Regional Municipality of Waterloo
Planning and Works Committee
Agenda
Tuesday, June 14, 2016
Approximately 10:30 a.m.
Regional Council Chamber
150 Frederick Street, Kitchener

1. Declarations of Pecuniary Interest under the Municipal Conflict Of Interest Act

2. Delegations

Consent Agenda Items
Items on the Consent Agenda can be approved in one motion of Committee to save time. Prior to the motion being voted on, any member of Committee may request that one or more of the items be removed from the Consent Agenda and voted on separately.

3. Request to Remove Items from Consent Agenda

4. Motion to Approve Items or Receive for Information


Recommendation:

4.2 **PDL-CPL-16-31**, Eighteenth Annual Report of the Kissing Bridge Trailway Advisory Committee for 2015 (For Information)

4.3 **PDL-CPL-16-30**, Authorization for Farm Crossing Agreements on the Kissing Bridge Trailway

**Recommendation:**

That the Regional Municipality of Waterloo, in concert with the Corporation of the County of Wellington, take the following actions with respect to the Kissing Bridge Trailway as detailed in Report PDL-CPL-16-30, dated June 14, 2016:

a) Support Regional staff in working with landowners having farm properties on both sides of the Kissing Bridge Trailway to identify and design appropriate crossing locations for farm equipment and livestock;

b) Authorize the Commissioner, Planning, Development and Legislative Services to execute licensing agreements with landowners and the Corporation of the County of Wellington to the satisfaction of the Province of Ontario and the Regional Solicitor; and

c) Amend the Fees and Charges By-law 16-001 to provide for fees of $50 plus disbursements for agreements with terms ending on August 31st, 2017 and fees of $250 plus disbursements thereafter for the preparation of licencing agreements with a 5-year term, related to usage of the lands leased from the Province comprising the Kissing Bridge Trailway.

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5. **Reports – Transportation and Environmental Services**

**Waste Management**

5.1 **TES-WMS-16-05**, Waste Management Master Plan Update – Completion of Thermal Treatment and Energy Recovery for Residual Waste Management Feasibility Study (Consultant Presentation)

**Recommendation:**

That the Regional Municipality of Waterloo undertake the following
actions with respect to the management of residual waste:

a) Take no further action related to pursuing Energy from Waste (EfW) for residual waste management at this time;
b) Direct staff to continue discussions regarding residual waste management and waste diversion programs with the Intermunicipal Working Group (IMWG); and

Direct staff to report back to Planning and Works Committee regarding the remaining site life at the Waterloo Landfill and the state of the EfW industry in 3 years.

Reports – Planning, Development and Legislative Services

5.2 **PDL-CPL-16-32**, Adoption of the Greenlands Network Implementation Guideline

**Recommendation:**

That the Regional Municipality of Waterloo approve the Greenlands Network Implementation Guideline to implement the environmental planning policies of the Regional Official Plan pursuant to Policy 10.B.9, as described in Report PDL-CPL-16-32, dated June 14, 2016.

Interdepartmental Reports

5.3 **TES-TRP-16-04/PDL-CPL-16-33**, Chicopee Hills Traffic Control Review and Proposed Amendment to Controlled Access By-law #58-87

**Recommendation:**

That the Regional Municipality of Waterloo amend the Region’s Traffic and Parking By-law 06-072, as amended, to add to Schedule 10, a Level 2 Pedestrian Crossover (PXO) on Lackner Boulevard at its intersection with Corfield Drive in the City of Kitchener, as described in Report No. TES-TRP-16-04/PDL-CPL-16-33, dated June 14, 2016;

And that the Regional Municipality of Waterloo approve an amendment to the Controlled Access By-law #58-87 for an access on the east side of Lackner Boulevard (Regional Road 54), approximately 170 metres north of Fairway Road (Regional Road 53).
Reports – Transportation and Environmental Services

Design and Construction

5.4 **TES-DCS-16-12.1**, Class Environmental Assessment Study
Bridgeport Road/Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street, City of Waterloo

**Recommendation:**

That the Regional Municipality of Waterloo take the following actions with respect to the Class Environmental Assessment Study for proposed improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street in the City of Waterloo:

a) Approve the Recommended Design Concept for the proposed improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street as described in Report TES-DCS-16-12.1 dated June 14, 2016;

b) Direct staff to file a Notice of Completion for this Class Environmental Assessment Study by means of advertisements in local newspapers and mailings to adjacent property owners, tenants and agencies, and place the Project File on the public record for review for a period of 30 days.

5.5 **TES-DCS-16-13**, Contract 2016-126, Westmount Road North (Regional Road 50) Retaining Wall Replacement at University Avenue, City of Waterloo - Approval of Additional Contract Expenditure

**Recommendation:**

That the Regional Municipality of Waterloo approve an additional contract expenditure of $555,000 on Contract 2016-126 (Westmount Road Retaining Wall Replacement at University Avenue, City of Waterloo) to extend the length of the proposed retaining wall to accommodate a future multi-use trail.

5.6 **TES-DCS-16-14**, Consultant Selection – Preliminary Design, Public Consultation, Detailed Design, Contract Administration and Construction Inspection Services for Proposed Improvements on Westmount Road (South of Victoria Street to Glasgow Street) and on Victoria Street (Lawrence Avenue to Fischer-Hallman Road) City of Kitchener
Recommendation:

That the Regional Municipality of Waterloo enter into a Consultant Services Agreement with Associated Engineering Ltd. of Kitchener, Ontario to provide consulting engineering services for preliminary design, public consultation, detailed design, contract administration and construction inspection services for proposed improvements on Westmount Road (South of Victoria Street to Glasgow Street) and on Victoria Street (Lawrence Avenue to Fischer-Hallman Road), City of Kitchener at an upset limit of $637,680.00 plus applicable taxes for the preliminary design and detailed design phases, with contract administration and construction inspection to be paid on a time basis in an estimated amount of $380,000.00 as described in Report TES-DCS-16-14 dated June 14, 2016.

5.7 TES-DCS-16-15, C2016-08, Consultant Selection – Detailed Design and Services during Construction for the New Hamburg Wastewater Treatment Plant Upgrades

Recommendation:

That the Regional Municipality of Waterloo enter into an Agreement for Professional Consulting Services with Stantec Consulting Ltd., to provide engineering services during the detailed design and services during construction for the New Hamburg Wastewater Treatment Plant (WWTP) Upgrades, the Township of Wilmot, at an upset fee limit of $1,510,624.00 plus applicable taxes.

5.8 PDL-LEG-16-27, Authorization to Expropriate Lands (2nd Report) for Franklin Blvd Improvements (Regional Road 36) Project – Year 2 North (200m North of Clyde Road to 200m North of Avenue Road) and Year 2 South (125m South of Champlain Boulevard to 200m South of Main Street), in the City of Cambridge

Recommendation: See page 190-195

5.9 PDL-LEG-16-45, Authorization To Expropriate Lands (1st Report) for improvements to Fountain Street (Regional Road 17) City of Cambridge from Kossuth Road / Fairway Road to Cherry Blossom Road (Phase 1)

Recommendation: See page 206-207
Transit Services

5.10 **TES-TRS-16-14**, Electronic Fare Management System Update (For Information) 215

5.11 **TES-TRS-16-15**, Family and Children’s Services Transit Update (For Information) 231

Transportation

5.12 **TES-TRP-16-13**, Traffic Control Signals on Westmount Road (Regional Road 50) and Union Boulevard, in the City of Kitchener (For Information) 237

5.13 **TES-TRP-16-14**, Proposed Level 2 Pedestrian Crossover Installation at All Roundabouts Under Regional Jurisdiction, in the Region of Waterloo 245

**Recommendation:** See page 245-249

5.14 **TES-TRP-16-15**, Revised 2016 Transportation Base and System Expansion Capital Budget 265

**Recommendation:**


6. Information/Correspondence

6.1 Council Enquiries and Requests for Information 290

7. Other Business

8. Next Meeting – August 9, 2016

9. Adjourn
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<tr>
<th>Date</th>
<th>Time</th>
<th>Description</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>Planning and Works Committee</strong></td>
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<tr>
<td>August 9, 2016</td>
<td>1:00 P.M.</td>
<td>Planning and Works Committee</td>
<td>Council Chamber 2nd Floor, Regional Administration Building 150 Frederick Street Kitchener, Ontario</td>
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<tr>
<td>September 13, 2016</td>
<td>1:00 P.M.</td>
<td>Planning and Works Committee</td>
<td>Council Chamber 2nd Floor, Regional Administration Building 150 Frederick Street Kitchener, Ontario</td>
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<td><strong>Transportation and Environmental Services</strong></td>
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<tr>
<td>Thu. June 23, 2016</td>
<td>3:00 P.M. – 7:00 P.M.</td>
<td>Public Consultation Centre – Family and Children’s Services Transit Options</td>
<td>The Family Centre, Gymnasium 65 Hanson Ave., Kitchener, Ontario</td>
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<td><strong>Planning, Development and Legislative Services</strong></td>
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<tr>
<td>Thu., June 16, 2016</td>
<td>6:30 P.M. – 8:30 P.M.</td>
<td>East Sides Lands Stage 2 Public Information Centre</td>
<td>Père-René-de-Galinée (Cafeteria) 450 Maple Grove Road Cambridge, Ontario</td>
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Region of Waterloo
Planning, Development and Legislative Services
Community Planning

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016

Recommendation:

Summary:
In accordance with the Regional By-law 01-028, as amended, the Commissioner of Planning, Development and Legislative Services has:

- Accepted the following plan of condominium;
- Draft approved the following plan of condominium;
- Modified the following plans of subdivision; and
- Released for registration the following plans of condominium.

Report:
City of Cambridge
Draft Approval of Plan of Condominium 30CDM-15102
Applicant: Winzen Construction Limited
Location: 100 Chester Drive
Proposal: The common element plan is comprised of private road, parking spaces, landscaped areas, noise attenuation wall, a retention wall and other common elements.
Draft Approval of Plan of Condominium 30CDM-15102

Regional Processing Fee: Paid May 12, 2016
Commissioner’s Approval: May 31, 2016
Comes Into Effect: June 21, 2016

Modification of Draft Plan of Subdivision 30T-12103

Draft Approval: April 20, 2016
Applicant: Hunt Club Valley Inc.
Location: 1134 Hunt Club Road
Proposal: To modify condition No. 35 to add additional wording to require a warning clause in all agreements of purchase and sale in addition to all offers of purchase and sale, and lease and/or rental agreements.

Regional Processing Fee: Not applicable due to nature of modification.
Commissioner’s Approval: May 12, 2016
Comes Into Effect: Immediately

Modification to Plan of Subdivision 30T-12104

Draft Approval: April 20, 2016
Applicant: General Shale Canada GP Inc.
Location: 875/1065 Speedsville Road
Proposal: To modify condition No. 28 to add additional wording to require a warning clause in all agreements of purchase and sale in addition to all offers of purchase and sale, and lease and/or rental agreements.

Regional Processing Fee: Not applicable due to nature of application.
Commissioner’s Approval: May 12, 2016

City of Kitchener

Plan of Condominium Application 30CDM-16202

Date Accepted: May 20, 2016
Applicant: Activa Holdings Inc.
Location: 115 South Creek Drive
Proposal: To permit the development of 54 back-to-back residential townhouse condominium units and 40 quad residential
Plan of Condominium Application 30CDM-16202

condominium units.

Regional Processing Fee: Paid May 19, 2016

Registration of Draft Plan of Condominium 30CDM-15201

Draft Approval Date: May 8, 2015
Phase: Phase 3
Applicant: 2280644 Ontario Inc.
Location: 70 Willowrun Drive
Proposal: To permit the development of 18 residential townhouse condominium units.

Regional Processing Fee: Paid May 13, 2016
Commissioner’s Release: May 25, 2016

Registration of Draft Plan of Condominium 30CDM-15204

Draft Approval Date: September 14, 2015
Phase: Block 5
Applicant: Losani Homes
Location: 1 Adam Street
Proposal: The common element plan is comprised of private roads, amenity area, landscaped areas, garbage enclosure areas, fifteen visitor parking spaces and two barrier-free parking spaces.

Regional Processing Fee: Paid May 25, 2016
Commissioner’s Release: May 25, 2016

Area Municipal Consultation/Coordination:

These planning approvals and releases, including consultations with Area Municipalities, have been completed in accordance with the Planning Act. All approvals included in this report were supported by the Area Municipal Councils and or/staff.

Corporate Strategic Plan:

This report reflects actions taken by the Commissioner in accordance with the Delegation By-law adopted by Council. Strategic objective: Improve environmental sustainability and liability intensifying urban and rural settlement areas.
Financial Implications:
Nil.

Other Department Consultations/Concurrence:
Nil.

Attachment:
Nil.

Prepared By: Andrea Banks, Program Assistant

Approved By: Rob Horne, Commissioner, Planning, Development and Legislative Services
Region of Waterloo
Planning, Development and Legislative Services
Community Planning

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016
File Code: D12-40/KBT/ANN RPT
Subject: Eighteenth Annual Report of the Kissing Bridge Trailway Advisory Committee for 2015

Recommendation:

For information.

Summary:

When the County of Wellington and Regional Municipality of Waterloo jointly created the Kissing Bridge Trailway Advisory Board in May 1998, the Terms of Reference required the Board to report to both Councils each year on its activities. The Board adopted the attached report as its Eighteenth Annual Report for the year 2015 at its May 5, 2016 meeting.

Some notable highlights from 2015 include:

- Steward Group and Section Realignment - In 2015, the Guelph Hiking Trail Club assumed stewardship of the Millbank segment of the Trailway, with maintenance and upgrades to be completed by the Village of Millbank Association.

- Trans Canada Trail - The missing Grand River bridge continues to be a major gap in the Kissing Bridge Trailway. A significant detour is required for trail users travelling between Guelph and Elmira and the river crossing has been identified as a major gap in the Trans Canada Trail in Southern Ontario. In 2015, the Region allocated $40,000 to be matched by Regional Tourism Organization 4 (RTO4) to cover an “Engineering
and Feasibility Study for the Potential Replacement of the Bridges over the Grand and Conestogo Rivers”. The Province will have final approval on the design of the bridges.

- Trans Canada Trail(2) - The County of Wellington has completed construction of the Cottontail Road Trail which links the Kissing Bridge Trailway northwest of Ariss to the Elora Cataract Trail in Elora. This trail completes the Trans Canada Trail through Wellington County.

- Trailway Encroachment - Over the past years encroachments onto the Trailway right-of-way by neighbouring landowners has increased. The province has requested that agreements be put into place for encroachments and for agricultural-related crossings perpendicular to the Trailway. Region and County staff continue to work on this matter with local land owners.

Report:

When the County of Wellington and Regional Municipality of Waterloo jointly created the Kissing Bridge Trailway Advisory Board in May 1998, the Terms of Reference required the Board to report to both Councils each year on its activities. The Board adopted the attached report as its Eighteenth Annual Report for the year 2015 (Attachment 1) at its May 5, 2016 meeting.

The Kissing Bridge Trailway runs through parts of the County of Wellington and the Region of Waterloo from Guelph to the Village of Millbank. From Millbank, the trail continues on to terminate in Goderich. The section of trail from Millbank to Goderich is under the guidance and stewardship of the Guelph to Goderich (G2G) Trail Association.

Trailway Activities in 2015

The Trailway Advisory Board met three times in 2015. For the most part, the meetings focused on activities involving development of infrastructure, encroachments, promotion of trail use and maintenance required to ensure that trail users are provided with a safe and enjoyable experience.

Mike Curtis, representative of the Guelph Hiking Trail Club was re-elected Chair of the Advisory Board for 2015 and Derek Kidnie, Linwood and District Lions Club representative, was elected as vice-chair.

Steward Group and Section Realignment - During the past few years, the Conestogo-Winterbourne Optimists group found it increasingly difficult to keep up with the maintenance activities required on their section of the Trailway. At the same time, the West Montrose Residents’ Association Inc. (aka the BridgeKeepers), expressed an interest in developing a closer working relationship with the Trailway. Eventually the Optimist Club terminated their
stewardship of the segment and the BridgeKeepers are now the steward group from the west bank of the Grand River to Northfield Drive. As part of the restructuring, the section from Northfield Drive to the eastern limits of Elmira was added to the Elmira Lions Club stewardship agreement as a natural extension of the section.

Also in 2015, the Guelph Hiking Trail Club assumed stewardship of the Millbank segment of the Trailway, with maintenance and upgrades to be completed by the Village of Millbank Association.

**Spring on the Trail** - Spring on the Trail continues to gain momentum each year and as a result more people are becoming aware of the Kissing Bridge Trailway. The money raised by this event is helping to make improvements to the Trailway. The Regional Tourism Organization from Zone 4 (RTO4) is providing assistance in this endeavour along with the County of Wellington and the Region of Waterloo. In addition, Spring on the Trail has resulted in participation and interest from other community groups who want to make the event a success in their respective communities. Local steward groups are considering identifying “local heroes” who contribute to the further development of the Trailway in their community or elsewhere.

**Trans Canada Trail** - The missing bridge over the Grand River near West Montrose continues to be a major gap in the Trans Canada Trail in southern Ontario. In addition, the bridge over the Conestogo River near Wallenstein also necessitates a lengthy, on-road detour for Trailway users.

In April 2015, Regional Council approved the allocation of $40,000 from the Community Environmental Fund in order to attract matching funding from the provincial Regional Tourism Organization 4 Inc. (RTO4) for the purpose of conducting engineering feasibility studies on replacing the former bridges over the Grand and Conestoga Rivers. The Region retained MMM to carry out the study. It is now in progress, and is expected to be completed later this year. Staff will submit a report summarising the study and exploring potential next steps for Council’s consideration. In the meantime, staff, Trailway Steward Groups, and G2G will be exploring potential sources of funding that might be accessed to complete the bridges.

In addition, the funding is to provide for appropriate wayfinding signage and other necessary improvements to the Kissing Bridge Trailway.

Transportation and Environmental Services staff from the Region of Waterloo is providing technical advice on potential design solutions for a new crossing utilizing the century-old abutments and piers which remain from the original bridges.

The County of Wellington has completed construction of the Cottontail Road Trail which links the Kissing Bridge Trailway northwest of Ariss to the Elora Cataract Trail in Elora.
trail completes the Trans Canada Trail through Wellington County.

Trail Maintenance and Enhancement. During 2015, all steward groups were busy with maintenance along the trail including:

- the application of stonedust;
- mowing;
- tree and shrub trimming;
- gazebo installation;
- tree planting; and
- other regular maintenance.

This ongoing work ensures that trail users can use the Trailway safely and maintains the overall aesthetic appearance of the trail. The Township of Woolwich Environmental Enhancement Committee’s (TWEEC) Trees for Woolwich group also planted approximately 170 trees and shrubs in the section between Katherine Street and the Grand River. Plants and materials were supplied by Trees for Woolwich. Assistance from neighbouring landowner Grant Bauman was gratefully acknowledged.

As part of the maintenance work in the vicinity of the Grand River, the Advisory Board was awarded $3,000 from the Region’s Community Environmental Fund toward a multi-year effort to control the spread of Dog-strangling Vine (Vincetoxicum rossicum). Dog strangling vine is listed on Ontario’s Noxious Weed List and due to its proximity to agricultural fields, must be controlled. The funding will cover the costs of herbicide and its application for a period of at least three years.

**Trailway Encroachment** - Over the past years there have been a number of encroachments onto the Trailway right-of-way by neighbouring landowners in the Ariss and Elmira areas. Region and County staff continue to work with local land owners. The province would like agreements for encroachments and for crossings. Work is ongoing regarding this matter.

**Guelph to Goderich Trail** - The Guelph to Goderich (G2G) trail board signed an agreement with the province in July 2015 to establish this additional length of the trail. Steward groups will need to be established through Perth and Huron Counties. There also needs to be some discussion regarding formalization of a relationship between Kissing Bridge Trailway and G2G.

**Finances and Funding** - The cost of developing recreational trails can be high. When the Kissing Bridge Trailway was established, it was intended that most of the cost would be borne by the community groups who are jointly developing the Trailway. To date, the majority of the funds expended on the Trailway have come from the Trailway Steward Groups or private donations. In the past three years, private donations have increased,
largely in part due to the Spring on the Trail event.

The Region of Waterloo contributed $38,000 to the Kissing Bridge Trailway in 1999, and a further $20,000 in 2000. The Board has developed a formula to allocate this money among Trailway Steward Groups based on infrastructure development costs within Regional boundaries. In addition, Wellington County provided $10,000 in 2001 to assist the Guelph Hiking Trail Club install barrier gates at intersections along its section. The County provided $25,000 in each of 2004, 2005 and 2006 to grade and apply stonedust to the Trailway. The County continues to fund ongoing maintenance (mowing and weed control) in Guelph/Eramosa.

Regional and County staff provide assistance in a variety of ways to the steward groups including brochure and signage development, clerical support and technical expertise.

**Activities Planned for 2016**

**Trail Condition Reports** - During 2016, Trail Condition Reports will be completed by each of the steward groups detailing trailway inspections including trail surface, bridges, gates, signage, fencing and vegetation. Conducting the inspection and reporting regularly enables the steward groups to take the required actions in a timely fashion in order that all trail users will be able to enjoy themselves safely.

**Property Lines and Encroachments** - One of the necessary activities of 2016 will be the demarcation of property lines and rights-of-way where farmers are farming or pasturing onto Trailway property. Due to increased pressure by a few neighbours, parts of the Trailway will have to be surveyed and marked clearly in order to reduce encroachment onto Trailway right-of-way. Planting trees and shrubs and possibly some fence installations will help to maintain a clearly marked property line. Farm crossings (where farm equipment is permitted to cross the right-of-way to gain access to fields separated by the Trailway) need to be clearly marked as a precautionary measure to inform Trailway users of the potential presence of machinery on or near the trail.

G2G. During 2016, the Trailway Advisory Board plans to continue its participation in Guelph to Goderich Rail Trail effort by having one or two representatives sit on the G2G advisory group. The representatives will bring the many years of experience in trail steward activity to new steward group representatives in Perth and Huron Counties as the process unfolds. The participation will enable the linkage and cooperative functioning across all sections of what promises to become one of the major off-road trail systems in southwestern Ontario.

The Trailway Advisory Board anticipates that 2016 will continue as another busy year along the entire length of the Trailway. The Advisory Board is confident that the enthusiasm generated by the activities of the various steward groups will result in increased overall support for the Kissing Bridge Trailway. The Advisory Board also looks forward to the ongoing development of the G2G initiative and the realization of an approximately 124 km,
off-road trail connecting a network of communities across a significant portion of the southern Ontario landscape from Goderich to Guelph.

Legal Services also advises on legal matters pertaining to the operation of the Trailway, renewing the Trailway Steward Group agreements and dealing with encroachments.

**Area Municipal Consultation/Coordination:**

Staff liaise with the Townships of Wellesley and Woolwich staff as required. The Township of Woolwich trails coordinator attends Trailway Advisory Board meetings on a regular basis, and the Mayor of Woolwich is the Regional representative on the Board. A copy of this report will be circulated to Wilmot and Wellesley Township staff.

**Corporate Strategic Plan:**

The Kissing Bridge Trailway is helping to achieve the Sustainable Transportation Focus Area of the Region of Waterloo's Strategic Focus 2015-2018, as it addresses Strategic Objective 2.3, “Build infrastructure for, and increase participation in, active forms of transportation (cycling and walking)”.

The Trailway has been identified as a major bicycle route in the Regional Cycling Master Plan.

In addition to coordinating with trails in Woolwich and Wellesley Townships, the Kissing Bridge Trailway is a collaboration with six community groups, the County of Wellington, the Ontario Realty Corporation, the Trans Canada Trail Foundation and the Ontario Trails Foundation.

**Financial Implications:**

There is no Regional Budget allocation to the development and operation of the Kissing Bridge Trailway. The Region provides in-kind staff support to the Kissing Bridge Trailway Advisory Board.

The survey of the lands affected by encroachments east of Elmira was paid from funds within the approved Planning, Development, and Legislative Services budget.

Funds toward the engineering feasibility studies for bridges across the Grand and Conestogo Rivers was allocated from the Region’s Community Environmental Fund which was established in 2011 to provide an integrated funding program to support community-based environmental initiatives. Through this Fund, the Region collaborates with local stakeholders to build a sustainable community for current and future generations.

**Other Department Consultations/Concurrence:**

Structural engineers in Transportation and Environmental Services provide invaluable
technical advice on bridges along the Trailway. Finance staff has sent municipal receipts to those who made donations to the Spring on the Trailway event and manage the accounts of the Trailway.

Attachments:

Attachment 1 - Eighteenth Annual Report of the Kissing Bridge Trailway Advisory Board for the Year 2015

Prepared By: Albert Hovingh, Principal Planner, Environmental and Stewardship

Approved By: Rob Horne, Commissioner, Planning, Development and Legislative Services
Eighteenth Annual Report
of the Kissing Bridge Trailway Advisory Board
for the Year 2015

Submitted to the Councils of

The County of Wellington
and
The Regional Municipality of Waterloo

Spring 2016
Introduction

In September 1997, the County of Wellington and Region of Waterloo jointly leased a 44.5 kilometre stretch of abandoned rail right-of-way from the Province for development as a multi-use recreational trail between the outskirts of the City of Guelph and the Village of Milbank. During the winter and spring of 1998, the County and Region concluded Trailway Steward agreements with five community groups to develop and operate sections of the Trailway.

In May 1998, the County and Region jointly approved Terms of Reference for the Trailway Advisory Board, and appointed fifteen persons and four alternate representatives to the Board. Section 1.8 of the Terms of Reference states that the Board "will prepare an annual report to the Councils of the County of Wellington and Regional Municipality of Waterloo on its activities, initiatives, and proposals for the coming year." The eighteenth annual report covers the year 2015.

Figure 1  Kissing Bridge Trailway
The current steward groups and their respective segments are as follows:

**Figure 2  Trail Sections and Respective Steward Groups**

<table>
<thead>
<tr>
<th>SECTION</th>
<th>TRAILWAY STEWARD GROUP</th>
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<tbody>
<tr>
<td>Grand River to Northfield Drive</td>
<td>West Montrose Residents' Association Inc.</td>
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<tr>
<td>Northfield Drive to Wallenstein</td>
<td>Lions Club of Elmira</td>
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<tr>
<td>Wallenstein to Linwood (Ament Line)</td>
<td>Linwood Lions Club</td>
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<tr>
<td>Linwood to Perth Road 116</td>
<td>Golden Triangle Snowmobile Association</td>
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<tr>
<td>Perth Road 116 to Perth Road 121</td>
<td>Guelph Hiking Trail Club</td>
</tr>
<tr>
<td>Guelph to Grand River</td>
<td>Guelph Hiking Trail Club</td>
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</tbody>
</table>

Detailed maps of each section are appended to this report.

During 2015 the steward groups carried out a range of activities including routine trail maintenance, application of stonedust, tree planting, completion of a gazebo at the connection to Ring Trail, and generally improving the overall appearance of the Trailway. The Spring on the Trail Event was held for the sixth year and has been successful in promoting the Trailway and raising funds for the trail. These activities have had a positive impact on the profile and use of the trail, particularly among local residents.

**Trailway Advisory Board Activities**

The Trailway Advisory Board met three times in 2015. For the most part, the meetings focused on activities involving development of infrastructure, encroachments, promotion of trail use and maintenance required to ensure that trail users are provided with a safe and enjoyable experience.

Mike Curtis, representative of the Guelph Hiking Trail Club was re-elected Chair of the Advisory Board for 2015 and Derek Kidnie, Linwood and District Lions Club representative, was elected as vice-chair.
New Steward Group and Section Realignment

During the past few years, the Conestogo-Winterbourne Optimists group was finding it ever more difficult to keep up with the maintenance activities required on their section of the Trailway from the eastern edge of Elmira to the Grand River due to declining numbers of volunteers. At the same time, the West Montrose Residents’ Association Inc. known as the BridgeKeepers, expressed an interest in developing a closer working relationship with the Trailway. After lengthy discussions, the Optimist Club decided to terminate their stewardship of the segment. The BridgeKeepers subsequently agreed to take over stewardship activities of the Trailway section from the west bank of the Grand River to Northfield Drive. The remainder of the former section from Northfield Drive to the eastern limits of Elmira was added to the Elmira Lions Club stewardship agreement as a natural extension of the section. In 2015, the Guelph Hiking Trail Club assumed stewardship of the Millbank segment of the Trailway, with maintenance and upgrades to be completed by the Village of Millbank Association.

Spring on the Trail

In 2010, a proposal was put forward by Doug Cerson, the business community representative, to organize an annual trail event. A subcommittee was formed to explore possibilities for such an event. The resulting event has become known as “Spring on the Trail” and is intended to promote activities along the length of the trail and to help to raise the local profile of the Trailway. The priority for the event is to raise funds for the two major bridges required across the Conestogo River (near Wallenstein) and the Grand River (near West Montrose).

Spring on the Trail gains momentum each year and as a result people are starting to recognize the Kissing Bridge Trailway, but it requires participation by all stakeholders. Money is being raised from the general public and is helping to make improvements to the Trail. There is an online system for making contributions to the Guelph to Goderich Trail. The Regional Tourism Organization from Zone 4 (RTO4) is providing assistance in this endeavour along with the County of Wellington and the Region of Waterloo. In addition, Spring on the Trail has resulted in participation and interest from other community groups who want to make the event a success in their respective communities. Local steward groups are considering identifying “local heroes” who contribute to the further development of the Trailway in their community or elsewhere. In 2016, there are plans to host a G2G walk with a concert at the end.
Trans Canada Trail

A major gap in the Kissing Bridge Trailway continues to be the Grand River near West Montrose in Woolwich Township. The missing bridge results in a significant detour for trail users travelling between Guelph and Elmira and has been identified as a major gap in the Trans Canada Trail in Southern Ontario. Regional Transportation and Environmental Services staff are providing technical advice on potential design solutions which address the configuration of the century-old abutments and piers which remain from the original bridge.

In 2015, the Region allocated $40,000 to be matched by Regional Tourism Organization 4 (RTO4) to cover an “Engineering and Feasibility Study for the Potential Replacement of the Bridges over the Grand and Conestogo Rivers”. The Province will have final approval on the design of the bridges.

The County of Wellington has completed construction of the Cottontail Road Trail which links the Kissing Bridge Trailway northwest of Ariss to the Elora Cataract Trail in Elora. This trail completes the Trans Canada Trail through Wellington County.

Figure 3  Cottontail Road Trail
G2G

The Guelph to Goderich (G2G) trail board signed an agreement with the province in July 2015 to establish this additional length of the trail. Steward groups will need to be established through Perth and Huron Counties. There also needs to be some discussion regarding formalization of a relationship between KBT and G2G.

Trail Maintenance and Enhancement

All steward groups were busy with maintenance along the trail including:

- the application of stonedust
- mowing
- tree and shrub trimming
- gazebo installation
- tree planting
- and other regular maintenance

This ongoing work ensures that trail users can use the Trailway safely and maintains the overall aesthetic appearance of the trail. The Township of Woolwich Environmental Enhancement Committee’s (TWEENC) Trees for Woolwich group also planted approximately 170 trees and shrubs in the section between Katherine Street and the Grand River. Plants and materials were supplied by Trees for Woolwich. Assistance from neighbouring landowner Grant Bauman was gratefully acknowledged.

As part of the maintenance work in the vicinity of the Grand River, the Advisory Board was awarded $3,000 from the Region’s Community Environmental Fund toward a multi-year effort to control the spread of Dog-strangling Vine (Vincetoxicum rossicum). Dog strangling vine is listed on Ontario’s Noxious Weed List and due to its proximity to agricultural fields, must be controlled. The funding will cover the costs of herbicide and its application for a period of at least three years.

Figure 4  Dog Strangling Vine (Vincetoxicum rossicum) Plant and Invasion Site
Trailway Encroachment

Over the past years there have been a number of encroachments onto the Trailway right-of-way by neighbouring landowners in the Ariss and Elmira areas. Region and County staff continue to work with local land owners. The province would like agreements for encroachments and for crossings. Work is ongoing regarding this matter.

Finances and funding

The cost of developing recreational trails can be high. When the Kissing Bridge Trailway was established, it was intended that most of the cost would be borne by the community groups who are jointly developing the Trailway. To date, the majority of the funds expended on the Trailway have come from the Trailway Steward Groups or private donations. In the past three years, private donations have increased, largely in part due to the Spring on the Trail event.

The Region of Waterloo contributed $38,000 to the Kissing Bridge Trailway in 1999, and a further $20,000 in 2000. The Board has developed a formula to allocate this money among Trailway Steward Groups based on infrastructure development costs within Regional boundaries. In addition, Wellington County provided $10,000 in 2001 to assist the Guelph Hiking Trail Club install barrier gates at intersections along its section. The County provided $25,000 in each of 2004, 2005 and 2006 to grade and apply stonedust to the Trailway. The County continues to fund ongoing maintenance (mowing and weed control) in Guelph/Eramosa.

Regional and County staff provide assistance in a variety of ways to the steward groups including brochure and signage development, clerical support and technical expertise.

Activities Planned for 2016

During 2016, Trail Condition Reports will be completed by each of the steward groups. Trailway inspections cover all aspects of the Trailway infrastructure including trail surface, bridges, gates, signage, fencing and vegetation. Conducting the inspection and report regularly enables the steward groups to take the required actions in a timely fashion in order that all trail users will be able to enjoy themselves safely.

One of the necessary activities of 2016 will be the demarcation of property lines and rights-of-way where farmers are farming or pasturing onto Trailway property. Due to increased pressure by a few neighbours, parts of the Trailway will have to be surveyed and marked clearly in order to reduce encroachment onto Trailway right-of-way. Planting trees and shrubs and possibly some fence installations will help to maintain a
clearly marked property line. Farm crossings (where farm equipment is permitted to cross the right-of-way to gain access to fields separated by the Trailway) need to be clearly marked as a precautionary measure to inform Trailway users of the potential presence of machinery on or near the trail.

During 2016, the Trailway Advisory Board plans to continue its participation in Guelph to Goderich Rail Trail effort by having one or two representatives sit on the G2G advisory group. The representatives will bring the many years of experience in trail steward activity to new steward group representatives in Perth and Huron Counties as the process unfolds. The participation will enable the linkage and cooperative functioning across all sections of what promises to become one of the major off-road trail systems in southwestern Ontario.

Conclusion

The Trailway Advisory Board anticipates that 2016 will continue as another busy year along the entire length of the Trailway. The Advisory Board is confident that the enthusiasm generated by the activities of the various steward groups will result in increased overall support for the Kissing Bridge Trailway. The Advisory Board also looks forward to the ongoing development of the G2G initiative and the realization of an approximately 124 km, off-road trail connecting a network of communities across a significant portion of the southern Ontario landscape from Goderich to Guelph.

Respectfully submitted,

[Signature]

Mike Curtis, Chair (2015)
Trailway Advisory Board
May, 2016

Attachments:
Detail Maps, Trailway Steward Group Sections
Region of Waterloo
Planning, Development and Legislative Services
Community Planning

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016  File Code: D12-40/KBT
Subject: Authorization for Farm Crossing Agreements on the Kissing Bridge Trailway

Recommendation:
That the Regional Municipality of Waterloo, in concert with the Corporation of the County of Wellington, take the following actions with respect to the Kissing Bridge Trailway as detailed in Report PDL-CPL-16-30, dated June 14, 2016:

a) Support Regional staff in working with landowners having farm properties on both sides of the Kissing Bridge Trailway to identify and design appropriate crossing locations for farm equipment and livestock;

b) Authorize the Commissioner, Planning, Development and Legislative Services to execute licensing agreements with landowners and the Corporation of the County of Wellington to the satisfaction of the Province of Ontario and the Regional Solicitor; and

c) Amend the Fees and Charges By-law 16-001 to provide for fees of $50 plus disbursements for agreements with terms ending on August 31st, 2017 and fees of $250 plus disbursements thereafter for the preparation of licencing agreements with a 5-year term, related to usage of the lands leased from the Province comprising the Kissing Bridge Trailway.

Summary:
Since 1997, the Region and the County of Wellington have jointly leased from the Province the 44.5 kilometre abandoned railway right-of-way from Guelph to Millbank for development as a multi-use recreational trailway. The Kissing Bridge Trailway is being developed and maintained by five community groups. Recently, complaints have been received about activities on the Trailway associated with farms in Woolwich Township.
These have arisen from landowners crossing the right-of-way to access fields on the other side of the Trailway and also cultivating lands and storing objects within the right-of-way.

In consultation with the County of Wellington and the DMS Group, who is the property management agent of the Province, a draft Trailway crossing agreement is being developed. It is proposed that the agreement take the form of a licence rather than a sub-lease which would be coincident with the term of the Lease held by the County and Region from the Province. Some of salient features of the draft agreement include:

- There would be a fee for the preparation, monitoring, and maintenance of the licence. This is proposed to be $50 plus disbursements for the remaining term of current lease ending August 31, 2017, and $250 for subsequent five-year licences (that would correspond with the five year term of the lease with the Province) plus disbursements, which would include registering the agreement on title to the licensee’s lands.
- Landowners would be required to maintain the surface of Trailway crossings in a condition which does not detract from the safety and enjoyment of Trailway users.
- Landowners would be required to install and maintain at their own expense stop signs and “Farm Crossing” signs for the safety of Trailway users.
- Landowners would not be permitted to store materials, apply herbicides, or carry out activities on the Trailway which could adversely affect Trailway users.
- Landowners would indemnify the Region and County in relation to the agreement and carry liability insurance to the satisfaction of the County and Region.

Once the draft agreement is acceptable to the Province and the Regional Solicitor, staff would meet with the affected landowners to identify and map the crossing location using GPS.

It is recommended that Council authorize the Commissioner, Planning, Development and Legislative Services to execute the license agreements on behalf of the Region. Legal Services would coordinate execution of the agreement with Wellington County and the respective landowners.

The Province, through its property management agent DMS Group, has advised the Region and County that it is permissible to charge the licensees document preparation fees. However, the Province has noted that any fees charged to the licensees in relation to their use of the lands for agricultural or other personal use would correspondingly increase the Region and County’s rent paid to the Province under the aforementioned lease with the Province. As such, it is further recommended that the Fees and Charges By-law be amended to provide for fees to be charged for preparation of licensing agreements related to usage of the lands leased from the Province comprising the Kissing Bridge Trailway.
In September 1997, the Region and County of Wellington jointly leased from the Province the 44.5 kilometre abandoned Canadian Pacific Railway right-of-way from Guelph to Millbank for development by community groups as a multi-use recreational Trailway, now known as the Kissing Bridge Trailway. When the railway was constructed in the early years of in the 20th century, it bisected a number of farms and created a need for farm landowners to cross the railway to access their fields. Some of these crossings were secured by formal agreements and others were more informal.

In recent years, complaints have been received from the public about the condition of the Trailway east of Elmira. To a significant extent, these were associated with activities originating on adjoining farm properties. These have arisen from landowners crossing the right-of-way to access fields on the other side of the Trailway and also cultivating lands and storing objects within the right-of-way (Figure 1).

![Farm crossing on the Kissing Bridge Trailway looking west toward Elmira](image)

*Photo: Albert Hovingh, Region of Waterloo, May 2, 2014*

In August 2014, Regional staff and a representative of the DMS Group, a property management company administering the right-of-way on behalf of the Province,
inspected the Trailway in this area. DMS Group staff expressed concern about activities on the right-of-way that exceeded what was permitted in the original Lease to the County and Region. The matter has also been the subject of discussions at successive meetings of the Kissing Bridge Trailway Advisory Board between September 2014 and May 2016. The affected landowners were invited to participate in the first two of these meetings.

In discussions with the DMS Group and the Trailway Advisory Board, it was decided that adjoining landowners’ use of Trailway lands, over and above those permitted to the general public, needed to be defined through legal agreements setting out clear rules. DMS staff has requested Regional Legal Services to prepare a prototype agreement for this purpose. It has been determined that a licensing agreement rather than a sub-lease would be the most appropriate legal instrument for this purpose.

Usage of the Trailway by adjoining landowners falls into three categories:

1. Recreational use as permitted to the general public,
2. Crossing farm equipment and livestock from the farmstead to fields on the other side of the Trailway, and
3. Cultivation of lands within the Trailway right-of-way for crop production.

The present report deals only with the second category of use. The third category is significantly more complicated, and will be the subject of a future report.

In consultation with the County of Wellington and the DMS Group, a draft Trailway crossing agreement is being developed for farm crossings. Some of salient features of the draft agreement include:

- The agreement would take the form of a licence to use a small portion of the Trailway for a farm crossing.
- The term of the agreement would coincide with the term of the Lease between the Province on one hand and the County and Region on the other. The first term would expire August 31, 2017 when the current lease expires, and be renewable for the term of any future lease with the Province.
- There would be a fee for the preparation, monitoring, and maintenance of the licensing agreement. This is proposed to be $50 plus disbursements for the remaining term of the current Lease with the Province, and $250 plus disbursements for subsequent five-year leases.
- Crossings would be limited to simple perpendicular crossings. Running farm lanes parallel to the Trailway within the right-of-way or along the Trailway itself would no longer be permitted.
- Landowners would be required to maintain the surface of the Trailway within the crossing in a condition which does not detract from the safety and enjoyment of
Trailway users.

- Landowners would be required to install and maintain at their own expense stop signs on either side of the Trailway. Farm vehicle operators would be obliged to give the right-of-way to Trailway users. In addition, landowners would install “Farm Crossing” signs at a reasonable distance from both sides of the crossing to alert Trailway users to the potential appearance of farm equipment or livestock.
- Landowners would not be permitted to store materials, apply herbicides, or carry out activities on the Trailway which could adversely affect Trailway users.
- Landowners would indemnify the Region and County in relation to the agreement and carry liability insurance to the satisfaction of the County and Region.

Once the draft agreement is acceptable to the DMS Group on behalf of the Province and the Regional Solicitor, staff would meet on site with landowners wishing a farm crossing to identify and map the location of the crossing using GPS. This would be shown on a large scale digital image which would become a schedule to the licensing agreement.

It is recommended that Council authorize the Commissioner, Planning, Development and Legislative Services to execute the licensing agreements on behalf of the Region. Legal Services would coordinate execution of the agreement with Wellington County and the respective landowners.

Legal Services will prepare the licensing agreement and oversee its execution by the Region in consultation with the County of Wellington.

At present, the Fees and Charges By-law does not provide for the collection of fees for the preparation of legal agreements such as the recommended licensing agreements to utilise lands within the leased railway right-of-way for agricultural purposes. It is therefore recommended that the By-law be amended to provide for the preparation of such agreements. As the preparation and monitoring of the recommended licensing agreements would entail considerable effort by Community Planning and Legal Services staff, it is recommended that the fee for a five-year licence corresponding to the Regional-County head Lease be set at $250 plus disbursements. As the first such licensing agreement would only cover one year until the expiration of the current head Lease, it is recommended that the initial fee be set at $50 plus disbursements.

**Area Municipal Consultation/Coordination**

Regional staff collaborate with staff of the Townships of Woolwich and Wellesley on matters pertaining to the development and administration of the Kissing Bridge Trailway as they affect Township interests.
Corporate Strategic Plan:

The development of the Kissing Bridge Trailway is helping to achieve Strategic Objective 2.3 to build infrastructure to foster active forms of transportation. The Trailway also helps achieve Strategic Objective 3.5 by realizing the recreational and tourism potential of the Region (and adjoining Counties) by developing a multi-use recreational Trailway.

Financial Implications:

The Province, through its property management agent DMS Group, has advised the Region and County that it is permissible to charge the licensees document preparation fees. However, the Province has noted that any fees charged to the licensees in relation to their use of the lands for agricultural or other personal use would correspondingly increase the Region and County’s rent paid to the Province under the aforementioned lease with the Province. As such, it is proposed to impose a fee to help defray the costs of preparing, monitoring, and maintaining the Trailway crossing agreements. Anticipated revenues from the preparation of the licensing agreements will be included in the 2017 Community Planning budget.

Other Department Consultations/Concurrence:

Nil.

Attachments:

Nil.

Prepared By: Chris Gosselin, Manager, Environmental Planning and Stewardship

Approved By: Rob Horne, Commissioner, Planning, Development and Legislative Services
Region of Waterloo
Transportation & Environmental Services
Waste Management

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016  File Code: E20-40
Subject: Waste Management Master Plan Update – Completion of Thermal Treatment and Energy Recovery for Residual Waste Management Feasibility Study

Recommendation:

That the Regional Municipality of Waterloo undertake the following actions with respect to the management of residual waste:

a) Take no further action related to pursuing Energy from Waste (EfW) for residual waste management at this time;

b) Direct staff to continue discussions regarding residual waste management and waste diversion programs with the Intermunicipal Working Group (IMWG); and

c) Direct staff to report back to Planning and Works Committee regarding the remaining site life at the Waterloo Landfill and the state of the EfW industry in 3 years.

Summary: Nil

Report:

Background

A new Waste Management Master Plan (WMMP) was completed in 2013 to establish the direction for integrated waste management in the Region considering that the Region’s landfill will likely reach capacity in approximately 15 years. The WMMP examined various aspects of waste management including how to manage residual waste (i.e. garbage) once the landfill is full, how to improve diversion rates, how to further reduce environmental impacts, and established strategic directions in the complementary focus areas of Diversion, Residual Waste Management and Planning.
The WMMP included a recommendation in the Residual Waste Management focus area to further investigate thermal technology options. As a first step, a Feasibility Study to examine the various aspects associated with thermal treatment and energy recovery for residual waste management (EfW Feasibility Study) was initiated in 2014 and recently completed.

The WMMP also included a recommendation in the Planning focus area to establish an inter-municipal working group (IMWG) to explore potential partnership opportunities for both diversion and residual waste management. The group was established in 2014 and meetings were held in the Fall of 2014 and 2015. Initial membership includes the Cities of Brantford, Guelph, Hamilton, London, and Toronto, Counties of Brant, Wellington, Norfolk, Oxford and Regions of Peel, Halton and Niagara.

Report TES-WMS-16-05 provides a summary of the findings of the EfW Feasibility Study and discussions held with the IMWG.

**EfW Feasibility Study**

In accordance with the recommendations of the WMMP to further investigate thermal technology options for the management of residual waste, a study was initiated in 2014 to assess and evaluate the feasibility of implementing a residual waste management system using thermal treatment technology with energy recovery and to examine the question “What does the Region of Waterloo need to have in place to make EfW feasible for our community?”. The Feasibility Study examined the opportunities and barriers associated with implementation of thermal treatment by the Region, including:

- opportunities for collaboration and partnership amongst neighbouring jurisdictions and/or private sector entities,
- synergies with the Biosolids Master Plan,
- factors which are outside of the primary waste management mandate of the Region, including provincial policy direction and changes,
- considerations related to revenue from energy generation,
- required changes to Regional waste management policies, programs and operational practices necessary to allow for the successful implementation of thermal treatment, and
- the relative benefits of utilizing recovered energy for electricity generation and/or district heating.

The study included a comprehensive overview of a variety of aspects necessary to inform decision making, including technical, operational, environmental, risk, policy, and economic issues. A variety of technologies were investigated, together with various potential feedstock scenarios and energy outputs as shown in Table 1.
### Table 1. Study Parameters

<table>
<thead>
<tr>
<th>Feedstock Scenarios</th>
<th>Technology Scenarios</th>
<th>Recovered Energy Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current residential waste stream</td>
<td>Conventional Incineration</td>
<td>Electricity</td>
</tr>
<tr>
<td>Addition of Industrial, Commercial and Institutional waste stream</td>
<td>Advanced Thermal Technology (e.g. gasification, plasma gasification, pyrolysis)</td>
<td>Combined Heat and Power</td>
</tr>
<tr>
<td>Addition of municipal solid waste stream from a partner</td>
<td></td>
<td>Bio-ethanol</td>
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<tr>
<td>Addition of multi-residential municipal solid waste stream</td>
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<tr>
<td>Addition of biosolids</td>
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### Study Findings

Key findings from the study include the following:

- The capital cost of an EfW facility could range from $300-$600M depending on size of facility and technology selected;
- The net lifecycle cost per tonne of waste processed could range from $75-$200 depending on technology and facility size. Significant economies of scale exist, reducing the net cost per tonne as facility size increases;
- All residual waste disposal options, including landfilling, can result in environmental impacts. EfW specific impacts associated with facility operations and emissions can be mitigated with engineered design;
- Due to the relatively low greenhouse gas (GHG) impact of the Ontario power grid since the closing of coal-fired power plants, the greatest GHG emission savings are realized with conversion to either combined heat and power or bio-ethanol;
- Advanced Thermal Technologies (ATT) for management of municipal solid waste (MSW) are not yet proven commercially;
- ATT have a narrower range of acceptable feedstock quality, therefore it is typically necessary to include some form of pre-treatment, which adds to capital and operating cost of the facility;
- All technologies produce solid residues requiring disposal (i.e. landfill), typically ranging from 10-20% of facility input;
- Bioethanol facilities typically produce a liquid waste stream in addition to solid residuals which may require additional treatment;
Due to their relatively high moisture content, additional pre-treatment (e.g. drying) would likely be necessary to include biosolids as a feedstock for EfW;

- There is very limited global experience with co-incineration of MSW and biosolids.

**Study Conclusions**

The study conclusions address the requirements that the Region should have in place or should work to optimize if the Region wishes to pursue EfW as a residual waste management strategy in the future. The primary factors highlighted in the study conclusions include:

**Food Waste**

The residential waste stream currently contains over 50% by weight organic material, primarily in the form of food waste. Organic matter with a high moisture content reduces the calorific value of the waste stream resulting in a feedstock that is not conducive to EfW. Food waste should be diverted to a higher use such as composting or anaerobic digestion.

**Flow Control**

The Region’s waste management mandate under provincial legislation is limited to residential waste, with no control over the management and ultimate destination for waste generated by ICI sources. In the absence of ICI feedstock, future projected residential waste tonnages (i.e. approximately 125,000 tonnes in 2025 and 153,000 tonnes in 2045) are at the low end of economies of scale for conventional incineration. Economy of scale becomes most apparent at facilities sized at 250,000 t/yr and above.

**Long Term Feedstock Supply**

The lifespan of a thermal treatment facility is typically in the range of 30 years, thus long term contracts with third parties are necessary to guarantee feedstock and continued plant operation. Many jurisdictions in the European Union (e.g. Netherlands, Sweden, Germany) have found themselves in a position where importing waste across national borders has been necessary to sustain operation of EfW facilities in the midst of diversion rates that were not anticipated at the time of construction of the facilities.

**Energy Conversion Efficiencies**

Recovered energy can be in the form of electricity (or power), heat or biofuels such as bio-ethanol. Recovery of each form of energy has an associated efficiency in terms of the amount of energy that can be captured as an output based on a given input. Because conversion to heat energy is far more efficient than conversion to electricity, and excess heat will always exist when power is generated, the most efficient energy recovery scheme (referred to as combined heat and power or CHP) includes both heat
and power generation. CHP conversion efficiencies can be upwards of 85%. In order to make the best use of CHP, a large heat consumer is needed, such as a single industrial user where heat or steam is required in a process, or a group of users such as an industrial park or district heating network.

Commercial Viability of ATT

Advanced thermal EfW technologies (ATT) such as gasification to produce electricity or biofuel are not yet commercially proven in MSW applications, and have minimal operating experience. A full scale bio-ethanol plant in the City of Edmonton began operation in 2015 using a gasification process developed in Quebec, however details about operating and life cycle costs are not yet available. Several large gasification projects are underway in the United Kingdom and Australia, driven by a favourable fiscal and regulatory regime. Technology advances are also underway to allow for more efficient direct combustion of gas and conversion of gas to liquid fuels. Again, actual details about operating and life cycle costs and the commercial viability of ATT in an MSW application will be forthcoming over the next few years.

State of the Industry and Trends to Watch

In the past decade several Ontario and Canadian jurisdictions have considered EfW as a residual waste management solution. Due to the significant capital investment necessary to construct a plant, risk associated with securing sufficient feedstock, and a rapidly changing technology and policy environment, no Ontario municipalities are actively pursuing EfW at the present time.

Council at the Region of Peel voted in Fall 2015 to halt the implementation of a planned 300,000 t/yr facility when the projected cost approached $600M, and instead focus on an aggressive 75% diversion target. In late 2015, Metro Vancouver also halted implementation of a regionally-sized EfW facility of approximately 500,000 t/yr when cost estimates exceeded $1 billion and a proposed flow control bylaw was blocked from enactment by the Province. Locally, private waste management firms have proposed EfW facilities in Port Hope and Hamilton. Significant public opposition to these facilities has resulted in the initiatives being cancelled. Third parties partnering with the Cities of Ottawa (Plasco) and Sault Ste Marie (Enquest) to pilot gasification EfW processes both went bankrupt before construction on a full scale facility was started.

The Region of Durham’s 140,000 t/yr EfW facility began processing waste in 2015. The facility, which cost in the neighbourhood of $300M to construct, will produce up to 14MW of power, enough for approximately 10,000 homes. The facility required one year longer to construct than originally anticipated, at an extra cost to the Region of approximately $250k. The Durham project required approximately 10 years to conduct impact studies and secure the necessary approvals from the Province.
In jurisdictions, particularly in Europe, where EfW projects have been implemented, project drivers generally fall into three categories. These include:

- geography; high population densities and lack of available land for the large footprints associated with landfiling drive the need for a solution that is not land intensive,
- energy needs; energy dependence, security of supply, and cost to produce or import energy drive the need for domestic production, and
- political and commercial environment; landfill bans and levies drive economics to favour EfW solutions.

Trends to watch locally include demographics and provincial policy. A period of increased uncertainty currently exists regarding composition of the residual waste stream in the Region, in part as a result of coming demographic changes including population growth, shifts in the ratio of single-family to multi-residential housing, and the evolution of waste diversion that will likely result from changes to curbside policy in 2017. All of these factors could dramatically impact the proportions of various materials present in the residential waste stream. Further, provincial legislative changes as a result of the new Waste Free Ontario Act will likely result in changes to the residual waste stream resulting from new diversion programs for specific material types. In addition, the Climate Change Mitigation and Low-Carbon Economy Act will likely impose a GHG emissions cap on EfW facilities, and the resulting impact on life cycle costs is not yet understood. The Province will require a minimum of two years to enact the regulations to operationalize the Acts discussed above. Until such time as regulations are in place, uncertainty remains as to their impact on EfW initiatives.

Provincially, recent information (Ontario Waste Management Association, February 2016) indicates that approximately 120M tonnes of disposal capacity remains in the province, with approximately one third of this being private landfills. At a provincial fill rate of approximately 8M t/yr (exclusive of the 3.5M tonnes that are exported to New York and Michigan annually), this amounts to 15 years of landfill capacity in the province. This is generally consistent with projections for the remaining lifespan of the Waterloo Landfill.

Opportunities

The study findings present several opportunities associated with long term waste management planning in the Region.

Full cost accounting completed as part of the WMMP determined that the Region’s cost to dispose of waste at the Waterloo Landfill is approximately $50/t (adjusted to $2015). The comparable annual operating cost for an EfW facility could range from $75-$200. Capital costs associated with construction of an EfW facility could range from $300-$600M. Alternatively, capital costs associated with siting and constructing a new landfill in the Region could range from $200-$250M.
Implementing strategies to increase the amount of waste diverted from the landfill will increase the remaining lifespan of the Waterloo Landfill beyond the approximate 15 years remaining currently, and defer both a significant capital outlay to construct a new residual waste disposal facility and the potential for future increased operating costs associated with EfW. Further, capital costs associated with the ultimate build out of the Waterloo Landfill will also be deferred.

Deferring immediate next steps associated with residual waste management will also allow for policy (e.g Waste Free Ontario and Climate Change Mitigation and Low-Carbon Economy Acts) and technology developments to stabilize. ATT solutions may mature to the point of improved commercial viability and the private sector may have an increasing market presence, providing for disposal options that are not municipally owned assets. Further, over the next several years neighbouring municipalities with active landfills will also begin to approach the time where decision making must commence for their next residual waste management solution.

Finally, whether or not the Region pursues an EfW solution at some point in the future, consideration of a Community Energy Plan, including district heating concepts is a worthwhile initiative. District heating opportunities would maximize the energy recovery and revenue potential for an EfW system. In the absence of an EfW system, community energy planning and district heating would enable efficiencies in the transportation and use of heat for a wide variety of users, and in turn reduce greenhouse gas emissions through an optimized heating distribution network.

**Intermunicipal Working Group**

The mandate of the IMWG is to maintain open and on-going dialogue amongst neighbouring municipal jurisdictions to explore opportunities for collaboration, including the joint implementation of waste management policies, programs and/or facilities. Initial membership includes the Cities of Brantford, Guelph, Hamilton, London, and Toronto, Counties of Brant, Wellington, Norfolk, Oxford and Regions of Peel, Halton and Niagara.

As part of the Feasibility Study the Region hosted IMWG meetings in October 2014 and November 2015. Waste management representatives discussed common challenges, opportunities, leading/best practices, and the current state of waste management master planning. In general, waste management strategies include maximizing diversion rates, maximizing existing landfill capacity and non-infrastructure based residual waste disposal options (e.g export of waste). None of the participants in the IWWG are actively pursuing EfW initiatives for residual waste management at this time. The next meeting is tentatively scheduled for Fall 2016.

**Recommendations:**

Based on the review completed as part of the feasibility study and as described in this
Staff are recommending that no immediate action be taken to pursue an Energy From Waste Facility and that staff continue to monitor the state of EFW industry and report back to Council in 3 years.

Waste Management is a rapidly evolving and changing field. It is expected that the next 3-5 years will continue to see changes. Based on the summary from this report and taking into account the remaining landfill capacity at the Waterloo Landfill site, there is no immediate need to plan or construct an EFW and waiting 3 years to make a formal decision is appropriate.

The Region should continue to work with potential partners in an EFW to ensure that appropriate partnerships can be created.

**Corporate Strategic Plan:**

Implementation of the recommendations of this report support the Corporate Strategic Plan Objectives of the Environment and Sustainable Growth Focus Area, including 3.1 “Increase the Amount of Waste Diverted From the Landfill”.

**Financial Implications:**

The approved 2016 Waste Management Ten Year Capital Program includes sufficient funding provisions to implement the recommendations identified in this report.

**Other Department Consultations/Concurrence:**

Nil

**Attachments**

Nil

**Prepared By:** Donna Serrati, Manager, Engineering and Programs

**Approved By:** Thomas Schmidt, Commissioner, Transportation & Environmental Services
Region of Waterloo
Planning, Development and Legislative Services
Community Planning

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016  File Code: D23-40/GNIG

Subject: Adoption of the Greenlands Network Implementation Guideline

Recommendation:
That the Regional Municipality of Waterloo approve the Greenlands Network Implementation Guideline to implement the environmental planning policies of the Regional Official Plan pursuant to Policy 10.B.9, as described in Report PDL-CPL-16-32, dated June 14, 2016.

Summary:
The Regional Official Plan (ROP) provides for a variety of Implementation Guidelines to detail the manner in which specific policies are to be implemented by staff and development applicants. ROP Policy 7.A.4 commits the Region to develop a “Greenlands Network Implementation Guideline.” This Implementation Guideline is proposed to serve as a guide for the preparation of Environmental Impact Statements affecting Core Environmental Features. It also provides technical guidance for interpreting feature boundaries, delineating the buffers of Regionally-significant environmental features, and identifying natural linkages as are required by policies in the ROP and Area Municipal Official Plans.

The development of the document has been informed by input from stakeholders such as Area Municipalities, the Grand River Conservation Authority, the Ministry of Natural Resources and Forestry, the Ecological and Environmental Advisory Committee (EEAC), and private environmental consultants. As such, it is expected that it can serve as a common framework for the preparation of Environmental Impact Statements by development applicants and better coordinate their review by the respective approval agencies.
The First Draft of the Greenlands Network Implementation Guideline was prepared in 2009 and circulated to stakeholders. Based on comments received, a Second Draft was the subject of a March 8, 2011 Public Meeting of the Planning and Works Committee. Further action on the draft was suspended when the implementing policy was appealed along with the rest of the ROP in 2011. Following approval of the ROP in June 2015, a Third Draft was circulated for final comment (Report PDL-CPL-15-48, dated September 15, 2015). Many helpful comments submitted during that circulation have informed the preparation of the Final Draft now being submitted for Council's consideration.

As required by ROP policy 10.B.11, public and agency notification have been given prior to Council consideration of the Implementation Guideline. A pointer ad was placed in the Record on May 24, 2016 and in other area newspapers the week of May 23 to 27, 2016. The notice and draft document were also placed on the Regional website at that time. Digital copies have been e-mailed to the Area Municipalities, Grand River Conservation Authority, Ministry of Natural Resources and Forestry, and environmental consulting firms active in the Region. It is now recommended that the Final Draft be adopted pursuant to ROP Policy 10.B.9. If adopted, staff would format the draft document with appropriate graphics.

Report:

The Greenlands Network is one of the cornerstones of the ROP. It comprises environmental features significant at the Regional and/or provincial level such as Environmentally Sensitive Landscapes (ESLs), Environmentally Sensitive Policy Areas (ESPAs), significant woodlands, Provincially Significant Wetlands, and other valuable or rare habitats and the linkages among them. The purpose of the Greenlands Network policies in Chapter 7 is to “maintain, enhance, and restore” the Greenlands Network. This is consistent with corresponding policies in the Provincial Policy Statement. In part, this may be achieved by requiring development proponents to prepare Environmental Impact Statements (EISs) to evaluate potential impacts to the features, and make detailed recommendations to protect them from those impacts.

ROP Policy 7.A.4 commits the Region to develop a “Greenlands Network Implementation Guideline.” The Regional Official Plan (ROP) relies on a variety of Implementation Guidelines to detail the manner in which specific policies are to be implemented by staff and development applicants. Policies 10.B.9 and 10.B.10 set the legal context for Implementation Guidelines. Regional Implementation Guidelines are . . . statements adopted by resolution of Regional Council which detail the manner in which policies established in this Plan will be implemented. The content and scope of these Implementation Guidelines will be determined by the Region, in consultation with the Area Municipalities and the Grand River Conservation Authority as appropriate, will be updated from time-to-time and

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Implementation Guidelines elaborate upon ROP policy, but may not be used as a means of introducing “new policy provisions that could be the basis for denying development applications . . . or for interfering with the natural justice rights of landowners and the public” (ROP 10.B.10). As clear and detailed elaborations of Regional policy, proposed Implementation Guidelines must also be publicised in newspapers and circulated to public agencies and affected organisations in order to provide interested parties an opportunity to comment upon them. They must also be the subject of a formal public meeting where Council or its standing committee may receive comments (10.B.14).

The Greenlands Network Implementation Guideline gives detailed guidance for the preparation of EISs which may be required by ROP policy. It provides specific guidance for the collection and reporting of field data and for identifying and evaluating potential “adverse environmental impacts” on natural features. The ROP provides for both Full EISs (Policy 7.G.4(a) andScoped EISs (7.G.4(b). In day-to-day practice, the overwhelming majority of EISs are scoped to address matters considered relevant to an application. The Guideline for Scoped EISs contains items that would be required along with other matters that may be required if deemed relevant to the application by the approval authority(s). Other sections of the Implementation Guideline give guidance on topics required in an EIS such as interpreting the boundary of a Core Environmental Feature (Policy 7.A.6 to 7.A.8); determining buffers around Core Environmental Features (Policies 7.B.9(b), 7.C.11); and maintaining and creating landscape linkage and connectivity (Policies 7.B.9(b), 7.E.6 to 7.E.8).

Development of successive drafts of the Implementation Guideline has been informed by input from Area Municipalities, the Grand River Conservation Authority, the Ministry of Natural Resources and Forestry, the Ecological and Environmental Advisory Committee (EEAC), and private environmental consultants. As such, it may serve as a common framework for the preparation of EISs by development proponents and has the potential to streamline their review by the respective approval agencies. This has the potential to streamline the environmental component of the development review process for agency staff and applicants alike.

The First Draft of the Greenlands Network Implementation Guideline was prepared by staff in 2009 with substantial input from the EEAC and circulated to the Area Municipalities, the Grand River Conservation Authority and Ministry of Natural Resources, as well as environmental consulting firms active in the Region (Report P-10-007). Comments and suggestions received were incorporated in a Second Draft which was the subject of a Public Meeting of the Planning and Works Committee on March 8, 2011 (Report P-11-022). Further action on the draft was suspended when the implementing policy was appealed along with the rest of the ROP in 2011.
approval of the ROP on June 18, 2015, a Third Draft was circulated for final comment (Report PDL-CPL-15-48, dated September 15, 2015). Staff is most appreciative of comments submitted through that circulation. They have been invaluable in preparing the Final Draft now being submitted for Council’s consideration.

ROP policy 10.B.11 requires the Region to provide public and agency notification prior to Council consideration of a new or revised Implementation Guideline. A pointer ad was placed in the Record on May 24, 2016 and in other area newspapers the week of May 23 to 27, 2016. In addition, the notice and draft document were placed on the Regional website at that time. Digital copies were also e-mailed to the Area Municipalities, Grand River Conservation Authority, Ministry of Natural Resources and Forestry, and environmental consulting firms active in the Region. It is now recommended that the Final Draft be adopted pursuant to ROP Policy 10.B.9.

If the Final Draft is approved, staff would format the draft document with appropriate graphics and provide hard and digital copies to the Area Municipalities, Grand River Conservation Authority, and Ministry of Natural Resources and Forestry.

Council and Administrative Services staff has placed the public notice advertisements in local newspapers. Communications staff has placed the notice and the text of the Final Draft on the Regional website as required by ROP policy 10.B.12. If approved by Council, the approved Greenlands Network Implementation Guideline would be placed on the Regional website.

Area Municipal Consultation/Coordination

Successive drafts of Greenlands Network Implementation Guideline were circulated to the Area Municipalities and Grand River Conservation Authority for comment as required by ROP policies 10.B.9 and 10.B.12(b). Comments received from these circulations informed development of the Final Draft.

Corporate Strategic Plan:

The development of the Greenlands Network Implementation Guideline was identified as Action Item 1.5.1 in the former Region of Waterloo Strategic Focus 2011-2014, but its completion was delayed by the ROP appeals. It will help achieve Strategic Objective 3.5 of the current 2015-2018 Strategic Focus by informing effects to preserve, protect, and enhance our significant environmental features.

Financial Implications:

The cost of placing public notices would be paid from funds in the approved Planning, Development and Legislative Services budget.
Other Department Consultations/Concurrence:

Nil.

Attachments:

Attachment 1 - Greenlands Network Implementation Guideline: Final Draft

Prepared By:  Chris Gosselin, Manager of Environmental Planning and Stewardship

Approved By:  Rob Horne, Commissioner, Planning, Development and Legislative Services
Region of Waterloo
Greenlands Network
Implementation Guideline

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A. Introduction

Regional Official Plan

7.4. The Region will prepare and update a Regional Greenslands Network Implementation Guideline to guide the implementation of the policies in this Chapter in accordance with the provisions of Policies 10.B.9 through 10.B.14.

The purpose of the Greenslands Network Implementation Guideline is to provide guidance to development applicants, the Ecological and Environmental Advisory Committee (EEAC), and agency staff in the preparation and review of applications for development and site alteration which affect the Greenslands Network. The Greenslands Network consists of the following categories of environmental features designated in the Regional Official Plan (ROP) and Area Municipal Official Plans:

Landscape Level Systems
- Environmentally Sensitive Landscapes
- Significant Valleys
- Regional Recharge Areas
- Provincial Greenbelt Natural Heritage System

Core Environmental Features
- Habitat of Endangered and Threatened Species
- Provincially Significant Wetlands
- Environmentally Sensitive Policy Areas
- Significant Woodlands
- Environmentally Significant Valley Features

Supporting Environmental Features
- Environmentally Significant Discharge Areas
- Environmentally Significant Recharge Areas
- Linkages
- Other environmental features designated in Area Municipal Official Plans and/or regulated by the Grand River Conservation Authority

The Implementation Guideline provides detailed implementation guidance on selected ROP environmental policies. These policies direct that the elements of the Greenslands Network be maintained, enhanced, or wherever feasible, restored.

The ROP relies on Implementation Guidelines in a number of subject areas to provide detailed technical guidance in the application of certain policies. Implementation Guidelines elaborate upon ROP policy, but may not be used as a

1. This comprises staff at the Area Municipalities, Grand River Conservation Authority, as well as the Region of Waterloo. Studies required pursuant to the Endangered Species Act shall be scoped by the Ministry of Natural Resources and Forestry.
means of introducing “new policy provisions that could be the basis for denying
development applications or for interfering with the natural justice rights of
landowners and the public.” (See ROP Policy 10.B.10).

The content and scope of Regional Implementation Guidelines are determined
through a full, open, and transparent consultation process with Area Municipalities,
other agencies, interested organisations, and interested citizens. As relevant Official
Plan policies are updated, added, or deleted, Implementation Guidelines must also
be updated to conform more closely to the provisions of the ROP. Once adopted by
resolution of Council, Implementation Guidelines are clear and detailed elaborations
of Regional policy. Input to the development of the Guideline by Area Municipal and
Grand River Conservation Authority staff will allow the Guideline to serve as a
common resource and thereby help co-ordinate the environmental review of complex
development applications.

On June 26, 2002, Regional Council adopted the Guideline for the Preparation of
Environmental Impact Statements in the Regional Municipality of Waterloo. This
document provided detailed guidance for development applicants required to prepare
Full Environmental Impact Statements. The adoption of the new Regional Official
Plan on June 16, 2009 and its subsequent approval by the Ontario Municipal Board
on June 18, 2015 is the impetus for the adoption of the Region of Waterloo
Greenlands Network Implementation Guideline. This includes an updated
Guideline for the Preparation of Full Environmental Impact Statements which
reflects changes in practice and policy since 2002. It also includes a Guideline for
the Preparation of Scoped Environmental Impact Statements, since most
Environmental Impact Statements prepared for review by agencies are scoped.
Reflecting the purpose of the guidelines, the Greenlands Network Implementation
Guideline includes other matters related to the implementation of the ROP
environmental policies which are addressed in Environmental Impact Statements
such as

- interpreting the boundaries of environmental features,
- delineating ecological buffers, and linkages, and
- expanded definitions of terms. 2

Environmental Impact Statements are used to identify potential adverse environmental impacts upon environmental features and assist development proponents and public agencies to avoid, minimise, or mitigate such impacts. They are recommended to ensure consistency with applicable policies of the Provincial Policy Statement (e.g., demonstration of “no negative impacts”), and are required by the Regional Official Plan, Area Municipal Official Plans, secondary plans, and Grand River Conservation Authority policies. This Guideline will assist proponents to

2. Terms defined in the Glossary of this Implementation Guideline but not included in the ROP are marked with an asterisk. As in the ROP itself, all terms defined in the Glossary are printed in italics in the text when the text specifically refers to that term. Terms in the Glossary are in the form of nouns. In the text of the Implementation Guideline, they may take the form of verbs when appropriate (e.g., restoration – restore).
organise and synthesise all the information required by the respective approval agencies. The information and expert opinions expressed in an Environmental Impact Statement by the qualified professionals who prepare them inform approval agency decisions to accept, modify, or refuse applications for development or site alteration. As the information and opinions contained in an Environmental Impact Statement may be questioned or challenged by agency staff, it should be noted that mere completion of an Environmental Impact Statement does not necessarily mean that the development application will be approved. Moreover, individual agencies may decline to review or provide comment upon draft documents or Environmental Impact Statements not fulfilling the requirements of the Guideline.

A.1 Environmental Impact Statements

An Environmental Impact Statement is defined within the Regional Official Plan as:

- a study prepared in accordance with established procedures to precisely delineate and map the boundaries of elements of the Greenslands Network,
- identify the potential impacts of a development application on such elements,
- and recommend a means of preventing or minimizing these impacts through avoidance or mitigation.

The ROP further specifies that an Environmental Impact Statement should recommend means to enhance or restore the quality and connectivity of elements of the Greenslands Network.

The Environmental Impact Statement will often be coordinated with other technical studies such as hydrological, hydrogeological, or stormwater management reports which are prepared consistent with other applicable guidelines. Environmental Impact Statements will be prepared in accordance with this Guideline.

There are three types of Environmental Impact Statement. The type of Environmental Impact Statement shall be determined by the agency(ies) having jurisdiction.

1. A Comprehensive Environmental Impact Statement is carried out at a landscape scale prior to widespread development in order to identify environmental features for protection, delineate landscape linkages, define potential development areas, recommend development setbacks and other environmental protection measures, and assess cumulative impacts to the extent feasible in order to maintain the ecological sustainability of the Greenslands Network in the area. It informs the type, scale and location of development. Typically, detailed Terms of Reference rather than generic guidelines are prepared for such a study which often takes the form of a watershed study, sub-watershed study, or Master Environmental Servicing Plan carried out under the auspices of government agencies, and once completed, is approved by Council.
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2. A Full Environmental Impact Statement is an area or site-specific study that may be required in the absence of an approved Comprehensive Environmental Impact Statement in accordance with the Guideline to address potential adverse environmental impacts anticipated to arise from a development application or site alteration, and to identify means to enhance or restore elements of the Greenlands Network.

3. A Scoped Environmental Impact Statement is an area- or site-specific study where the impacts of the proposed development or site alteration upon one or more elements of the Greenlands Network are expected to be limited in area and/or scope, or where other environmental studies fulfilling some or all of the requirements of an Environmental Impact Statement have been previously approved. Terms of Reference for major applications are scoped by Regional staff in consultation with the Ecological and Environmental Advisory Committee and/or other agencies having jurisdiction. Area Municipalities and/or the Grand River Conservation Authority will scope Terms of Reference in accordance with their established procedures.

A.2 When is an Environmental Impact Statement Required?

The purpose of an Environmental Impact Statement is to provide necessary technical information for review by approval agencies considering the approval of development applications or applications for site alteration affecting a designated Landscape Level System, Core Environmental Feature, or Supporting Environmental Feature. An Environmental Impact Statement may also be required to assess the ecological significance of a hitherto undesigned natural feature affected by a proposed development application and to interpret an ecologically appropriate boundary to the feature. The Environmental Impact Statement identifies potential adverse environmental impacts to ecological features and functions, and recommends measures to prevent, avoid, minimise, and mitigate those potential impacts. It also identifies opportunities to enhance and/or restore the environmental features and functions of the area. An Environmental Impact Statement is generally required when development or site alteration is proposed on lands within or contiguous to environmental features. Further guidance is provided by the policies in Chapter Seven of the ROP and also by policies and procedures established by Area Municipalities and agencies. The following discussion summarises these policies.

It is intended that this Guideline consolidate the study requirements of review agencies having jurisdiction over elements of the Greenlands Network in order to avoid discrepancy or duplication. Prior to undertaking an Environmental Impact Statement, applicants for development or site alteration are encouraged to consult at the earliest opportunity and in a co-ordinated manner with staff of the respective agencies having jurisdiction in order to facilitate early identification of environmental issues, clarify the precise nature of the information required, and ensure timely processing of the application. See Table 1 for the agencies to be consulted.
Table 1  Review Agencies to be Consulted for Specific Greenland's Network Elements

<table>
<thead>
<tr>
<th>Natural Feature</th>
<th>Ministry of Natural Resources &amp; Forestry</th>
<th>Grand River Conservation Authority</th>
<th>Region of Waterloo</th>
<th>Area Municipality</th>
<th>Fisheries &amp; Oceans Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat of an Endangered or Threatened Species</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Provincially Rare Species and communities</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Provincial Greenbelt,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmentally Sensitive Landscape</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Core Environmental Feature (e.g., Provincially Significant Wetland, E.S.P.A.,</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Significant Woodland</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Environmentally Significant Discharge Area and/or Recharge Area sustaining</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Core Environmental Features</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant Valley</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Non-Provincially Significant Wetland or unevaluated wetland</th>
<th>✓</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watercourse</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Hazardous site (i.e., karst topography), riverine erosion hazard (valleylands or steep slope), or riverine flooding hazard (floodplain)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Supporting Environmental Feature, or Locally Significant Natural Area</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lands sustaining fish habitat</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Applicants are also advised to solicit input from local residents or organisations having knowledge of the environmental characteristics of the area.

Where an Environmental Impact Statement would normally be required by the Region, the submission of an Environmental Impact Statement may not be required where an Environmental Assessment or alternative environmental review is being undertaken under Provincial or Federal Legislation, providing the alternative process fulfills all the requirements for site specific, and/or landscape level Environmental Impact Statements otherwise required by the Regional Official Plan. Further, the Region may waive the requirement for an Environmental Impact Statement where consultation with other agencies or site investigation by the Region indicates that there are not likely to be adverse environmental impacts upon the Greenslands Network.
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Version: May 18, 2016

A.3 Pre-Submission Consultation with the Region of Waterloo

In accordance with ROP Policy 10.D.5, if an Environmental Impact Statement is required in support of an application for development or site alteration, it must be submitted before the application is deemed complete and the review process can begin.

The Environmental Impact Statement will be prepared to the satisfaction of Regional staff in consultation with other agencies having jurisdiction over the affected natural features. Therefore, it is necessary that the proponent of the proposed development or site alteration schedule a pre-submission consultation meeting as early as possible with the Region, and as appropriate, the respective Area Municipality, Province, and Grand River Conservation Authority, and/or Department of Fisheries and Oceans.

Pre-submission consultation will help to clarify whether an Environmental Impact Statement is required, and if so, whether the EIS should be a full Environmental Impact Statement or whether it can be scoped. If an Environmental Impact Statement is to be scoped, scoping must be done in consultation with and to the satisfaction of agency staff, and not solely by the applicant. Pre-submission consultation can also provide an opportunity to harmonise Regional, Provincial, Area Municipal, and Grand River Conservation Authority requirements, and ensure that all agency matters of concern are addressed. Pre-submission consultation should generally occur before the commencement of field surveys and prior to the completion of the report in order to ensure that all requirements are being addressed.
B. Guidelines

I. Guideline for the Preparation of a Full Environmental Impact Statement

An Environmental Impact Statement may be required to identify and evaluate the potential effects of a proposed development or site alteration on elements of the Greenlands Network, and recommend means of preventing, minimizing or mitigating these impacts, as well as enhancing or restoring the quality and connectivity of elements of the Greenlands Network. An Environmental Impact Statement may also be used to identify and evaluate elements of the Greenlands Network and interpret the boundaries of these elements based on ecological considerations. The Province, Region, Area Municipalities and the Grand River Conservation Authority will coordinate the requirements for the preparation of Environmental Impact Statements.

7.G.2 The Region, in consultation with the Province, Area Municipalities and the Grand River Conservation Authority may require the completion of a single comprehensive Environmental Impact Statement where:

(a) development or site alteration is proposed on multiple contiguous properties containing elements of the Greenlands Network;
(b) a comprehensive community planning process is being undertaken;
(c) environmental studies are required to support the proposed expansion of the Urban Area or a Township Urban Area; or
(d) the extent of a development application and its anticipated impacts on the Greenlands Network are anticipated by the relevant agency(ies) to be substantial.

7.G.3 The need for, and scope of Environmental Impact Statements, will be determined in collaboration with affected Area Municipalities, the Province, the Grand River Conservation Authority by:

(a) the Province, for development or site alteration potentially affecting Habitat of Endangered or Threatened Species, or;
(b) the Region, for development or site alteration potentially affecting:
   i) Landscape Level Systems, not including Significant Valleys;
   ii) Core Environmental Features; or
   iii) Environmentally Significant Discharge Areas and/or Environmentally Significant Recharge Areas that sustain Core Environmental Features.
(c) the Grand River Conservation Authority for Significant Valleys, Provincially Significant Wetlands located outside Environmentally Sensitive Policy Areas and wetlands not identified as provincially significant, including unreviewed wetlands;
(d) the affected Area Municipality for development applications potentially affecting other elements of the Greenlands Network; and
(e) the Federal Department of Fisheries and Oceans, or its delegate, for fish habitat.

7.G.4 The following provisions will apply to Environmental Impact Statements required by the Region under Policy 7.G.3(b):
(a) the Environmental Impact Statement will be prepared in accordance with the provisions of the Regional Greenlands Network Implementation Guideline; . . .
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Application
In accordance with policy 7.G.4 of the Regional Official Plan, this Guideline will apply when a Full Environmental Impact Statement is required for development or site alteration within or contiguous to elements of the Greenlands Network.

To ensure that all applicable agency interests are addressed, it is recommended that terms of reference for the Environmental Impact Statement be approved during or following pre-submission consultation.

Purpose
The purpose of this Guideline is to ensure that appropriate and consistent methods and report formats are followed in the preparation of Environmental Impact Statements. In cases when a Comprehensive Environmental Impact Study or Sub-watershed Plan has not been completed, or when the extent of a proposal and its potential impacts on the Greenlands Network are anticipated by the relevant agency(ies) to be substantial, a Full Environmental Impact Statement may be required. Compliance with these guidelines will help to expedite the review process by reducing the need for further study and information. Prior to commencing such a study, a pre-submission consultation meeting with agency staff is strongly recommended in order to determine study parameters and/or specific Terms of Reference. When a Full Environmental Impact Statement is required, it must be submitted as part of a complete application as directed by the approval authority(ies), and be prepared consistent with this Guideline.

Guideline for a Full Environmental Impact Statement

A Full Environmental Impact Statement required pursuant to the policies of the ROP, and/or the Provincial Policy Statement, and/or the Greenbelt Plan, and/or an Area Municipal Official Plan and/or the Grand River Conservation Authority will, at a minimum, consist of the following:

1. A statement of the purpose and rationale for the application for development or site alteration.

2. Maps, site plans, and/or recent airphotos at an appropriate scale showing previously documented and newly obtained information on:

   2.1 The location of lands affected by the application for development or site alteration in relation to elements of the Greenlands Network, as defined in the ROP and/or Area Municipal Official Plan, or shown on mapping maintained by the Grand River Conservation Authority, or the Ministry of Natural Resources and Forestry including but not necessarily limited to the following:

   2.1.1 Habitat of Endangered and Threatened species identified by the Ministry of Natural Resources and Forestry.
2.1.2 Provincey Significant Wetlands identified by the Ministry of Natural Resources and Forestry and other wetlands identified by the Grand River Conservation Authority. (Unvaluated wetlands on and contiguous to the subject lands should be assessed to determine if an individual Ontario Wetland Evaluation System (OWES) evaluation should be completed as part of the Environmental Impact Statement, or whether the wetland should be complexed with an existing evaluated wetland.)

2.1.3 Provincey and Regionally Significant Life Science and Earth Science Areas of Natural and Scientific Interest identified by the Ministry of Natural Resources and Forestry.

2.1.4 Elements of the Natural Heritage System identified by the Greenbelt Plan.

2.1.5 Environmentally Sensitive Policy Areas designated by the Region.

2.1.6 Significant Woodlands identified by the Region.

2.1.7 Environmentally Significant Valley Features designated by the Region.

2.1.8 Significant Wildlife Habitat, as defined by the Provincial Policy Statement, the current Natural Heritage Reference Manual, the Ministry of Natural Resources and Forestry’s Eco-region criteria, and, where applicable, Ecological Land Classification.

2.1.9 Fish habitat, as defined by the Fisheries Act.

2.1.10 Locally Significant Natural Areas and/or Supporting Environmental Features identified by an Area Municipality and/or regulated by the Grand River Conservation Authority.

2.1.11 Surface water features (i.e., watercourses).

2.1.12 Groundwater recharge and/or discharge areas.

2.1.13 Other natural high quality or unusual environmental features or functions such as good representative communities of native species typical of the region, natural corridors, migration staging areas, and deer yards.

2.2 Ecologically functional natural linkages and potential linkage enhancement opportunities among elements of the Greenlands Network.

2.3 Topography - showing the relationship of the proposed development or site alteration to environmental features.

2.4 Predominant soil series.

2.5 Groundwater regime (where known).

2.6 Grand River Conservation Authority Regulation Limit.\(^{3}\)

\(^{3}\) In addition to an EIS, other studies such as a geotechnical study, fluvo-geomorphic assessment, or hydraulic study may be required to delineate the Regulation Limit.
2.7 Existing land uses and ownership patterns of properties abutting the subject property.

2.8 Existing and proposed Regional and Area Municipal Official Plan designations and zoning.

2.9 Natural and other hazards (e.g., riverine flooding hazards, riverine erosion hazards, other valleylands, meander belt, shallow bedrock, active faults, karst, old waste deposit and disposal sites, leachate, etc.).

2.10 Other development or site alteration applications known to be in progress which would affect the identified environmental features.

Some of the above information may be available from the respective agencies. In cases where such information is not available, however, the proponent is required to assess environmental features and ecological functions in the light of applicable Provincial guidelines, the current version of the Natural Heritage Reference Manual, current Significant Wildlife Habitat Technical Guideline, or other generally accepted principles as set out in this Guideline.

3. The approved Terms of Reference for the Environmental Impact Statement.

4. Information on the environmental features identified in 2.1 on the subject property and on adjacent or contiguous lands as defined in the ROP, Area Municipal Official Plans or secondary plans which might also be affected or that might reasonably be expected to be affected, either directly or indirectly, by the proposed development or site alteration, namely:

4.1 Detailed mapping of the environmental feature(s) and nearby related natural features at an appropriate scale showing any boundary interpretations recommended by the applicant.

4.2 Mapping and description of ecological communities within the environmental features identified in 2.1 in the study area on and contiguous to the site proposed for development or site alteration to be prepared by qualified professionals during the appropriate season(s) using the current published version of Ecological Land Classification (ELC), with such mapping and description taken to the vegetation type level with dominant, abundant, and significant species keyed to the mapped communities.

4.3 Assessment of the quality of vegetation in the study area with reference to successional state, predicted successional pathway, assessment of natural regeneration, habitat specialisation, degree of disturbance, presence of pathogens, and presence and extent of invasive plant species
using qualitative description, and where appropriate, quantitative measures such as the Floristic Quality Assessment Index (FQAI).

4.4 A comprehensive inventory, conducted by qualified professionals in the appropriate seasons, of species occurring in the study area and adjacent lands, including but not limited to:

4.4.1 Vegetation in spring (May), summer (July), and late summer (August-early September), using commonly acceptable sampling and recording methods. See section 11.1.3 for additional detail.

4.4.2 Breeding birds
- Main breeding season: a minimum of two visits, at least a week apart, June 1-21; dates between May 24 and June 30 are acceptable as long as one visit is conducted in the June 1-21 period.
- Time of day and weather conditions consistent with the Ontario Breeding Bird Atlas (OBBA 2001).
- Line transects, point counts or a combination of both are acceptable so long as all areas receive coverage. (See Bibby et al. 2000 for bird census techniques.
- Where habitat is suitable, dusk and night visits to document twilight (e.g., American Woodcock, Common Nighthawk) and nocturnal species (e.g., rails, bitterns & owls).
- Owls: two visits at least a week apart; survey dates (mostly between March 15 and April 30), time of night, and weather conditions to follow OBBA Standardized Owl Survey Protocol (OBBA 2002). A combination of silent listening and standard playback protocol is recommended.
- When applicable, Ministry of Natural Resources and Forestry protocols should be used to document Species at Risk.
- Whenever possible, field data, including breeding evidence/behaviours, should be documented on aerial photography. Locations of all significant species should be recorded. OBBA codes (OBBA 2001) and Forest Bird Monitoring Program symbols are recommended (FBMP 2008).

4.4.3 Herpetofauna:
- Newts and mole salamanders: minnow trapping supplemented by active hand searches in suitable habitats adjacent to and around the margins of potential breeding ponds during seasonal migration (i.e., March 15 - April 30).
- If Jefferson Salamanders potentially present, trapping may be necessary in consultation with Ministry of Natural Resources and Forestry. (Note: applications to the Ministry are due February 15).
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- Lungless salamanders: active hand searches between mid-May and late September, preferably following wet weather.
- Frogs and toads: Surveys to follow Bird Studies Canada’s Marsh Monitoring Program protocol (BSC 2009). Point count stations should be located adjacent to breeding sites. If not feasible, document the distance and direction of calling.
- Turtles: Nesting surveys and visual encounter surveys to detect basking turtles and other habitats utilised by turtles following Ministry of Natural Resources and Forestry protocol for Blanding’s Turtle (OMNR 2013b); minimum three visits to detect basking turtles. Follow Ministry protocols if Species at Risk turtles potentially present.
- Snakes:
  - Active hand searches between late April and late June (Ministry of Natural Resources and Forestry Milksnake Survey Protocol for Guelph District (OMNR 2013a).
  - Hibernacula searches: Visual encounter surveys to detect basking snakes during the first sunny, warm days in early spring.
  - Cover board surveys may be conducted where appropriate;
  - Animal Care Protocol and Fish and Wildlife Conservation Act authorisation is required.
  - Queensnake surveys for the Grand River in North Dumfries Township.

4.4.4 Fish and other aquatic organisms, especially those used as indicators of environmental quality: using commonly acceptable sampling methods such as the Ontario Stream Assessment Protocol (OSAP) for aquatic organisms and the Ontario Benthos Biomonitoring Network (OBBN). Visual surveys and review of Department of Fisheries and Oceans and Ministry of Natural Resources and Forestry records for provincially rare mussels, including Species at Risk, in the Grand, Nith, Speed, and Conestoga Rivers should be completed for projects that might affect potential habitat.

4.4.5 Lepidoptera, Odonata, and Provincially significant Bumblebees: When habitats are potentially suitable for provincially ranked S1 to S3 species, at least two dedicated surveys in appropriate seasons and weather conditions. Catching and releasing adults is the most reliable way to confirm identification.

4.4.6 Mammals: Targeted surveys for listed mammal species in areas of suitable potential habitat. Examples include American Badger in areas of sandy soils, and bat species in tree-dwelling areas and in suitable buildings.
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4.4.7 Winter wildlife: Two visual encounter surveys between January 1 and February 28, 24 to 72 hours after a snowfall of at least two centimetres. Document all animals, calls, tracks, scat, browse, etc.) and over-wintering habitat use by waterfowl, raptors, wild turkeys, and deer as per the current applicable Significant Wildlife Technical Guideline.

4.4.8 Non-target wildlife: All species observed or detected during fieldwork (e.g., Lepidoptera, Odonata, mammals) should be identified, recorded and integrated into report findings.

4.4.9 Significant Wildlife Habitat (SWH): All potential SWH criteria should be surveyed using current accepted methodologies; some surveys may require specialised expertise (e.g., Lepidoptera, Odonata, bat maternity colonies, rare vegetation communities, etc.)

- SWH criteria should be consistent with the current Significant Wildlife Habitat Technical Guide (Ministry of Natural Resources and Forestry, 2000) and most current Ministry SWH Criteria Schedule for Ecoregions 6E & 7E (OMNRF 2015a,b).
- SWH surveys should focus on areas not currently protected or planned for protection.

The final list of SWH criteria to be surveyed should be screened in advance with relevant agencies.

4.4.10 Plants (e.g., Giant Hogweed, Poison Ivy) and animals (e.g., mosquitoes, ticks) likely to cause nuisance and health problems.

4.4.11 Species at Risk not noted above: If potential suitable habitat for other Species at Risk is encountered, contact the Ministry of Natural Resources and Forestry for advice on targeted survey protocols.

In addition, it is recommended that expert local naturalists and residents be consulted with respect to the flora and fauna of the site.

New and emerging techniques may be considered and/or may be required if they provide equal or better inventory results. These include remote sensing using infrared and hyperspectral imagery for large-scale tree inventory, DNA analysis of cryptic species such as Butternut/Butternut hybrids or mole salamander species, and so forth.

4.5 identification of the ecological, hydrological, hydrogeological, economic, and social functions of the respective environmental features identified pursuant to 4.4 above.
4.6 Groundwater regime based on at least 1 year of continuous groundwater level monitoring showing groundwater contours, flow directions, and vertical gradients; the spatial and temporal variability of groundwater levels and flows; aquitard and aquifer conditions; the locations and elevations of monitoring wells, piezometers and test pits; a record of the dates and duration of observations; and an assessment of the adequacy of the groundwater observations and mapping and a quantitative analysis and summary of the spatial and temporal variability of groundwater levels and flows.

4.7 Analysis of surface water quantity and quality which assesses the interaction between groundwater and surface water features such as wetlands, watercourses, ponds, discharge areas, and existing stormwater management facilities, in terms of contributing drainage area, source of water, drainage patterns, hydroperiod, depth to groundwater within or contiguous to wetland, seasonal high water marks, and other relevant hydrological data.

4.8 Existing environmental management plans including council-approved (Sub)Watershed Studies, Master Environmental Servicing Plans, Master Drainage Plans, Community or Secondary Plans.

4.9 Apparent impacts of previous development applications or site alteration, or other land management activities on the identified environmental features and functions, including alteration of natural topography, draining or filling of wetlands, removal of woodlands, trails, dumping, excavation and fill, grazing, forestry, and invasive plant and animal species.

4.10 Other relevant information.

5. A discussion of the proposed development and/or site alteration, with plans showing existing grades, proposed grades, grade changes with contour intervals not exceeding one metre, and where appropriate, structure elevations, of:

5.1 the proposed development or site alteration in relation to the environmental features and other natural features as delineated by the proponent and confirmed by agencies having jurisdiction, including locations of existing and proposed streets and lots, limit of grading, infrastructure, stormwater management facilities, trails, and, where appropriate, other structures;

5.2 reasonable alternatives to the proposal; and

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4. Three or more years of continuous groundwater level data may in some instances be required to identify seasonal and annual variations in groundwater elevations.
5.3 alternative designs and/or methods of carrying out the proposal with less adverse environmental impact.

6. A concise description of anticipated direct and indirect impacts to the environmental features identified in 2.1 and 4 that may reasonably be expected to result from the proposal, alternatives to the proposal, and alternative methods of carrying out the proposal. The impacts should be discussed in terms of their likelihood of occurrence, anticipated areal extent, anticipated duration, and reversibility/irreversibility, and relation to impacts associated with development identified in 2.10. Reference should be made to the definition and examples of adverse environmental impacts in the Glossary. Where fish habitat is present, the applicant will complete a Risk Assessment Process for Fish Habitat in order to identify the risk of impact to fish habitat.

The above shall include an explanation of the methods and assumptions used to determine the above-mentioned effects of the proposed development.

7. A comparative evaluation of the alternatives identified in item 5 in terms of anticipated adverse environmental impacts and other relative advantages and disadvantages. This will result in selection or confirmation of a preferred alternative.

8. The actions required, in the following order of precedence, to prevent, minimize, or mitigate adverse environmental impacts to the environmental features resulting from the implementation of the alternative selected in 7. This section shall include detailed recommendations for buffers consistent with guidance provided in this Guideline, or other appropriate safeguards around environmental features.

9. A discussion of opportunities for ecological enhancement, restoration, and long term conservation and stewardship of natural areas including the conservation, enhancement, or restoration of ecological linkages among environmental features and other natural features on and contiguous to the subject property. Recommendations with respect to linkages should reference Section V of this Guideline.

10. A summary consisting of:

10.1 A detailed discussion of expected adverse environmental impacts on the environmental features in relation to policies and definitions in the ROP, applicable Area Municipal Official Plans, Community Plans, international conventions, the Provincial Policy Statement, Conservation Authority regulations and policies, Risk Assessment Process for Fish Habitat, council-approved (sub-)watershed plans, Master Environmental Servicing Plans, Comprehensive Environmental Impact Statements, or other applicable studies. Where good quality natural habitat within or
contiguous to the environmental feature may be irremediably altered by the proposed development, this discussion shall also indicate whether habitat of comparable type, quality, or extent which will not be directly affected by the proposed development or site alteration exists in the vicinity. Where significant features or species within an environmental feature may be adversely affected, this discussion shall also indicate whether similar features or another population of the significant species exists in the vicinity and that that offsite habitat will not be adversely affected resulting in further reduction of the significant species. Any recommended ecological compensation for adverse environmental impacts must be consistent with applicable federal, provincial, municipal, or permitting authority compensation policies and guidelines.

10.2 Recommended conditions of development approval to
(a) prevent, minimise, and mitigate identified adverse environmental impacts identified in the Environmental Impact Statement,
(b) establish buffers and appropriate demarcation between the environmental feature(s) and proposed development,
(c) realise opportunities for environmental enhancement and/or restoration, and
(d) achieve the objectives of applicable council-approved sub-watershed plans or community plans.

This discussion shall assess the adequacy of recommended measures to prevent or mitigate adverse environmental impacts, and shall assess the significance of impacts likely to persist after mitigation.

10.3 Recommendations for long term management, conservation, enhancement, or restoration of significant environmental features and functions on the subject property or which may have to be considered for adjoining lands.

10.4 Recommendations for compliance and effectiveness monitoring of the site including items/areas of particular concern, meaningful benchmarks, parameters, locations, timelines, frequency, targets to ensure that mitigation measures recommended in the Environmental Impact Statement have been implemented, are adequate, and are performing as intended along with a plan to address deviations from desired outcomes in an adaptive management framework.

11. The following appendices:

11.1 Species lists of organisms observed in the study area as well as a detailed timeline showing dates when bio-physical information was collected in the study area and the field workers responsible for collection of the data. The above information, along with the species recorded,
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should be specific to each ecological unit as identified by mapping in the report and should be consistent with the following:

11.1.1 The Natural Heritage Information Centre (NHIC) Ontario Vascular Plant Species List shall be used for all vascular plant species names. This list is updated on a regular basis and is publicly available online or by request from the NHIC. Both the scientific and common name shall be given for each species on the plant list. Regional or Provincial lists shall be consulted for the preferred taxonomy and nomenclature for all other organisms.

11.1.2 Species used to characterise vegetation communities through the current version of the Ecological Land Classification shall be identified as dominant, abundant, occasional, or rare.

11.1.3 While presence is the only requirement for recording common species, most vascular plant species listed on the Region's "Significant Vascular Plant List" shall be further qualified as to precise location, distribution and approximate numbers. Species that are susceptible to collecting (i.e., *Panax, Drosera*, spp.), or any species considered Vulnerable, Threatened, or Endangered should NOT be qualified in a published appendix. Rather, Federal, Provincial, Regional, Grand River Conservation Authority, and Area Municipal staff should be notified directly of such information. Locations should be defined in NAD83 UTM coordinates or most currently acceptable standards, if possible. Abundance should be expressed using standard scales such as Doman or Braun-Blanquet.

11.1.4 Breeding evidence for birds is essential to properly assess, *mitigate*, and where necessary compensate potential adverse environmental impacts. Current protocols and conventions should be followed in both collecting and reporting data for all species.

- Dates of each survey visit and survey period (time of day), number of hours, weather conditions (temperature, % cloud cover, precipitation, wind speed, wind direction), and noise level).
- Map showing line transect routes, point count stations, and total area surveyed.
- Locations of locally rare or uncommon species, regionally significant species, and provincially significant species (i.e. *S1 to S3 species*) listed according to NAD 83 UTM coordinates and shown on constraint mapping.
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- Conservation status information for each species: Region of Waterloo; Bird Conservation Region 13, (Environment Canada, 2014); provincial SRanks & SARO (NHIC 2015); and national (COSEWIC or SARA).
- Area sensitivity (Ministry of Natural Resources and Forestry, 2000).
- Original field notes, preferably mapped on aerial photography, should be included in an appendix.
- Field notes Locations of Species at Risk (SAR) should be shared confidentially with municipal and agency staff.

Note: As some Species at Risk information is considered sensitive, it is recommended that the Ministry of Natural Resources and Forestry be contacted prior to sharing such information with the public.

11.2 Relevant Ecological Land Classification geo-referenced mapping and datasheets, including those for canopy description and soil moisture regime analysis.

11.3 Detailed descriptions of methodologies used to gather field data, model hydrological or hydrogeological regimes (including a water balance), or make assumptions about other biophysical processes. The above shall include an explanation of the methods and assumptions, and potential errors arising therefrom, used to determine the above-mentioned effects of the proposed development.

11.4 A geo-referenced monitoring plan consistent with item 10.4 above.

11.5 A list of agencies and individuals contacted in the preparation of the report, the date of contact, information supplied, and the contacts' addresses, phone numbers and/or e-mail addresses. This must include copies of correspondence with appropriate agencies when a Threatened or Endangered Species, or other item subject to Provincial or Federal legislation or regulation is identified in the course of fieldwork.

11.6 Bibliography of references cited.

11.7 Current curricula vitae of the principal author(s), and a list of other technical staff who contributed to the document.

12. Format of the Environmental Impact Statement

12.1 The Environmental Impact Statement shall be printed on 8½ by 11 inch paper, double-sided to conserve paper and file storage space. Looseleaf binders will not be accepted. An electronic copy conforming
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12. Format of the Environmental Impact Statement

12.1 The Environmental Impact Statement shall be printed on 8½ by 11 inch paper, double-sided to conserve paper and file storage space. Looseleaf binders will not be accepted. An electronic copy conforming
to AODA requirements or website where the report is posted shall also be provided.

12.2 Maps up to 11 inches by 17 inches shall be bound into the report. Larger maps shall be inserted in a pocket inside the back cover of the report.

12.3 The title page shall list the name of the proponent, address, and legal description of the subject property, planning file number (i.e., 30T, OP, ZCA), principal author(s) of the report and/or their firm, and the date the report was completed.

12.4 An executive summary shall follow the title page.

12.5 Following the Executive Summary, the Environmental Impact Statement shall contain a statement to the effect of whether the report has been edited, by whom, and for what purpose, including normal editing which would occur by the principal author with respect to text prepared by the firm’s field staff.

12.6 The Environmental Impact Statement shall be signed by the lead author(s) and their firms.
II. Guideline for the Preparation of an Environmental Impact Statement where the Terms of Reference have been Scoped

Regional Official Plan

7.G.1 An Environmental Impact Statement may be required to identify and evaluate the potential effects of a proposed development or site alteration on elements of the Greenslands Network, and recommend means of preventing, minimizing or mitigating these impacts, as well as enhancing or restoring the quality and connectivity of elements of the Greenslands Network. An Environmental Impact Statement may also be used to identify and evaluate elements of the Greenslands Network and interpret the boundaries of these elements based on ecological considerations. The Province, Region, Area Municipalities and the Grand River Conservation Authority will coordinate the requirements for the preparation of Environmental Impact Statements.

7.G.3 The need for, and scope of Environmental Impact Statements, will be determined in collaboration with affected Area Municipalities, the Province, the Grand River Conservation Authority by:
(a) the Province, for development or site alteration potentially affecting Habitat of Endangered or Threatened Species, or;
(b) the Region, for development or site alteration potentially affecting:
   i) Landscape Level Systems, not including Significant Valleys;
   ii) Core Environmental Features; or
   iii) Environmentally Significant Discharge Areas and/or Environmentally Significant Recharge Areas that sustain Core Environmental Features.
(c) the Grand River Conservation Authority for Significant Valleys, Provincially Significant Wetlands located outside Environmentally Sensitive Policy Areas and wetlands not identified as provincially significant, including unevaluated wetlands;
(d) the affected Area Municipality for development applications potentially affecting other elements of the Greenslands Network; and
(e) the Federal Department of Fisheries and Oceans, or its delegate, for fish habitat.

7.G.4 The following provisions will apply to Environmental impact Statements required by the Region under Policy 7.G.3(b):
(a) the Environmental Impact Statement will be prepared in accordance with the provisions of the Regional Greenslands Network Implementation Guideline;
(b) the Region may reduce the scope and/or content of the Environmental Impact Statement where the impacts of the proposed development or site alteration upon an element of the Greenslands Network are expected to be limited in area and/or scope, or where other environmental studies fulfilling the requirements of an Environmental Impact Statement have been previously been prepared;

Application
The Regional Official Plan (ROP) provides for a reduction in the scope and/or content of the Terms of Reference of an Environmental Impact Statement where the impacts of the proposed development or site alteration upon an element of the Greenslands Network are expected to be limited in area and/or scope, or where other environmental studies such as Comprehensive Environmental Impact Statements or council-approved watershed studies or Master Environmental Servicing Plans, which
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fulfill some of the requirements of an Environmental Impact Statement, have previously been completed.

In accordance with policy 7.G.4 of the Regional Official Plan, this Guideline will apply when a Scoped Environmental Impact Statement is required for development or site alteration within or contiguous to elements of the Greenlands Network.

To ensure that all applicable agency interests are addressed, that terms of reference for the Scoped Environmental Impact Statement will be approved during or following pre-submission consultation.

Purpose

The purpose of this guideline is to ensure appropriate and consistent methods are applied in the preparation of Scoped Environmental Impact Statements. The Terms of Reference of a Scoped Environmental Impact Statement will focus on areas or issues of particular concern identified by the agency(ies) having jurisdiction. Subject to applicable policy, scoping is done collaboratively by the approval agency(ies) in a pre-submission consultation process. Applicants are strongly advised not to commence the Environmental Impact Statement until the Terms of Reference have been accepted by the relevant agencies as this could result in the rejection of all or part of the Scoped Environmental Impact Statement or the requirement for additions or revisions which could cause delays or generate further costs to the applicant. When a Scoped Environmental Impact Statement is required, it must be submitted as part of a complete application as directed by the approval authority(ies), and be prepared consistent with this Guideline.

Once the Terms of Reference have been scoped, consultants are responsible to report and discuss new information that emerges during site investigations which may be relevant to the consideration of the development application or site alteration. This may include, for example, such items as the unexpected discovery of an undocumented groundwater discharge area, Regionally significant species of flora and fauna, or other information which increases knowledge about the environmental feature, or identifies previously unanticipated potential for adverse environmental impacts. Such changes should be reported to staff of the relevant agency(ies) at the earliest opportunity to determine whether the Terms of Reference need to be updated.

Guideline for a Scoped Environmental Impact Statement

A Scoped Environmental Impact Statement required pursuant to the policies of the Provincial Policy Statement, and/or the Provincial Greenbelt, and/or the Regional Official Plan and/or an Area Municipal Official Plan, and/or the Grand River Conservation Authority will consist of the following items, as may be further scoped by the relevant agency(ies):
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1. A statement of the purpose and rationale of the application for development or site alteration.

2. Maps, site plans, and/or the most recently available airphotos at an appropriate scale showing previously documented and newly obtained information on:

   2.1 The location of lands affected by the application for development or site alteration in relation to elements of the Greenslands Network, as defined in the Regional Official Plan, and/or Area Municipal Official Plan, or shown on mapping maintained by the Grand River Conservation Authority, or the Ministry of Natural Resources and Forestry including but not including but not necessarily limited to the following:

   2.1.1 Habitat of Endangered and Threatened species identified by the Ministry of Natural Resources and Forestry.

   2.1.2 Provincially Significant Wetlands identified by the Ministry of Natural Resources and Forestry and other wetlands identified by the Grand River Conservation Authority. (Unevaluated wetlands on and contiguous to the subject lands should be assessed to determine if an individual Ontario Wetland Evaluation System (OWES) evaluation should be completed as part of the Environmental Impact Statement, or whether the wetland should be complexed with an existing evaluated wetland.)

   2.1.3 Provincially and Regionally Significant Life Science and Earth Science Areas of Natural and Scientific Interest identified by the Ministry of Natural Resources and Forestry.

   2.1.4 Elements of the Natural Heritage System identified by the Greenbelt Plan.

   2.1.5 Environmentally Sensitive Policy Areas designated by the Region.

   2.1.6 Significant Woodlands identified by the Region.

   2.1.7 Environmentally Significant Valley Features designated by the Region.

   2.1.8 Significant Wildlife Habitat, as defined by the Provincial Policy Statement, the current Natural Heritage Reference Manual, the Ministry of Natural Resources and Forestry’s Eco-region criteria, and, where applicable, Ecological Land Classification.

   2.1.9 Fish habitat, as defined by the Fisheries Act.

   2.1.10 Locally Significant Natural Areas and/or Supporting Environmental Features identified by an Area Municipality and/or Grand River Conservation Authority.

   2.1.11 Surface water features.

   2.1.12 Groundwater recharge and/or discharge areas.

   2.1.13 Other natural high quality or unusual environmental features or functions such as good representative communities of native
species typical of the region, natural corridors, migration staging areas, and deeyards.

2.2 Ecologically functional natural linkages and potential linkage enhancement opportunities among elements of the Greenlands Network.

2.3 Topography - showing the relationship of the proposed development or site alteration to environmental features.

2.4 Grand River Conservation Authority Regulation Limit.

2.5 Natural and other hazards (e.g., riverine flooding hazards, riverine erosion hazards, other valleylands, meander belt, shallow bedrock, active faults, karst, old waste deposit and disposal sites, leachate, etc.).

2.6 Other development applications known to be in progress which would affect the identified environmental features.

Some of the above information may be available from the respective agencies. In cases where such information is not available, however, the proponent is required to assess environmental features and ecological functions in the light of applicable Provincial guidelines, the current version of the Natural Heritage Reference Manual, or other generally accepted principles as set out in this Guideline.

3. The approved Terms of Reference for the Scoped Environmental Impact Statement.

4. Information requested pursuant to the approved Terms of Reference on any environmental features identified in 2.1 on the subject property and on adjacent or contiguous lands as defined in the ROP. Area Municipal Official Plans or secondary plans which is considered relevant to the items to which the Environmental Impact Statement has been scoped. Depending on the approved Terms of Reference, this may include.

4.1 Detailed mapping of the environmental feature(s) and nearby related natural features at an appropriate scale showing any boundary interpretations recommended by the applicant.

4.2 Mapping and description of ecological communities within the environmental features identified in 2.1 in the study area on and contiguous to the site proposed for development or site alteration by qualified professionals during the appropriate season(s) using the current...
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published version of Ecological Land Classification (ELC), with such
mapping and description taken to the vegetation type level with dominant,
abundant, and significant species keyed to the mapped communities.

4.3 Assessment of vegetation quality in the study area with reference to
successional state, predicted successional pathway, assessment of
natural regeneration, habitat specialisation, degree of disturbance,
presence of pathogens, and extent of invasive plant species using
qualitative description, and where appropriate, quantitative measures such
as the Floristic Quality Assessment Index (FQAI).

4.4 A comprehensive inventory, conducted by qualified professionals in the
appropriate seasons, of species occurring in the study area and adjacent
lands, including but not limited to:

4.4.1 Vegetation in spring (May), summer (July), and late summer
(August-early September), using commonly acceptable sampling
and recording methods. See section 10.1.3 for additional detail.

4.4.2 Breeding birds:
- Main breeding season: a minimum of two visits, at least a week
  apart, June 1-21; dates between May 24 and June 30 are
  acceptable as long as one visit conducted in the June 1-21
  period.
- Time of day and weather conditions consistent with the Ontario
- Line transects, point counts or a combination of both are
  acceptable so long as all areas receive coverage. (See Bibby
  et al. 2000 for bird census techniques.
- Where habitat is suitable, dusk and night visits to document
twilight (e.g., American Woodcock, Common Nighthawk) and
nocturnal species (e.g., rails, bitterns & owls).
- Owls: two visits at least a week apart; survey dates (mostly
  between March 15 – April 30), time of night, and weather
  conditions to follow OBBA Standardized Owl Survey protocol
  (OCCA 2002). A combination of silent listening and standard
  playback protocol is recommended.
- When applicable, Ministry of Natural Resources and Forestry
  protocols should be used to document Species at Risk.
  Whenever possible, field data, including breeding evidence/
  behaviours, should be documented on aerial photography.
  Locations of all significant species should be recorded. OBBA
  codes (OCCA 2001) and Forest Bird Monitoring Program
  symbols are recommended (FBMP 2008).
4.4.3 Herpetofauna:

- Newts and mole salamanders: minnow trapping supplemented by active hand searches in suitable habitats adjacent to and around the margins of potential breeding ponds during seasonal migration (i.e., March 15 - April 30).
- If Jefferson Salamanders potentially present, trapping may be necessary in consultation with Ministry of Natural Resources and Forestry. (Note: applications to the Ministry are due by February 15).
- Lungless salamanders: active hand searches between mid-May and late September, preferably following wet weather.
- Frogs and toads: Surveys to follow Bird Studies Canada’s Marsh Monitoring Program protocol (BSC 2009). Point count stations should be located adjacent to breeding sites. If not feasible, document the distance and direction of calling.
- Turtles: Nesting surveys and visual encounter surveys to detect basking turtles and other habitats utilised by turtles following Ministry of Natural Resources and Forestry protocol for Blanding’s Turtle (Ministry of Natural Resources, 2013b); minimum three visits to detect basking turtles. Follow Ministry protocols if Species at Risk turtles potentially present.
- Snakes:
  - Active hand searches between late April and late June (Ministry of Natural Resources and Forestry Milksnake survey protocol for Guelph District (Ministry of Natural Resources, 2013a).
  - Hibernacula searches: Visual encounter surveys to detect basking snakes during the first sunny, warm days in early spring.
  - Cover board surveys may be conducted where appropriate;
  - Animal Care Protocol and Fish and Wildlife Conservation Act authorisation is required.
  - Queensnake surveys for the Grand River in North Dumfries Township.

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4.4.5 Lepidoptera, Odonata, and Provincially Significant Bumblebees: When habitats are potentially suitable for provincially ranked S1 to S3 species, at least two dedicated surveys in appropriate seasons and weather conditions. Catching and releasing adults is the most reliable way to confirm identification.

4.4.6 Mammals
Targeted surveys for listed mammal species in areas of suitable potential habitat. Examples include American Badger in areas of sandy soils, and bat species in treed areas and in suitable buildings.

4.4.7 Winter wildlife: Two visual encounter surveys between January 1 and February 28, 24 to 72 hours after a snowfall of at least two centimetres. Document all animals, calls, tracks, scat, browse, etc.) and over-wintering habitat use by waterfowl, raptors, wild turkeys, and deer as per the current applicable Significant Wildlife Technical Guideline.

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- SWH surveys should focus on areas not currently protected or planned for protection.
The final list of SWH criteria to be surveyed should be screened in advance with relevant agencies.

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4.4.11 Species at Risk not noted above: If potential suitable habitat for other Species at Risk is encountered, contact the M.N.R.F. for advice on targeted survey protocols.
In addition, it is recommended that expert local naturalists and residents be consulted with respect to the flora and fauna of the site.

New and emerging techniques may be considered and/or may be required if they provide equal or better inventory results. These include remote sensing using infrared and hyperspectral imagery for large-scale tree inventory, DNA analysis of cryptic species such as Butternut/Butternut hybrids or mole salamander species, and so forth.

4.5 Identification of the ecological, hydrological, hydrogeological, economic and social functions of the environmental features identified in 4.4 above.

4.6 Groundwater regime based on at least one year of continuous groundwater level monitoring showing groundwater contours, flow directions, and vertical gradients; and the locations and elevations of monitoring wells, piezometers and test pits, along with a record of the dates and duration of observations; an assessment of the adequacy of the groundwater observations and mapping, and a quantitative analysis and summary of the spatial and temporal variability of groundwater levels and flows.

4.7 Analysis of surface water quantity and quality which assesses the interaction between groundwater and surface water features such as wetlands, watercourses, ponds, discharge areas, and existing stormwater management facilities in terms of contributing drainage area, source of water, drainage patterns, hydroperiod, depth to groundwater within or contiguous to wetland, seasonal high water marks, and other relevant hydrological data.

4.8 Existing environmental management plans including council-approved (Sub-) Watershed Studies, Master Drainage Plans, Master Environmental Servicing Plans, Community or Secondary Plans.

4.9 Apparent impacts of previous development applications or site alteration, or other land management activities on the identified environmental features and functions, including alteration of natural topography, draining or filling of wetlands, removal of woodlands, trails, dumping, excavation and fill, grazing, forestry, and invasive plant and animal species.

4.10 Other relevant information.

5. A discussion of the proposed development and/or site alteration in relation to the environmental features as delimited by the proponent and confirmed by agencies having jurisdiction. Where necessary, this may include plans

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Three or more years of continuous groundwater level data may in some instances be required to identify seasonal and annual variations in groundwater elevations.
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showing existing and proposed grades with contour intervals not exceeding one metre, and where appropriate, structure elevations of the proposal, including locations of existing and proposed streets and lots, infrastructure, stormwater management facilities, trails, and, other structures.

6. A concise description of anticipated direct and indirect impacts to the environmental features identified in 2.1 and 4 above that may reasonably be expected to result from the proposed development or site alteration. The impacts should be discussed in terms of their likelihood of occurrence, anticipated areal extent, anticipated duration, and reversibility/irreversibility. Reference should be made to the definition and examples of adverse environmental impacts in the Glossary. Where fish habitat is present, the applicant will complete a Risk Assessment Process for Fish Habitat in order to identify the risk of development and site alteration impacts to fish habitat. The above shall include an explanation of the methods and assumptions used to determine the identified effects of the proposed development or site alteration.

7. The actions required, in the following order of precedence, to prevent, minimise, or mitigate adverse environmental impacts to the environmental features resulting from the proposed development or site alteration. This section shall include detailed recommendations for buffers consistent with guidance provided in this Guideline, or other appropriate safeguards around environmental features.

8. A discussion of opportunities for ecological enhancement, restoration, and long term conservation and stewardship of environmental features including the conservation, enhancement, or restoration of ecological linkages among environmental features and other natural features on and contiguous to the subject property. Recommendations with respect to linkages should reference Section V of this Guideline.

9. A summary consisting of:

9.1 A detailed discussion of expected adverse environmental impacts on the environmental features in relation to policies and definitions in the ROP, applicable Area Municipal Official Plans, Community Plans, international conventions, the Provincial Policy Statement, Conservation Authority regulations and policies, Risk Assessment Process for Fish Habitat, council-approved (sub-)watershed plans, Master Environmental Servicing Plans, Comprehensive Environmental Impact Statements, or other applicable studies. Where good quality natural habitat within or contiguous to the environmental feature may be irremediably altered by the proposed development, this discussion shall also indicate whether habitat of comparable type, quality, or extent which will not be directly affected by the proposed development or site alteration exists in the vicinity. Where significant features or species within an environmental feature may be
adversely affected, this discussion shall also indicate whether similar features or another population of the significant species exists in the vicinity and that that offsite habitat will not be adversely affected resulting in further reduction of the significant species. Any recommended ecological compensation for adverse environmental impacts must be consistent with applicable federal, provincial, municipal or permitting authority compensation policies and guidelines.

9.2 Recommended conditions of development approval to:
(a) prevent, minimise, and mitigate identified adverse environmental impacts,
(b) establish buffers and appropriate demarcation between the environmental feature(s) and proposed development,
(c) realise opportunities for environmental enhancement and/or restoration,
(d) meet the objectives of applicable council-approved sub-watershed plans or community plans.

This discussion shall assess the adequacy of recommended measures to prevent or mitigate adverse environmental impacts, and shall assess the significance of impacts likely to persist after mitigation.

9.3 Recommendations for long term management, conservation, enhancement, or restoration of significant environmental features and functions on the subject property or which may have to be considered for adjoining lands.

9.4 Recommendations for compliance and effectiveness monitoring the site including items/areas of particular concern, meaningful benchmarks and parameters, locations, timelines, frequency, targets, and recommendations for an adaptive management framework plan to address deviations from desired outcomes in.

10. The following appendices (where such information is required by the Terms of Reference):

10.1 Species lists of organisms observed in the study area while carrying out the study as well as a detailed timeline showing dates when bio-physical information was collected in the study area and the field workers responsible for collection of the data. The above information, along with the species recorded, should be specific to each ecological unit as identified by mapping in the report and should be consistent with the following:

10.1.1 The Natural Heritage Information Centre (NHIC) Ontario Vascular Plant Species List shall be used for all vascular plant species names. This list is updated on a regular basis and is
10.1.2 Species used to characterise vegetation communities through the current version of the Ecological Land Classification shall be identified as dominant, abundant, occasional, or rare.

10.1.3 While presence is the only requirement for recording common species, most vascular plant species listed on the Region's "Significant Vascular Plant List" shall be further qualified as to precise location, distribution and approximate numbers. Species that are susceptible to collecting (i.e., *Panax*, *Drosera*, spp.), or any species considered Vulnerable, Threatened, or Endangered should NOT be qualified in a published appendix. Rather, Regional, GRCA, and Area Municipal staff should be notified directly of such information. Locations should be defined in NAD83 UTM coordinates or most currently acceptable standards, if possible. Abundance should be expressed using standard scales such as Doman or Braun-Blanquet.

10.1.4 Breeding evidence for birds is essential to properly assess, mitigate, and where necessary compensate potential adverse environmental impacts. Current protocols and conventions should be followed in both collecting and reporting data for all species.

- Dates of each survey visit and survey period (time of day), number of hours, weather conditions (temperature, % cloud cover, precipitation, wind speed, wind direction), and noise level).
- Map showing line transect routes, point count stations, and total area surveyed.
- Locations of locally rare or uncommon species, regionally significant species, and provincially significant species (i.e. S1 to S3 species) listed according to NAD 83 UTM coordinates and shown on constraint mapping.
- Conservation status information for each species: Region of Waterloo; Bird Conservation Region 13, (Environment Canada, 2014); provincial SRanks & SARO (NHIC 2015); and national (COSEWIC or SARA).
- Area sensitivity (Ministry of Natural Resources, 2000).
- Original field notes, preferably mapped on aerial photography, should be included in an appendix.
field notes Locations of Species at Risk (SAR) should be shared confidentially with municipal and agency staff.

Note: As some Species at Risk information is considered sensitive, it is recommended that the Ministry of Natural Resources and Forestry be contacted prior to sharing such information with the public.

10.2 Relevant Ecological Land Classification geo-referenced mapping and datasheets, including those for canopy description and soil moisture regime analysis.

10.3 Detailed descriptions of methodologies used to gather field data, model hydrological or hydrogeological regimes (including a water balance), or make assumptions about other biophysical processes. The above shall include an explanation of the methods and assumptions, and potential errors arising therefrom, used to determine the above-mentioned effects of the proposed development.

10.4 A geo-referenced monitoring plan consistent with item 9.4 above.

10.5 A list of agencies and individuals contacted in the preparation of the report, the date of contact, information supplied, and the contacts' addresses, phone numbers and/or e-mail addresses. This must include copies of correspondence with appropriate agencies when a Threatened or Endangered Species, or other item subject to Provincial or Federal legislation or regulation is identified in the course of fieldwork.

10.6 Bibliography of references cited.

10.7 Current curricula vitae of the principal author(s), and a list of other technical staff who contributed to the document.

11. Format of the Scoped Environmental Impact Statement

11.1 The scoped Environmental Impact Statement shall be printed on 8½ by 11 inch paper, double-sided to conserve paper and file space. Looseleaf binders will not be accepted. An electronic copy conforming to AODA requirements or website where the report is posted shall also be provided.

11.2 Maps up to 11 inches by 17 inches shall be bound into the report. Larger maps shall be inserted in a pocket inside the back cover of the report.
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11.3 The title page shall list the name of the proponent, address and legal description of the subject property, planning file number (i.e., 30T, CP, ZCA), principal author(s) of the report and/or their firm, and the date the report was completed.

11.4 An executive summary shall follow the title page.

11.5 Following the Executive Summary, the Environmental Impact Statement shall contain a statement to the effect of whether the report has been edited, by whom, and for what purpose, including normal editing which would occur by the principal author with respect to text prepared by the firm’s field staff.

11.6 The scoped Environmental Impact Statement shall be signed by the lead author(s) and their firms.
III. Guideline for Interpreting the Boundaries of Environmental Features

Regional Official Plan

7.A.6 Interpretation of the boundaries of Landscape Level Systems and Core Environmental Features, as required to support the review of development applications, will be achieved through the completion of Environmental Impact Statements or other appropriate studies in accordance with the policies in Section 7.G.

7.A.7 Boundary interpretations not consistent with the Technical Appendix for Landscape Level Systems and Core Environmental Features must be approved by Regional Council, in consultation with the Province, Area Municipalities, the Grand River Conservation Authority and other stakeholders.

7.A.8 Boundary interpretations not generally in conformity with the Greenslands Network as shown on Map 4 will require an amendment to this Plan.

1. Application

This guideline will apply in interpreting the boundaries of Core Environmental Features designated in the Regional Official Plan but excluding Habitat of Endangered or Threatened Species, which is identified by the Province. Area Municipalities may also apply the Guideline to interpret boundaries of Supporting Environmental Features designated in Area Municipal Official Plans.

2. Purpose

The preliminary delineation of environmental features is usually undertaken through air photo interpretation. When development or site alteration are proposed, boundaries need to be more precisely interpreted through site-specific fieldwork preparatory to technical studies such as Environmental Impact Statements, draft plans of subdivision, and site plans. The purpose of this guideline is to:

a. guide interpretation of the small-scale mapping of Core Environmental Features shown on Map 4 in the ROP and at a larger scale in the ROP Environmental Technical Appendix (1:5000 to 1:1000), or as may be required in support of an application for development and/or site alteration;

b. establish a consistent basis for delineating existing Core Environmental Features and Supporting Environmental Features in Environmental Impact Statements, as well as other features which may be identified in the future;

c. document a replicable process for producing credible GIS-based mapping, which can be used as a long-term monitoring tool; and

d. develop a common understanding among agency staff, environmental advisory committees, and development proponents for interpreting the boundaries of environmental features.
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3. Principles

The boundaries of Core Environmental Features and Supporting Environmental Features can be defined using an appropriate combination of vegetation features, driplines, wetland boundaries, topography, or land use. For the purposes of implementing the policies of the ROP, boundary interpretations are guided by the following principles:

3.1 The establishment of credible boundary interpretations is dependent on scale and resolution, both of the source information and the mapping to be produced. The working scale for this exercise is generally in the range of 1:5000 to 1:2000. Mapping of elements of the Greenlands Network in the 2015 ROP is at a scale of 1:184,549 (or 1 centimetre = 2 kilometres). Mapping of Environmentally Sensitive Policy Areas (ESPAs) and Provincially Significant Wetlands in the 1995 Regional Official Policies Plan was at a slightly smaller scale of 1:250 000. ESPA mapping in the 1985 Technical Appendix was at 1:10 000.

3.2 In defining most Core Environmental Feature or Supporting Environmental Feature boundaries, consideration must be given to land uses on both sides of the proposed boundary, as these affect the ecological functions of the environmental feature. Boundaries should reflect the most abrupt change in land use or habitat type, while recognising that, in reality, the boundary will always be a continuum from an ecological perspective. (This may not apply to certain ESPAs or Environmentally Significant Valley Features defined primarily on earth science criteria).

An environmental feature needs to be evaluated as a continuous unit containing natural habitats of different types and varying quality. If there is variation around the periphery of an environmental feature (i.e. where a wetland or prairie remnant extends beyond the dripline of existing mapped limits of an ESPA or Significant Woodland), the extended area will normally be determined to represent the boundary.

3.3 In areas where geomorphology helps define an environmental feature, a perceptible break in slope or topographical contour may be interpreted to be the most appropriate boundary of the environmental feature.

3.4 Previous site-specific boundary determinations by the Ecological and Environmental Advisory Committee and/or Regional Council of Regionally significant environmental features must be respected. However, recognising that changing land uses and/or natural succession over time may have rendered some of these determinations obsolete, there may be a need to revisit them at the time subsequent development or site alteration is proposed.
3.5 Although the digital format of the boundary mapping implies a high degree of precision, the boundaries should still be regarded as approximate and therefore subject to further site-specific interpretation based on fieldwork carried out in support of development applications or in other circumstances.

3.6 Wherever possible, boundaries shall be staked in the field in the presence of the staff of agencies having jurisdiction, surveyed, and shown on planning documents.

4. Guidelines for Interpreting Boundaries of Environmental Features

4.1 “Bays” and “Inlets”: Active cultivation and cropping (including lawns and similar intensive uses) on the periphery of a Core Environmental Feature or Supporting Environmental Feature are excluded regardless of the size or shape of the intrusion. (Exception: ESPAs or Environmentally Significant Valley Features designated wholly or partly on earth science criteria may include agricultural or other land uses that would otherwise be excluded).

4.2 “Islands”: Isolated patches of land within the interior of a Core Environmental Feature or Supporting Environmental Feature, which are experiencing ongoing active land use not consistent with the natural habitat of the designation, are generally excluded if larger than one hectare. Smaller “islands” are included within the feature. Subsequent permanent abandonment of active human use or ecological restoration would qualify an “island” for inclusion.

4.3 Dwellings: The previous rules apply to dwellings within Core Environmental Features or Supporting Environmental Features. Generally, if there is lawn frontage on the road, the house and yard are excluded. Otherwise, they are treated as small “islands” within the feature.

4.4 Roads: Roads that divide a Core Environmental Feature or Supporting Environmental Feature are excluded where they pose a significant barrier to the movement of wildlife. In some cases, laneways that connect “islands” to the surrounding land use may be excluded. Roads without shoulders and little-travelled roads are generally included. In no case is a road or lane with a continuous tree canopy excluded.

4.5 “Peninsulas”: Projections that differ significantly in habitat character from the main body of a Core Environmental Feature or Supporting Environmental Feature are excluded unless they appear to provide some significant supporting ecological function. Thus, a small wetland contiguous to an upland forest would probably be included, whereas a contiguous hedgerow would not (however, note the linkage criterion below).
4.6  **Ecologically Functional Linkages**: Where habitats of marginal quality abut a Core Environmental Feature or Supporting Environmental Feature, they may be included where they facilitate the movement of wildlife.

4.7  **Plantations or Thickets**: Plantations or thickets projecting out from Core Environmental Features or Supporting Environmental Features are generally excluded unless the plantation provides habitat for Regionally significant species or serves an important buffer function for sensitive natural habitat within the area. If the exclusion of a plantation would increase the perimeter-to-area ratio of the environmental feature (i.e., by creating a “bay”), it is included. Where they occur in the interior of Core Environmental Features or Supporting Environmental Features, plantations are always included.

4.8  **Old Fields**: Long-abandoned fields or pastures on the margins of Core Environmental Features or Supporting Environmental Features often consist of successional habitats that may fulfill an important supporting role to the environmental feature or contribute significantly to its indigenous biodiversity. In either case, they would normally be included, although fieldwork may be necessary in order to verify the value of the habitat. Where old fields occur in the interior or in narrow bays where they serve to reduce the perimeter-to-area ratio of the environmental feature, they are always included.

5.  **Procedure for the Delineation of Environmental Features**

5.1  **Wetland Boundary Delineation**: Wetland boundaries should be interpreted by qualified professionals in accordance with the most recent edition of the Ontario Wetland Evaluation System (OWES) and GRCA Wetland Evaluation Protocol. Such interpretation should normally be carried out in the field by a certified wetland evaluator who has successfully completed the OWES course on behalf of the applicant for proposed development or site alteration, and subsequently verified by Ministry of Natural Resources and Forestry or Grand River Conservation Authority staff, as required.

5.2  **Woodlands and other Upland Habitats**: The boundaries of woodlands shall generally be interpreted to coincide with the dripline of the trees and/or indigenous shrubs forming the outer perimeter of the woodland. This should normally be augmented by a metre to accommodate the root zone in areas where the adjacent lands have not been regularly ploughed. The initial staking of the boundary shall be carried out by a qualified professional on behalf of the applicant for proposed development or site alteration, and subsequently verified by Regional and/or Area Municipal staff, as required.
5.3 Earth Science Features: The boundaries of earth science features shall be interpreted by a qualified professional on behalf of the applicant for proposed development or site alteration, and subsequently verified by Ministry of Natural Resources and Forestry, Regional, and/or Area Municipal staff, as required.
IV. Guideline for Determining Buffers around Environmental Features

Regional Official Plan

7.B.9 Within the Environmentally Sensitive Landscapes designation, development applications submitted in accordance with the policies in Chapter 6 to:
(a) establish or expand recreational and tourism uses or rural institutional uses;
(b) create a new lot, or permit a lot addition, for a recreational and tourism use or rural institutional use;
(c) permit the minor intensification of existing industrial, commercial, recreational and/or institutional uses, including minor changes in the uses thereof;
(d) permit new agriculture-related uses or secondary uses;
ii) the development will be buffered from existing natural features by an appropriate width of natural vegetation, and will otherwise facilitate the enhancement or restoration of new areas and/or corridors and linkages;

7.C.11 An Environmental Impact Statement submitted in accordance with Policies 7.C.9 or 7.C.10 will identify appropriate buffers to Core Environmental Features to the satisfaction of the Region, in consultation with Area Municipalities and the Grand River Conservation Authority. Such buffers will not only serve to protect Core Environmental Features from adverse environmental impacts but will also provide opportunities for net habitat enhancement to enhance or, wherever feasible, restore the ecological functions of the Core Environmental Feature. The location, width, composition and use of buffers will be in accordance with the approved Environmental Impact Statement, with buffers being a minimum of 10 metres as measured from the outside boundary of the Core Environmental Feature and established and maintained as appropriate self-sustaining native vegetation.

1. Application

This guideline will apply in assessing an application for development or site alteration within or contiguous to:
- a Landscape Level System (not including Significant Valleys), or
- a Core Environmental Feature.

Area Municipalities and/or the Grand River Conservation Authority may also apply them to determine buffers around Supporting Environmental Features. It will not apply to determining buffers around the Habitat of Endangered or Threatened Species, however, as such buffers are determined by the Ministry of Natural Resources and Forestry.

2. Purpose

The purpose of this guideline is to inform sections of Environmental Impact Statements dealing with the determination of buffers around environmental features. Policy 2.1.5 of the 2014 Provincial Policy Statement directs municipal approval authorities to prevent negative impacts to the natural features or ecological functions of designated environmental features that might be caused by new development or site alteration on adjacent lands. To this end, Regional Official Plan Policy 7.C.11 requires a minimum buffer of ten metres around a Core Environmental Feature, and...
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Policy 7.B.9 requires that natural features within Environmentally Sensitive Landscapes be buffered from new development. These requirements are very general, however, and are not intended to promote a rigid approach to buffer delineation. The policy directions are also not intended to override recommendations in council-approved (sub-)watershed studies, Master Environmental Servicing Plans, or Comprehensive Environmental Impact Statements for wider buffers. In general, however, the ultimate width and configuration of buffers needs to be determined in a context-sensitive fashion. This Guideline sets out matters to be considered in an Environmental Impact Statement when a buffer is required.

3. Rationale for Buffers

Buffers help protect the ecological integrity of environmental features from adverse environmental impacts. As such, they may become something of a functional extension of the features. Effective buffers must be based upon the relationship between an environmental feature and contiguous lands proposed to undergo development and/or site alteration. This involves identifying lands which help maintain the ecological functions and ecological integrity of the environmental feature. For example, contiguous lands that contribute groundwater or surface water flows or trap sediment before it enters wetlands or streams would perform buffer functions. Buffers may also include upland grassland, waterfowl or turtle nesting habitat, or foraging areas for amphibians or birds (Burke, 1995; Canadian Wildlife Service, 2004). Buffers attenuate a range of abiotic and biological "edge effects," some of which are summarised in Table 2.

A buffer can be designed to prevent or minimise a variety of edge effects on an environmental feature by:

- filtering out nutrients or contaminants before they enter a wetland or watercourse;
- attenuating noise;
- blocking artificial lighting, or the sight of adjacent developed lands;
- reducing direct human intrusion from the outside through edge treatments such as fences and appropriate plantings;
- accommodating transitional grading, where warranted, between an environmental feature with irregular native topography and a graded development area;
- containing outlets from stormwater management facilities or naturalised landscaping associated with the facilities; and
- providing for the alignment of community trails outside rather than within environmental features in order to reduce impacts to ecological integrity and also to enhance human safety.
Table 2: Edge Effects

<table>
<thead>
<tr>
<th>Edge Effect</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abiotic effects</td>
<td>Changes to forest microclimate, including changes in wind velocity, temperature, relative humidity, light levels</td>
</tr>
<tr>
<td></td>
<td>Increased nutrients</td>
</tr>
<tr>
<td></td>
<td>Changes in soil chemistry</td>
</tr>
<tr>
<td></td>
<td>Modified hydrological regimes, i.e. Increase or decrease in flows</td>
</tr>
<tr>
<td></td>
<td>Introduction of rubbish</td>
</tr>
<tr>
<td></td>
<td>Increased pedestrian access resulting in greater disturbance</td>
</tr>
<tr>
<td>Direct biological</td>
<td>Changes in vegetative structure and composition</td>
</tr>
<tr>
<td>effects</td>
<td>Increased weed diversity and abundance</td>
</tr>
<tr>
<td></td>
<td>Changes in soil micro-organism populations</td>
</tr>
<tr>
<td>Indirect biological</td>
<td>Increase opportunities for aggressive fauna</td>
</tr>
<tr>
<td>effects</td>
<td>Changes in animal behaviour</td>
</tr>
<tr>
<td></td>
<td>Increased predation</td>
</tr>
</tbody>
</table>

(Source: Adapted from Brisbane City Council, 2003)

4. Principles to Guide Buffer Design

Recommendations in an Environmental Impact Statement dealing with the establishment and design of buffers should demonstrate how the following three principles are being implemented.

4.1 Protection of environmental features from adverse environmental impacts originating on contiguous lands approved for development or site alteration

Objective: To protect the ecological integrity of an environmental feature, including the habitat of significant species of concern, from adverse environmental impacts, a buffer should be designed to:

- mitigate edge effects by separating post-development land uses from an environmental feature;
- maintain the habitat of significant species, other sensitive habitats, and hydrological functions of the environmental feature;
- retain natural catchments of wetlands, ponds, and watercourses within environmental features in order to maintain their hydrological functions;
- provide upland breeding and foraging habitat for organisms found within wetlands in the environmental feature;

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- prevent or attenuate the entry of sediments, nutrients, pesticides, and fertilisers into environmental features;
- be continuous, to the extent feasible, particularly along riparian corridors;
- shade watercourses and thereby moderate thermal impacts;
- contribute vegetation and woody debris to watercourses; and
- prevent the movement of invasive non-indigenous species from landscaped areas into environmental features.

4.2 Transition between new development or site alteration and environmental features

Objective: To create an intermediate zone between new development and/or site alteration and a residual environmental feature, a buffer should:
- allow for appropriate transitional grading (if required) between permitted new development and/or site alteration and natural topography which is to be maintained within and contiguous to environmental features;
- be supplemented by building setbacks at least as wide as the potential height of trees from the recommended buffer along the edge of the environmental feature;
- control pedestrian or vehicular access to environmental features by demarcating adjacent property boundaries with fences, bollards, and/or “living fences”;
- prevent encroachments of lawns and gardens and discourage storage of objects and dumping of refuse into environmental features;
- require directional exterior lighting on adjacent land uses to shine away from the environmental feature;
- accommodate public trails rather than align them within an environmental feature, provided this is supported through review of an Environmental Impact Statement which balances the need to prevent or minimise impacts to the ecological integrity of the environmental feature with the obligation of the trail operator to promote the safety of trail users and achieve an appropriate trail network design.

4.3 Opportunities for net ecological enhancement or wherever feasible, for restoration, of the ecological functions of the Core Environmental Feature

Objective: To improve the form and function of an environmental feature and enhance its ecological integrity, a buffer should:
- improve the configuration of the environmental feature by reducing the perimeter-to-area ratio by filling in gaps and consolidating linkages;
- enhance connectivity for wildlife movement, where feasible, by connecting nearby disjunct environmental features or other natural features, by incorporating hedgerows, or by installing eco-passage features where a buffer is interrupted by a road (if this would not exacerbate mortality);
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- use locally appropriate native species reflective of historic vegetation communities and of varying successional stages to complement habitat functions of the environmental feature (e.g., upland deciduous forest species around wetlands); and
- provide opportunities for public education/interpretation of environmental features and functions.

5. Design of Buffers

The location, width, composition, and use of buffers shall be determined through the completion and review of an Environmental Impact Statement. Buffers shall be a minimum of 10 metres measured from the outside boundary (i.e., dripline or wetland boundary) of the environmental feature as interpreted consistent with Section III of this Guideline. Wider minimum buffers will be implemented where previously recommended in an approved sub-watershed study, Master Environmental Servicing Plan, or Comprehensive Environmental Impact Statement, or as recommended through review of a Full or Scoped Environmental Impact Statement, or if required by the policies of another approval agency. Where buffers of different widths are required around specific portions of a diverse environmental feature (e.g., 15 or 30 metres around wetlands; 10 metres around upland woodlands), the final buffer shall be a composite of those buffers.

Scientific literature indicates that standard buffer widths do not always reflect the requirements of individual environmental features and that the resulting buffers are often too small to provide adequate protection (Semlitsch & Bodie, 2003). This guideline is intended to inform the design of context-sensitive buffers for Core Environmental Features and Supporting Environmental Features. It seeks to integrate:
- changing land use and development patterns on contiguous lands;
- physical and topographical characteristics of the environmental feature and contiguous lands being developed;
- locally-occurring significant species and their habitat requirements;
- ecological interactions between the environmental feature and contiguous lands where development or site alteration are proposed;
- intensity, frequency, and duration of potential stressors; and
- design options for buffers.

While it may not be possible to eliminate all edge effects, appropriate delineation, design, and maintenance of buffers can reduce their impact. Table 3 lists potential edge effects, and suggests buffer widths to prevent, minimise, or mitigate them. If the buffer recommended in an Environmental Impact Statement differs significantly from the recommended value, this should be justified with reference to relevant scientific literature or by the professional opinion of a qualified professional.

While Policy 7.C.11 specifies a minimum buffer width, consideration should also be given to creating buffers of variable width and shape (Castelle, 1994). This can afford
greater buffer protection to particularly sensitive features such as significant vernal ponds which need their entire surface catchment areas protected from development or site alteration. Varying the width can also accommodate highly irregular topography and/or result in better design of adjoining development by smoothing out what would otherwise be a line mirroring the irregular boundary of an environmental feature.

Table 3: Range of Edge Effects and Suggested Buffer Widths

<table>
<thead>
<tr>
<th>Stressor</th>
<th>Suggested buffer width</th>
<th>Reference</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herbicide drift from agricultural lands</td>
<td>&gt;6 m to 9 m from cultivated fields</td>
<td>Boutin and Jobin, 1998.</td>
<td>Cites other studies suggesting 5 m to 10 m.</td>
</tr>
<tr>
<td>Nitrate</td>
<td>16 m to 104 m</td>
<td>Basnyat et al., 1999.</td>
<td>Objective was &gt;90 percent nitrate removal.</td>
</tr>
<tr>
<td>Non-point source agricultural pollutants</td>
<td>16.3 m grass/woody strip (riparian)</td>
<td>Lee et al., 2003.</td>
<td>Removed &gt;97 percent of sediment, narrower (7 m) grass provided some benefits.</td>
</tr>
<tr>
<td>Residential stormwater</td>
<td>15 m; 23-50 m on slopes greater than 12 percent</td>
<td>Woodard and Rock, 1995.</td>
<td>Groundcover type also very important.</td>
</tr>
<tr>
<td>Lawn-related (e.g., wood piles, composting)</td>
<td>19 m to 38 m</td>
<td>Matlack, 1993.</td>
<td>Fencing may achieve same results in less width.</td>
</tr>
<tr>
<td>Recreation-related (e.g., camping, hacked trees)</td>
<td>67 m to 130 m</td>
<td>Matlack, 1993.</td>
<td></td>
</tr>
<tr>
<td>Introduction of artificial nocturnal light levels</td>
<td>N/A - Species specific response dependent on a number of factors such as type of light, intensity, duration.</td>
<td>Outen (2002)</td>
<td>Review of the literature identifies impacts on mammal, bird, bat, fish, amphibian, insect behaviour.</td>
</tr>
</tbody>
</table>

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V. Guideline for Determining Linkages

Regional Official Plan

7.B.9 Within the Environmentally Sensitive Landscapes designation, development applications submitted in accordance with the policies in Chapter 6 to:
(a) establish or expand recreational and tourism uses or rural institutional uses;
(b) create a new lot, or permit a lot addition, for a recreational and tourism use or rural institutional use;
(c) permit the minor intensification of existing industrial, commercial, recreational and/or institutional uses, including minor changes in the uses thereof;
(d) permit new agriculture-related uses or secondary uses;
may be considered for approval subject to the following additional criteria: . . .

i) there will be no adverse environmental impacts on environmental features and ecological functions, enhancement/restoration areas, existing corridors and linkages ... within or contiguous to the Environmentally Sensitive Landscape resulting directly from the proposed development or through increases in traffic or development of required servicing infrastructure ;

iii) the development will be buffered from existing natural features by an appropriate width of natural vegetation, and will otherwise facilitate the enhancement or restoration of new areas and/or corridors and linkages;

7.E.6 The Region, Area Municipalities, Grand River Conservation Authority and other stakeholders will identify linkages through watershed studies, Natural Heritage Inventories, Environmental Impact Statements or other appropriate studies. These areas are intended to provide opportunities for plant and animal movement among environmental features, support hydrological and nutrient cycling, and contribute to the overall ecological integrity of the Greenslands Network.

7.E.7 Area Municipalities will require the incorporation of any linkages identified in accordance with Policy 7.E.6, into the design of new development to maintain, enhance or, wherever feasible, restore linkages among environmental features.

7.E.8 The Region will enhance linkages, where appropriate, by restoring natural habitat on lands owned by the Region. The Region encourages the naturalization of inactive sections of parks and open space areas under the jurisdiction of other agencies and in private ownership, wherever appropriate, to enhance linkages.

1. Application

These guidelines will apply in assessing an application for development or site alteration or a stewardship proposal that is within or contiguous to:

- a Landscape Level System (not including Significant Valleys), or
- a Core Environmental Feature

Area Municipalities may also apply them to identify and design linkages associated with Supporting Environmental Features. They will not apply to identifying and designing linkages affecting the Habitat of Endangered or Threatened Species, however, as such linkages are determined by the Province.)
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2. Purpose

The purpose of this guideline is to ensure that appropriate linkages among environmental features are identified, maintained, or established in accordance with the 2014 Provincial Policy Statement and Regional Official Plan. It is the role of (sub-)watershed studies, Master Environmental Servicing Plans, Natural Heritage Inventories, Environmental Impact Statements or other appropriate studies to identify ecological linkages. In general, landscape scale linkages among larger environmental features should be identified in (sub-)watershed studies, Master Environmental Servicing Plans, Community Plans, or other comprehensive natural heritage or land use studies. Environmental Impact Statements should identify existing or potential linkages at a site scale.

This Guideline identifies a variety of means to prevent, minimise, and mitigate the fragmentation of the Greenlands Network and other potential adverse environmental impacts resulting from development and site alteration contiguous to environmental features. It will also guide efforts to enhance and restore ecological linkage functions and contribute to the ecological integrity of natural areas within a landscape.

3. Rationale for Linkages

Essentially, a linkage is an area of natural habitat within a landscape matrix of agricultural fields, urban development, infrastructure, and other land uses that helps connect separated environmental features and other natural habitat features. The scientific literature has for many years shown that, in general, maintaining connectivity among patches of natural habitat helps ensure better functioning of individual ecosystems. Linkages can facilitate the movement of indigenous organisms among what would otherwise be isolated habitat patches. This enhances or maintains the viability of populations of indigenous species in the habitat patches by conserving the potential for genetic variability and allowing populations of indigenous species to meet their habitat needs, disperse, and re-colonise environmental features where those species had been extirpated.

Linkages function on multiple scales, and typically vary in width and length as well as structure due to plant species composition (Dougan & Associates, 2005). In the context of the Greenlands Network, linkages provide connectivity and sufficient habitat to sustain local populations of indigenous species by facilitating their movement among both Core Environmental Features and Supporting Environmental Features. Linkages can, however, provide ecological functions beyond simply connecting fragmented habitat patches. Linkages can provide valuable feeding and breeding habitat for smaller species in their own right, as well as perform important land use planning functions such as serving as ecological buffers along streams, headwaters, and groundwater recharge areas, or even accommodating recreational trails and other amenities, where appropriate (Hess and Fischer, 2001).
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4. Principles for Identifying and Designing Linkages

4.1 Ecological Context

Understanding the context of environmental features and ecological functions at the landscape scale is the essential first step in assessing landscape connectivity. This permits the identification of linkages to be retained and enhanced or the delineation and character of new ones to be restored. The following should be assessed in the Environmental Impact Statement:

4.1.1 The present landscape matrix:
- underlying landscape patterns and features (topographical and hydrological);
- extent and pattern of principal land use(s) of the landscape matrix (e.g., rural, urban, extraction, infrastructure);
- relative size and distribution of natural areas;
- nature and degree of fragmentation of natural areas; and
- patterns of connectivity among environmental features and other natural features.

4.1.2 Local biodiversity
- diversity and distribution of natural habitat types in relation to landscape patterns, features, and land uses;
- prevalent native species;
- ecological integrity of habitats;
- the presence and distribution of significant native species of conservation concern in a landscape;
- the habitat requirements at various stages in the life of the significant species; and
- nature of ecological relationships and existing movement patterns among the environmental features and other natural features of the landscape.

4.1.3 Connectivity Assessment

Before determining whether existing linkages are to be retained or enhanced, or whether new ones need to be established, the following must be considered:

- Are existing linkages sufficient to maintain connectivity under present conditions?
- Will the proposed development and/or site alteration result in the weakening or loss of connectivity by isolating environmental features or other natural features?

If existing linkages need to be enhanced or new ones established, the following must be considered:

- What is the scale at which the linkage is to function, (i.e., from a landscape scale down to a relatively small part of a landscape such as between two environmental features)?
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- Which environmental features or other natural features are to be connected by the linkage?
- Is there an ecological relationship among the features to be connected?
- For which species are the linkages being maintained or re-created, and what is the nature of their need to migrate from one area of natural habitat to another?
- Is there compatible habitat for target species within the destination area?
- Will creating a linkage to an environmental feature jeopardise its ecological integrity by facilitating the introduction of predators or pathogens where they are not currently present?
- Can existing linkages be enhanced or must new connections be re-created?
- Are there linear landscape features such as watercourses, floodplains, utility corridors, landforms (escarpments, moraines, eskers, glacial meltwater channels), and the edges of relatively uncultivated agricultural lands which may have relief, terrain, soil, drainage or other characteristics that discourage intensive uses where linkages can be established?
- What is the nature of the landscape matrix that the linkage must cross (i.e., urban area, agricultural fields, or utility or transportation corridors)?
- Are there physical barriers to the movement of animals and plants (e.g., major roads or urban areas) due to urban use, resource extraction, or construction of linear transportation infrastructure, and if so, can passages be created over, under, or around them?

4.2 Design Guidelines for Linkages

Linkages must be ecologically functional. They must meet the movement patterns and requirements of identified species or groups of species. To the extent feasible, Environmental Land Classification (ELC) mapping and a comprehensive list of native species inhabiting the locality should inform the design in terms of identifying particular species and their various habitat and movement needs. Nevertheless, where such locally-specific information is not available, a precautionary approach should be taken. Linkages should be conserved or created with respect to the more vulnerable or conservative plant species (i.e., plants with a Coefficient of Conservatism of 0-10) and herpetofauna documented in an area (MNR, 2010:148).

The alignment, width, species composition, and continuity of a linkage must accommodate the ecological function(s) it is intended to support.

4.2.1 Alignment

The alignment of a linkage is a primary determinant of its effectiveness. In connecting environmental features, linkages should be reasonably direct in order to minimise the distance vulnerable organisms have to travel, and to reduce edge effects (Environment Canada, n.d.).
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The type and pattern of connectivity contributes to habitat quality (Pickett and Cadenasso 1985, Jordàn 2000). Providing multiple linkages among environmental features enhances connectivity by:

- providing greater opportunities for movement (Figure 1).
- embodying a precautionary approach, by enabling the system to retain overall connectivity in the event a particular linkage is interrupted by future activities or natural events (MNR, 2010: 148).

**Figure 1:** Increased movement options provided by multiple connections (Environment Canada, n.d.)

Linkages and corridors need to be designed to maximise the ability of plants and animals to use them.

- **Linkages** are best aligned along existing natural corridors which follow linear landscape features (e.g., valleys, stream corridors, escarpments, moraines, eskers, and glacial meltwater channels), or along linear cultural features such as utility corridors or along the edge of uncultivated farmland.
- Longer linkages should contain ‘nodes’ of compatible habitat which can serve as a destination or temporary refuge habitat.
- Some animals will disperse along established routes and will learn to use newly created linkages while other species may disperse randomly.
- To increase the probability that animals will locate linkages, they should be designed with a funnel shape at either end to maximise the “contact surface” between the environmental features and the linkage. (M.N.R., 2010: 150).
- **Linkages** should be a suitable length for the animals for which they are designed.
- **Linkages** should avoid channelling wildlife into risky situations near development or transportation corridors.
### Table 4.1 Optimal Linkage Length Requirements of Different Groups of Wildlife: Examples from the Literature.

<table>
<thead>
<tr>
<th>Linkage “Type” (Source)</th>
<th>Target Species or Species Group</th>
<th>Sizes/Distances (Distances travelled between environmental features)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland – Upland Corridor (Helferty 2002)</td>
<td>Amphibians</td>
<td>up to 1 km between wetland and terrestrial habitats</td>
<td>Terrestrial habitat must be naturally forested, but corridors may be open or semi-wooded fields.</td>
</tr>
<tr>
<td>Wetland – Upland Corridor (Semitzsch and Bodie 2003)</td>
<td>Amphibians</td>
<td>150 – 290 m</td>
<td>Range of distances traveled between wetland and terrestrial forested habitats.</td>
</tr>
<tr>
<td>Wetland – Upland Corridor (Calhoun and Klemens 2002)</td>
<td>Amphibians</td>
<td>152 – 1510 m; salamanders at lower end of this range and frogs at upper end</td>
<td>Distances traveled between isolated wetlands and between wetlands and upland forests.</td>
</tr>
<tr>
<td>Terrestrial Corridor (Merriam 1991)</td>
<td>Eastern Chipmunk</td>
<td>20 – 460 m; most frequent usage in the 20 – 40 m range</td>
<td>Range of distances traveled between isolated upland forests; 90% via wooded linkages.</td>
</tr>
</tbody>
</table>

(Source: Adapted from Dougan & Associates, 2005)

#### 4.2.2 Width

Width is one of the most important design considerations as it generally correlates with the quality and effectiveness of linkages (Fleury and Brown 1997; Canadian Wildlife Service, 2004). Unfortunately, there is little quantitative information on the ideal width of linkages; available data vary from region to region (Environment Canada, n.d.). Moreover, optimal widths vary between and within taxonomic groups (see Table 4), site specific habitat structure and quality, the nature of the landscape matrix, and human use patterns (Adams and Dove 1989).
## Table 4.2  Optimal Linkage Width Requirements of Different Groups of Wildlife: Examples from the Literature.

<table>
<thead>
<tr>
<th>Linkage “Type” (Source)</th>
<th>Target Species or Species Group</th>
<th>Width</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream Corridor</td>
<td>Herpetofauna &amp; Other Vertebrates</td>
<td>at least 30 m width on either side of the stream; more if adjacent landscape is cleared.</td>
<td>The corridor should have mature trees.</td>
</tr>
<tr>
<td>Stream Corridor</td>
<td>Herpetofauna</td>
<td>100 m width on either side of the stream + require habitat heterogeneity outside corridor</td>
<td>Wider corridor not needed if upland woodlands found nearby.</td>
</tr>
<tr>
<td>Stream Corridor</td>
<td>Breeding Birds</td>
<td>at least 25 - 175 m width on either side of the stream.</td>
<td>25 m provided some dispersal &amp; breeding opportunities; 125 m forested corridor supported full complement of bird communities</td>
</tr>
<tr>
<td>Stream Corridor</td>
<td>Resident Juvenile Birds</td>
<td>at least 100 m width on either side of the stream</td>
<td>This width facilitated movement of juveniles.</td>
</tr>
<tr>
<td>Hedgerows / Fencerows</td>
<td>Resident &amp; Migrating Birds Small Mammals</td>
<td>not available</td>
<td>These groups readily moved along fencerows connecting isolated woods in an otherwise agricultural landscape.</td>
</tr>
<tr>
<td>Not specified</td>
<td>Based on review of corridor width needs for birds</td>
<td>4 – 90 m</td>
<td></td>
</tr>
</tbody>
</table>

(Source: Adapted from Dougan & Associates, 2005)

In the absence of clear standards, some general principles can be drawn from the literature:

- The longer the linkage, the wider it should be in order to provide habitat to organisms that take more than a short time to transit the linkage (Diamond et al. 2002; MNR, 2010:148).
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• Linkages designed to function at the landscape scale may be greater in width (several hundreds of metres or more) and more generalized relative to local scale or site scale connections (MNRF, 2010: 146).
• A linkage should be wide enough to shelter vulnerable animal species from predators, allow for movement by multiple species, provide nesting and feeding opportunities for slower moving groups of wildlife groups, and not function as a trap (Forman 1995; Spackman and Hughes 1985; Fleury and Brown 1997).
• In general, a linkage that is continuously 100 metres wide allows for the movement of many species, but not breeding or feeding (Environment Canada et al. 1998; Forman 1995).
• Corridors along watercourses are recommended to be a minimum of 30 metres of naturally vegetated habitat on either side.
• Width determines the quantity and configuration of forest interior habitat and determines the extent of edge effects. Forest linkages often have a high ratio of edge habitat to interior habitat. The wider the linkage, the better it can provide suitable habitat for forest-interior species as well as reduce mortality risks. (Environment Canada, N.D.).
• Even narrow linkages, such as hedgerows connecting woodlands, have been observed to relieve the isolating effects of fragmented landscapes as well as provide temporary habitat for migrating birds and small mammals (Wegner and Merriam 1979; Merriam 1991; Hess and Bay 2000; Aude et al. 2004).
• Barriers may sometimes need to be incorporated in linkages in order to prevent vulnerable wildlife from accessing roadways and to channel them to crossing structures.
• Eco-passages or culverts need to be designed so as not to pose a psychological deterrent to the species for which they are intended.

Based on these principles, the Canadian Wildlife Service (2004) has provided guidelines to the effect that linkages to facilitate species movement should be a minimum of 50 to 100 metres wide. However, there is no standard width as linkages to accommodate breeding and feeding habitat must be sized according to target species requirements (Canadian Wildlife Service, 2004). Further, the use of any one single species (such as “umbrella” or “keystone species”) as a reference cannot ensure conservation of all co-occurring species. It is best to adopt a multi-species strategy based on systematic selection procedures that meet the needs of all species present (Roberge and Angelstam 2004; Fischer et al. 2004).

4.2.3 Species Composition

In addition to width, the species composition and physical structure of the linkage determines its quality and effectiveness. Birds, small, medium, and large mammals all have different requirements for movement and cover. Vegetation in linkages must provide food, cover, and resting areas suitable for target species, particularly those that are smaller or that move more slowly. They should also not be subject to excessive pressure from human activities (Canadian Wildlife Service, 2004;
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Environment Canada (n.d.). Individual species have specific requirements of linkages. For example, a linkage connecting salamanders’ core forest habitat to wetland breeding ponds may need to be moist woodland habitat with abundant litter and woody debris. While vegetation composition in the linkage should be generally comparable to that in the nodes it connects, there should also be a degree of heterogeneity along the linkage. This is particularly important for species of herpetofauna (Burbright et al. 1995).

4.2.4 Continuity

Fragmentation can diminish the quality and effectiveness of linkages. While some species can tolerate breaks in natural linkages, others such as salamanders and insects are very negatively affected (Beck, n.d.).

Several measures can be implemented to reduce fragmentation effects in linkages:

- **Linkages** should be continuous maintaining a minimum width along the entire length with as few bottlenecks as possible (Canadian Wildlife Service, 2004).
- If gaps or breaks in continuity are necessary, they should be as small as possible.
- Where linkages are bisected by transportation corridors, consideration needs to be given to creating grade-separated “eco-passages” with adjacent exclusion fencing and funnel walls to discourage animals from entering roadways and direct them to the opening of the eco-passage;
- In situations where unbroken natural linkages are not feasible, small patches of closely-spaced natural cover can serve as “stepping stones” for species movement, and thus serve a linkage function (MNR, 2010: 148).
C. Glossary

* Indicates a definition in addition to those cited from the Regional Official Plan Glossary

**Adverse Environmental Impacts** – changes likely to arise directly or indirectly from development or site alteration within or contiguous to an element of the Greenslands Network that result in widespread, long-term, or irreversible degradation of the significant features or impairment of the natural functions of the designated area.

Examples of Adverse Environmental Impacts include, but are not limited to, the following:

a) fragmentation or substantial reduction in size of an element of the Greenslands Network;
b) significant increase in the perimeter-to-area ratio of an element of the Greenslands Network;
c) disruption of corridors and linkages to other elements of the Greenslands Network;
d) substantial alteration of natural topography;
e) disruption of ecological relationships among significant or representative native species;
f) increased potential for human or domestic animal intrusion into relatively inaccessible areas;
g) alteration of the quantity, quality, timing (hydroperiod) or, direction of flow of surface or groundwater within or contiguous to an element of the Greenslands Network;
h) alteration of the structure, functions, or ecological interrelationships of a natural habitat which sustain representative community associations or populations of significant species;
i) reductions in the populations or reproductive capacity of significant species;
j) mortality in or removal of the predominant vegetation which provides structure to an element of the Greenslands Network;
k) erosion of soils or deposition of sediment;
l) compaction or trampling of soils;
m) increased potential for the introduction of invasive non-native species.
n) disruption of ecological processes due to increased nocturnal artificial light levels; or
o) increases in the level and quality of noise.

*Alvars* – naturally open areas of thin or no soil over essentially flat limestone, dolostone or marble rock pavement, supporting a distinctive vegetation community.

**Areas of Natural and Scientific Interest** – areas of land and water identified by the Province or the Region that contain natural landscapes or features that have been
identified as having life science or earth science values related to protection, scientific study or education.

*Benthic Community – the assemblage of interacting populations of organisms, including those forming structural elements, found at or near the bottom of a body of water. The composition of the benthic community is frequently used as an indicator of water quality.

Biodiversity – the variety of life in all its forms. It includes species diversity, ecosystem diversity, and genetic diversity within species.

*Buffer – an area or band of permanent vegetation, preferably consisting of native species, located adjacent to a natural heritage feature and usually bordering lands that are subject to development or site alteration. The purpose of the buffer is to protect the feature and its functions by mitigating impacts of the proposed land use and allowing an area for edge phenomena to continue (e.g., allowing edge trees and limbs to fall without damaging personal property, area for roots of edge trees to persist, area for cats to hunt without intruding into the feature). The buffer may also provide area for recreational trails and provides a physical separation from new development that will discourage encroachment. (Natural Heritage Reference Manual)

*Connectivity – the degree to which key natural heritage or significant hydrologic features are connected to one another by plant and animal movement corridors, hydrologic and nutrient cycling, genetic transfer, and energy flow through food webs.

Contiguous – lands that are situated in sufficiently close proximity such that development or site alteration could reasonably be expected to produce one or more of the following impacts: alterations to existing hydrological or hydrogeological regimes; clearing of existing vegetation; erosion and sedimentation; or producing a substantial disruption of existing natural linkages or the habitat of a significant species.

*Core Environmental Features – the environmental features identified in Policy 7.C.1 and designated on Map 4 of the Regional Official Plan. They are provincially significant or Regionally significant elements of the regional landscape in that they maintain, protect, and enhance biodiversity and important ecological functions. Core Environmental Features consist of:

(a) Habitat of Endangered or Threatened Species;
(b) ProvinceSignificant Wetlands;
(c) Environmentally Sensitive Policy Areas;
(d) Significant Woodlands;
(e) Environmentally Significant Valley Features; or
(f) Significant Areas of Natural and Scientific Interest.
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**Cumulative Impacts** – the changes to the environment resulting from a particular activity in combination with the incremental impacts caused by other closely related past, present and reasonably foreseeable future activities. Cumulative impacts may reveal that relatively minor impacts associated with a particular activity may contribute to more significant impacts when considered collectively with other activities taking place over a period of time.

**Development** – the creation of a new lot, a change in land use, or the construction of buildings and structures, requiring approval under the Planning Act. Where proposed development or site alteration also requires prior issuance of a permit by the Grand River Conservation Authority in accordance with the applicable regulation approved under the Conservation Authorities Act, the definition of development under the Conservation Authorities Act will also apply.

**Development application** – an application for approval under the Planning Act. Development applications may include applications for approval of the following: Plans of Subdivision; Plans of Condominium; Consent; Part Lot Control Exemption By-laws; Official Plan Amendments; and Zone Change Applications. Development applications do not include site plans.

*Dripline* - A line located on the ground vertically below the outer extent of the (live) tree crowns forming the perimeter of the woodland or hedgerow.

*Ecological enhancement* – ecological enhancement increases or improves the ecological functioning or resilience of altered or degraded natural areas. It may take the form of:

a. restoring clearings within an *environmental feature* or “bays” around its perimeter to natural habitat similar to that within the environmental feature such that the area is expanded or made more compact by decreasing the perimeter-to-area ratio;

b. adding onto existing *environmental features* new habitat elements such as wetlands, woodlands, or grasslands consisting of indigenous species characteristic of the locality;

c. creating or strengthening natural habitat linkages among *environmental features*;

d. eliminating or reducing the prevalence of invasive non-indigenous species of flora and fauna within *environmental features*;

e. converting conifer plantations to communities of indigenous deciduous, coniferous, and herbaceous woodland plants;

f. rehabilitating altered or degraded watercourses or wetlands to sustain populations of locally appropriate flora and fauna;

g. re-introducing indigenous species known to have been extirpated from an *environmental feature*; or

h. increasing the intrinsic, amenity, cultural, recreational and educational values of the *environmental feature*.
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Such actions should ideally bear in mind the likely medium and long-term effects of climate change.

Discharge Constraint Areas – lands where groundwater naturally discharges to the surface of the soil or other surface water bodies and may pose a serious constraint to the construction, use and occupancy of land and buildings.

Ecological function – the natural processes, products or services that living and non-living environments provide or perform within or among species, ecosystems and landscapes, including hydrologic functions and biological, physical, chemical and socio-economic interactions.

*Ecological Integrity – the condition of an ecosystem in which (a) the structure, composition, and function are unimpaired by stresses from human activity, (b) natural ecological process are intact and self-sustaining, and (c) ecosystem evolution is occurring naturally. Ecological integrity includes hydrological integrity. (Natural Heritage Reference Manual)

*Economic Functions – natural products and services of value to human beings such as the production of timber, maple syrup, potable water, commercial outdoor recreational opportunities, enhancing property values, pollution abatement, etc.

Endangered or Threatened Species – means a species that is listed or categorised as an “Endangered Species” or “Threatened Species” on the Ontario Ministry of Natural Resources and Forestry official Species at Risk list, as updated and amended from time to time. (PPS)

Environmental Assessment – a process for the authorization of an undertaking under legislation such as the Environmental Assessment Act, and the Ontario Energy Board Act.

Environmental features – features of the natural environment, including:
  a. Habitat of Endangered or Threatened Species;
  b. Fish habitat;
  c. Wetlands;
  d. Provincially significant life science Areas of Natural and Scientific Interest, regionally significant life science Areas of Natural and Scientific Interest, or provincially significant earth science Areas of Natural and Scientific Interest;
  e. Environmentally Significant Valley Features;
  f. Significant Woodlands;
  g. Significant wildlife habitat;
  h. Sand barrens, savannas and tallgrass prairies;
  i. Alvars;
  j. Permanent and intermittent watercourses;
  k. Lakes (and their littoral zones);
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1. Environmentally Significant Discharge Areas & Environmentally Significant Recharge Areas; and

m. Regional Recharge Areas.

Environmental Impact Statement – a study prepared in accordance with established procedures to refine the boundaries of elements of the Greenlands Network, identify the potential impacts of a development application on such elements, and recommend a means of preventing or minimising these impacts through avoidance or mitigation. The term "Environmental Implementation Report" is generally synonymous with Environmental Impact Statement.

*Environmentally Sensitive Landscape – An Environmentally Sensitive Landscape (ESL) is a geographically and ecologically definable landscape that is distinguishable from the surrounding areas by the concentration, proximity, and/or overlap of:

a. designated natural features (such as Environmentally Sensitive Policy Areas, Provincially Significant Wetlands, Significant Woodlands, and Environmentally Significant Valley Features),

b. associated natural features (such as stream valleys and specialised habitats),

and

c. ecological functions (such as groundwater recharge areas and ecological corridors or linkages) which together constitute a heterogeneous landscape mosaic that contributes significantly to Regional biodiversity conservation. (See ROP 7.B.5).

An ESL may include lands under active human use or management, but should be predominantly natural, not bisected by major highways, and exclusive of areas irreversibly transformed by concentrated human settlement, or where widespread commitments to development in the form of land use designations have been made in Area Municipal Official Plans. In recognition of the cultural influences that have shaped, and continue to shape, the Region’s landscape, ESLs are considered compatible with a number of limited human uses such as legally permitted agricultural, residential, commercial, and resource extraction uses. In addition to protecting regional and local biodiversity, providing a wide range of ecological functions, and accommodating some human land uses, ESLs also provide continued opportunities for aesthetic enjoyment, low-impact recreation, and scientific, archaeological and/or historical study in the Region’s countryside.

*Environmentally Sensitive Policy Area – a remnant natural area that fulfills sufficient technical criteria in the Regional Official Plan for designation. ESPAs are Core Environmental Features. (See ROP 7.C.5).

Environmentally Significant Discharge Areas – lands where groundwater discharges to the surface of the soil or to surface water bodies to sustain wetlands, fisheries, or other specialised natural habitats.
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Environmentally Significant Recharge Areas – lands where water infiltrates into the ground to replenish an aquifer that sustains, in full or in part, environmental features.

Fish habitat – as defined in the Fisheries Act, c. F-14, means spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes (PPS).

Floodplain – for rivers, streams, and small inland lake systems, means the area usually low lands adjoining a watercourse, which has been or may be subject to flooding hazards (PPS).

*Forest Interior Habitat* – habitat conditions typical of the central or interior part of a forest as distinguished from the edge habitat around the perimeter. Interior habitat is usually relatively stable and less influenced by changing climatic conditions, noise, wind, sunlight, temperature, invasive non-indigenous species, nest parasitism, human presence, and so forth. For Waterloo Region, this is taken to be approximately thirty metres in from the dripline, but may vary depending upon the ecological quality of the forest edge habitat.

Habitat of an Endangered or Threatened Species:

a) with respect to species listed on the Species at Risk in Ontario List as an endangered or threatened species for which a regulation made under clause 55(1)(a) of the Endangered Species Act, 2007 is in force, the area prescribed by that regulation as the habitat of the species; or

b) with respect to any other species listed on the Species at Risk in Ontario List as an endangered or threatened species, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, as approved by the Ontario Ministry of Natural Resources and Forestry; and places in the areas described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula, or other residences. (PPS)

Hydrologic function – the functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water’s interaction with the environment including its relation to living things. (PPS)

*Landscape Level Systems* – are large-scale environmental features or significant concentrations of environmental features within the Greenlands Network, as defined in ROP Policy 7.B.1. They comprise:

(a) Environmentally Sensitive Landscapes;
(b) Significant Valleys;
(c) Regional Recharge Areas; and
(d) Provincial Greenbelt Natural Heritage System.
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**Landscape matrix** – the most extensive and most connected landscape element type present, which plays the dominant role in landscape functioning. (Natural Heritage Reference Manual)

**Linkages** – areas that connect *environmental features* along which plants and animals can propagate, genetic interchange can occur, populations can move in response to environmental changes and life-cycle requirements, and species can be replenished from other *environmental features*. Linkages can also include those areas currently performing, or with the potential to perform, through restoration, linkage functions. Although linkages help to maintain and improve *environmental features*, they can also serve as important *environmental features* in their own right.

**Mitigate** – actions taken to prevent, modify, or alleviate adverse *environmental impacts to environmental features* identified in an *Environmental Impact Statement*. Mitigation may also include actions achieve beneficial effects. Examples of mitigations are provided in the Natural Heritage Reference Manual and Municipal Class Environmental Assessment manual.

**Native species** – species known to be indigenous to Waterloo Region are considered native species.

**Normal farm practices** – a practice, as defined in the *Farming and Food Production Protection Act, 1998*, that is conducted in a manner consistent with proper and acceptable customs and standards as established and followed by similar agricultural operations under similar circumstances; or makes use of innovative technology in a manner consistent with proper advanced farm management practices. Normal farm practices shall be consistent with the *Nutrient Management Act, 2002*, and regulations made under that Act.

**Pre-submission consultation meeting** – the opportunity for staff to consult with an owner/applicant prior to the owner/applicant preparing an application, in order to outline the information and materials that the owner/applicant will be required to submit concurrently with the application form and prescribed fees.

**Provincially constrained environmental areas** – landscape features where the features are both identified as significant in any applicable official plan or *Provincial plan*, and where the applicable *Provincial plan* or Provincial Policy Statement prohibits development in the features: wetlands, woodlands, Significant Valleys, Environmentally Significant Valley Features, *Areas of Natural and Scientific Interest*, Habitat of Endangered or Threatened species, *significant wildlife habitat* and fish habitat.

**Qualified professional** – a person carrying out studies or evaluations as recommended by the *Natural Heritage Reference Manual*, Regional or Area Municipal Official Plan, or Greenlands Network Implementation Guideline who meets
any specific requirements (e.g., wetland evaluation training) to carry out the study or evaluation and where appropriate meets professional standards in their particular field and is accredited by a professional association. (Natural Heritage Reference Manual)

*Rehabilitation – restoration of the ecosystem to a higher functioning condition. (PPS)

*Restore – convert lands whose ecological properties have been substantively degraded, damaged, or destroyed by human activity or natural processes back to natural habitat characteristic of the locality consisting of locally appropriate indigenous species of flora and fauna using active planting, natural succession, prescribed burning, removal of non-native vegetation, other means accepted by the Society for Ecological Restoration, or any combination thereof.

*Savanna – land (not including land that is being used for agricultural purposes) that:
  a. has vegetation with a significant component of non-woody plants, including tallgrass prairie species that are maintained by seasonal drought, periodic disturbances such as fire, or both;
  b. has scattered tree cover from 25% to 35%;
  c. has mineral soils; and
  d. has been further identified, by the Ministry of Natural Resources and Forestry or by any other person, according to evaluation procedures established by the Ministry of Natural Resources and Forestry, as amended from time to time.

Significant – means
  a. in regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time;
  b. in regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources and Forestry;
  c. in regard to other features and areas in PPS policy 2.1, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system;
  d. in regard to mineral potential, an area identified as provincially significant through evaluation procedures developed by the Province, as amended from time to time, such as the Provincially Significant Mineral Potential Index;
  e. in regard to cultural heritage and archaeology, resources that have been determined to have cultural heritage value or interest for the important
contribution they make to our understanding of the history of a place, an event, or a people (PPS); and

f. in regard to regionally significant features and areas comprising the Greenlands Network, areas identified as being ecologically important to the region based on the specific criteria established by the Region and described in the associated policies in the Regional Official Plan.

Site alteration – activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a site.

*Social Functions – community amenity, local heritage, outdoor recreation, camping, education and research, aesthetic pleasure, spiritual experience, some residential use, and so forth.

*Supporting Environmental Features – environmental features not considered Landscape Level Systems or Core Environmental Features which nonetheless perform ecological functions which help sustain the Greenlands Network and are designated by an Area Municipality and/or Grand River Conservation Authority.

*Tallgrass prairies – land (not including land that is being used for agricultural purposes) that:
  a. has vegetation dominated by non-woody plants, including prairie grass species that are maintained by seasonal drought, periodic disturbances such as fire, or both;
  b. has less than 25 per cent tree cover;
  c. has mineral soils; and
  d. has been further identified, by the Minister of Natural Resources and Forestry or by any other person, according to evaluation procedures established by the Ministry of Natural Resources and Forestry, as amended from time to time.

*Valleylands – a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. (PPS)

Watershed studies – comprehensive scientific studies that describe how surface water and groundwater and terrestrial and aquatic ecosystems function within a defined drainage area. These investigations result in recommendations as to where and how development activity can safely occur so as to minimize flood risks, stream erosion, degradation of water quality, and negative impacts on natural systems. Recommendations may also identify opportunities for ecological enhancement and recreation.

Wetlands – lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens. Periodically soaked or
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wetlands being used for agricultural purposes which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition.

*Wildlife habitat* – areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species. (PPS)

*Woodlands* – treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels.
D. Reference List


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Grand River Conservation Authority.


2015 Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation - Ontario Regulation 150-06 (revised)


Natural Heritage Information Centre, 2015. NHIC Species Lists. Available at: https://www.ontario.ca/page/get-natural-heritage-information

Natural Resources Canada. 2014. Climate sensitivities, impacts, and vulnerability: subregional perspectives 3.1 South Region November, 2014


Ontario Ministry of Municipal Affairs and Housing, 2014. Provincial Policy Statement


Ontario Ministry of Natural Resources,

Ontario Ministry of Natural Resources and Forestry,


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Version: May 18, 2016


Regional Municipality of Waterloo,


Region of Waterloo
Transportation and Environmental Services
Transportation
Planning, Development and Legislative Services
Community Planning

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016   File Code: T01-20/53, T01-20/54

Subject: Chicopee Hills Traffic Control Review and Proposed Amendment to Controlled Access By-law #58-87

Recommendation:

That the Regional Municipality of Waterloo amend the Region’s Traffic and Parking By-law 06-072, as amended, to add to Schedule 10, a Level 2 Pedestrian Crossover (PXO) on Lackner Boulevard at its intersection with Corfield Drive in the City of Kitchener, as described in Report No. TES-TRP-16-04/PDL-CPL-16-33, dated June 14, 2016;

And that the Regional Municipality of Waterloo approve an amendment to the Controlled Access By-law #58-87 for an access on the east side of Lackner Boulevard (Regional Road 54), approximately 170 metres north of Fairway Road (Regional Road 53).

Summary:

The Waterloo Region District School Board (WRDSB) received zone change approval from the City of Kitchener for a proposed development located in the northeast corner of the Lackner Boulevard/Fairway Road intersection. The development will include the future Chicopee Hills Public School scheduled to open in September 2017 (please see Appendix A). The school site is proposed to have accesses to both Fairway Road and Lackner Boulevard.
This site presents a number of challenges for vehicle and student pedestrian access due to its location adjacent to two arterial roads and due to a lack of a continuous pedestrian facility linking the site to adjacent residential neighbourhoods. One of the main accesses to the site would be located on Lackner Boulevard opposite existing Corfield Drive. This location is where a number of students who are walking to the new school would be crossing Lackner Boulevard.

The WRDSB’s Transportation Impact Study (TIS) recommended the installation of a pedestrian refuge island and a crossing guard at the Corfield Drive intersection but did not recommend the installation of traffic control signals at this location as warrants for such a signal were not met. The WRDSB also requested the Region install sidewalk on the north side of Fairway Road from Lackner Boulevard to 400 metres east of Lackner Boulevard to include a pedestrian link from neighbourhoods to the east of Lackner Boulevard to the new school. On May 9, 2015, City of Kitchener Council approved the TIS recommendations noted above and further requested the installation of an IPS at the Corfield Drive intersection as well as other pedestrian-related improvements in the area.

Based on the review of all the technical issues and in collaboration with staff from both the WRDSB and the City of Kitchener, Regional staff recommend the following:

1. At the Lackner Boulevard/Corfield Drive intersection, install a pedestrian refuge island and further enhance student mobility with the installation of a Level 2 Pedestrian Crossover prior to the new school opening in 2017;
2. Install underground conduit at the Lackner Boulevard/Corfield Drive intersection to allow the installation of an IPS in the future should the signals become warranted;
3. The City of Kitchener consider the implementation of a crossing guard at both the Corfield Drive and Fairway Road intersections with Lackner Boulevard; and
4. Regional and City staff continue to pursue options for addressing student access from the east, including a new sidewalk on the north side of Fairway Road and a pedestrian walkway from Country Clair Street to the school site.

Regional staff also recommend that subsequent to the school opening in 2017, that staff monitor the vehicular and pedestrian volumes at the Lackner Boulevar/Corfield Drive intersection to determine if the warrants for an intersection pedestrian signal (IPS) would be met.

Based on staff’s review of the proposed access locations to both Lackner Boulevard and Fairway Road, staff is recommending a right-turn in/out only movement access to Fairway Road and a full movement access to Lackner Boulevard opposite Corfield Drive. Lackner Boulevard is designated as a Controlled Access – Prohibited roadway under the Region of Waterloo Controlled Access By-law #58-87. As such, an amendment to By-law #58-87 is required prior to issuance of an Access Permit. Fairway Road is also a controlled access but designated as Controlled Regulated. In this regard, Fairway Road does not require an amendment to the Controlled Access By-law #58-87.
1.0 Background

The Waterloo Region District School Board (WRDSB) received approval for a zone change to re-zone a parcel of land located in the northeast corner of the Fairway Road/Lackner Boulevard intersection from Neighbourhood Shopping Centre/Residential use to mixed use which would allow for commercial, residential and a school. Figure 1 shows the subject site and nearby traffic control signals.

Figure 1 – Subject Site and Surrounding Area

The preferred development concept is illustrated in Appendix A.

The proposed development includes a full movement access on the east side of Lackner Boulevard approximately 170 metres north of Fairway Road at the existing Corfield Drive intersection and also proposes a right in/right out access to Fairway Road located approximately 110 metres east of Lackner Boulevard.

Through the zone change approval, Paradigm Transportation Solutions was retained by the WRDSB to undertake a Transportation Impact Study (TIS). The TIS reviewed the impacts to area roadways due to the increase of additional traffic and pedestrian volume and included the following recommendations:

- Traffic signals at Lackner Boulevard and Corfield Drive are not required;
• Install a pedestrian refuge island on Lackner Boulevard at Corfield Drive; and

• City of Kitchener staff to consider the implementation of a crossing guard at the Lackner Boulevard/Corfield Drive intersection.

Upon review of the TIS, City of Kitchener staff raised concerns associated with pedestrian mobility. At its regular scheduled meeting on March 9, 2015, City of Kitchener Council passed a resolution (refer to Appendix B) requesting the Region of Waterloo to work with the City of Kitchener and the WRDSB to:

• Install an intersection pedestrian traffic control signal at the Lackner Boulevard/Corfield Drive intersection;

• Install a pedestrian refuge island on Lackner Boulevard at Corfield Drive;

• Consider a traffic control device to aid pedestrians crossing Fairway Road at Pebblecreek Drive/Upper Mercer Street; and

• Consider enhanced treatments for pedestrians in any future intersection works at the Fairway Road/Lackner Boulevard intersection.

In light of City of Kitchener staff concerns, Regional staff undertook a review of the recommendations within the TIS and a review of the justification of additional traffic control requirements at the Lackner Boulevard and Corfield Drive intersection. Regional staff further assessed the need for pedestrian facilities and enhancements crossing Lackner Boulevard and Fairway Road in the vicinity of the proposed school. As part of the review process, Regional staff met several times with City of Kitchener staff to discuss issues and explore solutions.

2.0 Review of Traffic Control Devices to Assist Pedestrians

2.1 Intersection Pedestrian Signal and Pedestrian Refuge Island at Lackner Boulevard/Corfield Drive

Regional policy is to follow the warrant methodology established by provincial guidelines as documented in the Ontario Traffic Manual (OTM) Book 12 and developed through the Ministry of Transportation of Ontario. As such, Paradigm Transportation Solutions followed the Ministry of Transportation methodology to assess the need for an Intersection Pedestrian Signal (IPS) at the Lackner Boulevard/Corfield Drive intersection.

In order to justify the installation of an IPS, two warrants must be met; pedestrian volume and pedestrian delay. Generally, a minimum of 200 pedestrians must cross the main street during the eight highest hours of a typical weekday and experience delay in crossing the main road for an IPS to be considered. Using the estimated 8-hour pedestrian volume (180) noted within the TIS an IPS would not be justified at the time of full “build-out”.
Recognizing, however, that the 8-hour pedestrian volume is an estimate using Waterloo Region District School Board figures, it is recognized that the actual pedestrian volume crossing Lackner Boulevard may result in higher or lower figures. Should the volume of traffic or pedestrians be higher, this may justify the need for additional pedestrian related traffic control.

The installation of unwarranted signals can have many negative impacts. Many of these negative impacts may be contrary to common expectations, but are proven by observations and studies. Studies indicate that signals generally do not improve safety. Based on studies before and after (3 years before and 3 years after) the installation of intersection pedestrian signals in the Region of Waterloo vehicular collisions increased by 184% (from 19 to 54) after the installation of the IPS. Currently, the Region has insufficient evidence to conclude that an IPS results in an improvement in pedestrian safety.

Regional staff agree with the TIS recommendations to include the installation of a pedestrian refuge island on Lackner Boulevard at its intersection with Corfield Drive. The installation of a pedestrian refuge island on Lackner Boulevard at Corfield Drive will provide a more convenient and accessible crossing for pedestrians. Pedestrian refuge and median islands are proven to reduce the probability of pedestrian collisions. Regional staff is also in agreement with the TIS recommendation to include a school crossing guard at the Lackner Boulevard/Corfield Drive intersection.

2.2 New Level 2 Pedestrian Crossover at the Lackner Boulevard/Corfield Drive Intersection

In January 2016, the Transportation Minister of Ontario passed legislation which allows the Region of Waterloo to use a new traffic control device called a Level 2 Pedestrian Crossover. The new device is comprised of roadside signage and pavement markings that provide pedestrians the right-of-way when crossing the roadway.

Based on Regional staff’s review of enhanced pedestrian facilities and in light of newly introduced MTO regulations, Regional staff also recommends the installation of a Level 2 Pedestrian Crossover at the Lackner Boulevard/Corfield Drive intersection prior to school opening in 2017 and following public education as per report TES-TRP-16-04/PDL-CPL-16-33.

2.3 Traffic Signals at Fairway Road/Pebblecreek Drive/Upper Mercer Street

In March 2015, staff assessed the justification for traffic control signals at the Fairway Road/Pebblecreek Drive/Upper Mercer Street intersection. Traffic and pedestrian volume entering the intersection warranted the installation of traffic control signals. Staff arranged the installation of traffic control signals during the summer of 2015. The traffic signals are now fully operational at the Fairway Road/Pebblecreek Drive/Upper Mercer intersection.
and provide pedestrian signal control to assist pedestrians.

In addition to traffic control signals, a crossing guard is also present at the Fairway Road/Pebblecreek Drive/Upper Mercer Street intersection to assist students attending and leaving school.

### 2.4 Enhanced Pedestrian Treatments at Fairway Road/Lackner Boulevard

As part of future programmed road improvements, Regional staff will be assessing the preferred traffic control for the Fairway Road/Lackner Boulevard intersection. This assessment will include the consideration of both traffic control signals and a roundabout. Should traffic control signals be the preferred control, such measures as offset crosswalks and high visibility ladder crosswalk markings would be considered at the time of any road works. Should a roundabout be preferred, staff would consult with both School Board and City of Kitchener staff and conduct public consultation. Staff would further obtain Regional Council approval prior to the installation.

### 2.5 Other Pedestrian Facilities

As part of the proposed development, the Waterloo Region District School Board has requested that sidewalk be installed on the north side of Fairway Road from Lackner Boulevard to approximately 400 metres east of Lackner Boulevard. This would provide for a continuous sidewalk on the north side of Fairway Road between Lackner Boulevard and Pebblecreek Drive. Currently within this section of Fairway Road, sidewalk is only present on the south side. At this time, a sidewalk cannot be added on the north side of Fairway Road because the existing road cross-section would require widening and reconstruction to accommodate a new sidewalk. The road widening would require acquisition of private property.

Widening Fairway Road to its ultimate 4-lane cross-section would require completion of a detailed design and property acquisition, which cannot be completed before the school opens in September of 2017. Under the current Transportation Capital Program, the earliest that the road could be widened, and a sidewalk added to the north side, would be 2021. It may be possible to complete the construction as early as 2019, but this would require additional transportation analysis, funding and resource allocation review to support advancing the timing earlier. City of Kitchener Community Services staff is also investigating the possibility of providing an additional pedestrian link from Landgren Court or from Country Clair Street to connect directly to the school property. Currently a pedestrian link exists from Landgren Court southerly down to Fairway Road. The proposed additional pedestrian link could extend northerly and westerly through City of Kitchener lands into the northeast corner of the Chicopee Hills Public School site. This option is viewed by staff at both the Region and the City as the most direct, and therefore the best route for students to access the new school from the east. In an effort to ensure all options were explored, staff also considered the construction of an interim raised
sidewalk and/or barrier curb on the north side of Fairway Road which did not include widening the road but involved “restriping” of the existing travel lanes. Upon detailed review it was determined that this interim measure was not feasible due to safety concerns. In light of all the options considered to provide access to the school for students from the east, including consideration of all the existing constraints, City and Regional staff have identified the following action plan:

1. Starting in 2017 and on an interim basis, Chicopee Hills Public School should direct students from the eastern neighbourhoods on the north side of Fairway Road to use the existing south side sidewalk, and cross Fairway Road at the existing traffic signals at Lackner Boulevard and at Pebblecreek Drive. It is also proposed that the City of Kitchener consider locating a crossing guard at the Fairway Road/Lackner Boulevard intersection to assist students crossing;

2. As part of developing the 2017 Transportation Capital Program, Regional staff will review the possibility of advancing the needed road works on Fairway Road to accommodate the construction of the sidewalk on the north side. Subject to Regional Council approval, staff would initiate the detail design in 2017. Given that private property is required for this work, the earliest anticipated completion date for the sidewalk would be 2019; and

3. City of Kitchener staff will continue to explore the feasibility of constructing the direct pedestrian link between Country Clair Street and the new school property.

Please refer to Appendix C for a plan view of the proposed interim and long-term alternatives.

3.0 Proposed Access to Lackner Boulevard and Fairway Road

Regional By-law #58-87, a By-law to Designate and Regulate Controlled – Access Roads, was enacted to control the construction or alteration to the geometric design of any private means of access to a Regional Road. All Regional Roads are included in either Schedule A or Schedule B of the By-law. Regional Roads included in Schedule A (Controlled Access – Prohibited) include arterial roads and freeways where access to these roads must be restricted due to high speeds and volume of traffic. Any alteration to existing access or the addition of new accesses fronting controlled access roadways requires approval and an amendment to By-law #58-87.

The Lackner Boulevard access is proposed to be a full movement access and will be located directly opposite Corfield Drive. A southbound left-turn lane on Lackner Boulevard is warranted to accommodate site traffic and will be fully funded by the Waterloo Region District School Board. Lackner Boulevard is designated as a Controlled Access – Prohibited roadway under the Region of Waterloo Controlled Access By-law #58-87 from
Fairway Road to Victoria Street. As such, an amendment to By-law #58-87 is required prior to issuance of an Access Permit.

The Fairway Road access is proposed to be restricted to right in/right out only movements due to its close proximity to Lackner Boulevard. Fairway Road is a Controlled Access Regulated roadway which does not require an amendment to By-law #58-87.

4.0 Recommendations

In summary, based on a review of all the issues and in consultation with City and School Board staff, Regional staff recommends the following:

1. In lieu of initially installing traffic control signals or an intersection pedestrian signal (IPS) at the Lackner Boulevard/Corfield Drive intersection, install a pedestrian refuge island and a Level 2 Pedestrian Crossover prior to school opening in 2017;

2. Install underground conduit at the Lackner Boulevard/Corfield Drive intersection to allow the installation of an IPS in the future should the signals become warranted;

3. City of Kitchener staff consider the implementation of a crossing guard at the Lackner Boulevard/Corfield Drive and at the Lackner Boulevard/Fairway Road intersections;

4. Regional and City staff continue to pursue the options for addressing student access from the east, as detailed in Section 2.5 of this report; and

5. The Region’s Controlled Access By-law #58-87 be amended to allow the proposed access on the east side of Lackner Boulevard opposite Corfield Drive.

Although traffic control signals or an IPS are not initially justified at the Lackner Boulevard/Corfield Drive intersection, staff is recommending that underground provisions for the installation of a future IPS be included during any roadway improvements. Staff will survey the intersection after the school opens in September 2017 to assess if an IPS is warranted.

Area Municipality Consultation/Coordination

City of Kitchener staff support the recommendations in the report including the need to re-asses the need for an IPS at the Lackner Boulevard/Corfield Drive intersection after the school opens. Through discussions with City of Kitchener staff, it was noted that the City of Kitchener plans to implement a crossing guard at the Lackner Boulevard/Corfield intersection upon opening day of the new school.

Corporate Strategic Plan:

This report addresses the Region’s goal to optimize road capacity to safely manage traffic and congestion (Strategic Objective 2.4).
Financial Implications:

Any changes to the Lackner Boulevard access and Fairway Road access will be fully funded by the Waterloo Region District School Board.

Attachments:

Appendix A – Chicopee Hills Site Plan
Appendix B – City of Kitchener Council Resolution
Appendix C – Proposed Interim Student Walking Route

Prepared By: Mike Jones, Supervisor Traffic Engineering
Richard Parent, Transportation Planner

Approved By: Thomas Schmidt, Commissioner, Transportation and Environmental Services
Rob Horne, Commissioner, Planning, Development and Legislative Services
I, COLIN MATTHEW GOODEVE, Deputy City Clerk of the Corporation of the City of Kitchener, do hereby certify that the following is a true and correct copy of a resolution adopted by the Council of the Corporation of the City of Kitchener at its special meeting held on May 9, 2015.

That Zone Change Application ZC14/04/L/AP (Fairway Rd/Lackner Blvd; Waterloo Region District School Board) for the purpose of changing the zoning from Neighbourhood Shopping Centre (C-2) and Residential Nine (R-9) with special provisions 1R, 176R and 10HSR to Mixed Use (MU-2) with special provisions 1R, 443U, 662R, 74H and revised 10HSR, Open Space (P-2) and Hazard Land (P-3) on the lands specified on the attached Map Nos. 1 and 2, in the form shown in the “Proposed By-law” dated March 9th, 2015 attached to Community Services Department report CSD-15-016 as Appendix ‘B’, be approved; and,

B. That the Grand River South Community Plan be amended as follows:
   i) Delete Policies 5.6 and 6.1 and renumber the remaining policies accordingly;
   ii) Remove the word ‘Service’ from Policy 6.2;
   iii) Add new Section 15.0 Mixed Use with the following new Policy:

   15.1 That a Mixed Use site be located at the northeast corner of Fairway Road and Lackner Boulevard. This site is within a Node and is expected to function as a community-scale focal point. In that regard, a mixture of transit-supportive uses is intended and shall be designed to be transit- and pedestrian-oriented. The emphasis is on creating a walkable, neighbourhood unit internal to the site, but with enhanced connections for all modes of travel to the surrounding area. Retail and other neighbourhood-scale, pedestrian-oriented commercial uses are important for the planned function of the site, especially a mid-size food store or components thereof. Primarily auto-oriented uses may not be appropriate for this site.

   Multiple dwellings are the only type of residential use permitted and mixed use buildings are strongly encouraged. The minimum density to be achieved using a ‘phased approach’ over the long-term is 150 residents and jobs per hectare with a Floor Space Ratio of 1.0. Full build-out of the site may require confirmation of adequate sanitary sewer infrastructure.

   .../2
The built form may be organized on the site in accordance with an approved Urban Design Study. Building heights may be influenced by airport regulations, shadow studies and angular plane analysis. Buildings may be required to have pedestrian-scale podiums, building stepbacks, façade height regulations or other regulations to ensure a pedestrian-oriented design internal to the site. In this instance, an elementary school located internal to the site may be permitted.

iv) That Land Use Plan Schedule 1 be amended, as shown on Schedule ‘A’ attached to Report CSD-15-016 as Appendix ‘C’, to:

a. Redesignate the lands at the northeast corner of Fairway Rd/Lackner Blvd from Neighbourhood Commercial and High Rise Multiple Residential to Mixed Use and Open Space;
b. Relocate the “E” Elementary School Site symbol from the institutional lands near the Grand River to the lands at the northeast corner of Fairway Rd./Lackner Blvd;
c. Redesignate the Neighbourhood Institutional site that is closest to the Grand River as Low Density Residential; and,

C. That staff initiate a review to comprehensively revise or repeal the Grand River South Community Plan since the Grand River South Community is planned and substantially developed and a new Official Plan has been adopted; and,

D. That the Urban Design Study for the northeast corner of Fairway Rd/Lackner Blvd, dated January 2015, attached to Report CSD-15-016 as Appendix ‘D’, be approved and provide the basis for future site plan design. Minor changes to the Urban Design Study (i.e. internal site walkway or parking design, minor shifting of buildings, entrance/gateway design, clarification of design principles/guidelines, etc.) will be to the satisfaction of the Director of Planning and major changes (i.e. significant changes to building form especially along the internal road, changes to the school drop-off areas, major changes in building height, etc.) will be to the satisfaction of Council; and,

E. That in support of our collective Pedestrian Charters, Active Transportation Plans, and Safe and Active Routes to School program, Regional Council and staff be requested to work with the City of Kitchener and Waterloo Region District School Board to:

i) install an Intersection Pedestrian Signal (IPS), a pedestrian refuge island and provide a minimum 15 metre separation between the traffic signal and the vehicle stop bar from the intersection of Lackner Blvd. and Corfield Rd. to coincide with the opening date of any school at Fairway Rd/Lackner Blvd;

ii) consider a pedestrian activated signal or other suitable or comparable traffic control device at the intersection of Fairway Rd and Pebblecreek Dr/Upper Mercer St;

iii) consider, in any future intersection design and work at Fairway Rd/Lackner Blvd, treatments that give some priority to pedestrians including alternate crosswalk locations, and/or enhanced pedestrian signage, pedestrian activated signals, prepare to stop at traffic signals ahead sign (with amber flashers), and/or vehicle stop-bar/yield markings that are a minimum of 5-15 metres from a crosswalk; and,
F. That a Community Trail/Primary Walk Link from Country Clair Street to the site at the northeast corner of the Fairway Rd/Lackner Blvd (which would also connect to the future Idlewood Cr trail) be added to the City's Capital Budget Forecast (utilizing Development Charges funding) for design options and related study in 2018 and construction and any mitigation to coincide with the opening date of any school at Fairway Rd/Lackner Blvd; and,

G. That the landowner of the northeast corner of Fairway Rd/Lackner Blvd complete all recommendations from the technical studies submitted and amended as part of application ZC14/04/L/AP including finalizing water management requirements related to the Preliminary Servicing and Stormwater Management Report, Stantec Consulting Ltd and the Fairway Road/Lackner Boulevard Environmental Impact Study, Stantec Consulting Ltd. which contains recommendations from the Region's Ecological & Environmental Advisory Committee and requires an updated environmental inventory prior site plan approval; and further,

H. That the City of Kitchener and Waterloo Region District School Board formally pursue shared facility discussions for the community to utilize space within and/or on any school site at the northeast corner of Fairway Rd/Lackner Blvd for programming and events."

C. Goodeve
Manager of Council & Committee Services &
Deputy City Clerk

*rd
Proposed Trail/Path Connection

Future Chicopee Hills school site

Fairway Road North

Students use south side sidewalk and cross at Lackner Boulevard and Pebblecreek Drive traffic signals.
Region of Waterloo

Transportation and Environmental Services

Design and Construction

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016  File Code: C04-30 / 06510

Subject: Class Environmental Assessment Study
Bridgeport Road/Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street, City of Waterloo

Recommendation:

That the Regional Municipality of Waterloo take the following actions with respect to the Class Environmental Assessment Study for proposed improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street in the City of Waterloo:

a) Approve the Recommended Design Concept for the proposed improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street as described in Report TES-DCS-16-12.1 dated June 14, 2016;

b) Direct staff to file a Notice of Completion for this Class Environmental Assessment Study by means of advertisements in local newspapers and mailings to adjacent property owners, tenants and agencies, and place the Project File on the public record for review for a period of 30 days.

Summary:

The Region of Waterloo is currently undertaking a Class Environmental Assessment Study (Class EA) to consider improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street to King Street in the City of Waterloo. Improvements to Albert Street from Erb Street to Bridgeport Road are also being considered as part of this Class EA Study on behalf of the City of Waterloo. Please refer to Appendix “A” for a Key Plan of the Study Area for
This Class EA. This Class EA Study has been initiated to identify a recommended design concept to address the deteriorating pavement conditions and aging sewer and watermain on these sections of roadways, as well as to consider opportunities for improvements to pedestrian, cycling and transit facilities.

The Project Team conducted a Public Consultation Centre on January 27, 2016 at the Canadian Clay and Glass Gallery. Based on a review of the technical information gathered for this project, as well as a review of all public and agency comments received, the Project Team is now recommending that Regional Council approve the following improvements to Bridgeport Road/Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street to King Street in the City of Waterloo:

Bridgeport Road/Caroline Street from King Street to Erb Street:

- Complete replacement of the pavement structure including new concrete curb and gutter;
- Replacement of the storm sewers;
- Replacement of the City's watermain and sanitary sewer from King Street to 100 metres west of Albert Street;
- Construction of a 4.0 metre wide boulevard multi-use trail on the north side of Bridgeport Road from King Street to Dorset Street;
- Construction of a 3.0 metre wide boulevard multi-use trail on the north side of Bridgeport Road/Caroline Street from Dorset Street to Erb Street;
- Replacement of the existing 1.50 metre wide sidewalk on the south side of Bridgeport Road from King Street to Albert Street with 2.0 metre wide sidewalk;
- Construction of new 2.50 metre wide sidewalk on the south side of Caroline Street from Albert Street to Dupont Street;
- Replacement of the existing 1.50 metre wide sidewalk on the south/ east side of Caroline Street from Dupont Street to Erb Street with 2.0 metre wide sidewalk;
- Removal of the existing westbound curb lane on the north side of Bridgeport Road/Caroline Street from King Street to Erb Street to accommodate the proposed boulevard multi-use trail;
- Construction of a new designated westbound right-turn lane on Bridgeport Road at Albert Street; and
- Enhanced boulevard landscaping where space permits.

Erb Street from King Street to Caroline Street:

- Complete replacement of the pavement structure including new concrete curb and gutter;
- Replacement of the storm sewers;
- Replacement of the City's watermain and sanitary sewer on Erb Street from King Street to Caroline Street;
• Replacement of the existing 1.50 metre wide sidewalk on the north side of Erb Street from 90 metres east of Caroline Street to 30 metres west of King Street with a 2.50 metre wide sidewalk;
• Replacement of the existing 2.0 metre wide sidewalk on the south side of Erb Street from Caroline Street to 100 metres west of King Street with a 2.50 metre wide sidewalk; and
• Removal of the existing designated left-turn lanes on Erb Street at Albert Street.

The Recommended Design Concept for improvements to Albert Street from Erb Street to Bridgeport Road was approved by City of Waterloo Council on May 30, 2016 and is described in Appendix ‘E’ of this Report TES-DC-16-12.1.

Please refer to Appendix “B” for drawings of the Project Team’s Recommended Design Concept for Bridgeport Road/ Caroline Street, Erb Street and Albert Street.

The Region’s approved 2016 Ten-Year Transportation Capital Program includes funds of $3,230,000 in years 2016 to 2019 inclusive for the roadway improvements and a portion of the storm sewer replacement on Erb Street and Bridgeport Road/Caroline Street to be funded from the Roads Rehabilitation Reserve Fund. The City of Waterloo is responsible for the cost of the improvements to Albert Street, the replacement of the City’s watermain, sanitary sewer and a portion of the storm sewer replacement costs on Bridgeport Road/Caroline Street and Erb Street.

Construction of this project is currently scheduled to occur in 2018 in the Region’s 2016 Transportation Capital Program. In response to requests from Committee members at the May 24, 2016 Planning and Works Committee Meeting to defer construction to 2019, staff have confirmed that construction could be rescheduled to occur in 2019 with no scheduling impacts to other area projects. Staff will request and consider ongoing input from the Uptown Waterloo BIA, the City of Waterloo and other stakeholders regarding the timing of this project. Staff will provide the recommended timing of construction for this project through the development of the annual Transportation Capital Program.

Report:

1. Background

The Region of Waterloo is currently undertaking a Class Environmental Assessment Study (Class EA) to consider improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and Erb Street from King Street to Caroline Street to King Street in the City of Waterloo. Improvements to Albert Street from Erb Street to Bridgeport Road are also being considered as part of this Class EA Study on behalf of the City of Waterloo. Please refer to Appendix “A” for a Key Plan of the Study Area for this Class EA.
This Class EA Study has been initiated to identify a recommended design concept to address the deteriorating pavement conditions and aging sewer and watermain on these sections of roadways, as well as to consider opportunities for improvements to pedestrian, cycling and transit facilities. This project is being planned as a Schedule ‘B’ project under the Class EA process.

A Project Team consisting of staff from the Region of Waterloo, staff from the City of Waterloo and City of Waterloo Councillor Melissa Durrell was established to direct the planning of these improvements. The planning of these roadway improvements is being undertaken in accordance with the Regional Context Sensitive Corridor Design Guidelines, the Region’s Transportation Master Plan (TMP) and Active Transportation Master Plan (ATMP) and other relevant Regional policies and practices.

The sections of roadways within the study area are located within the Urban Core Area of the City of Waterloo and need to support future development intensification through prioritizing walking, cycling and public transit while accommodating significant peak hour traffic volumes.

Within the Study area, Bridgeport Road/Caroline Street is a one-way road (in the westerly direction) with three travel lanes. This section of Bridgeport Road/Caroline Street is classified as a Neighbourhood Connector – Main Street in the Regional Context Sensitive Corridor Guidelines and has a posted speed limit of 50km/hour. The abutting land use is a combination of residential, commercial and institutional properties. Traffic control signals exist at the intersections of Bridgeport Road and King Street, Bridgeport Road and Albert Street and Caroline Street/Erb Street. Sidewalks currently exist on each side of Bridgeport Road/Caroline Street from King Street to Erb Street, with the exception of a missing section on the south side of the road from Albert Street to Dupont Street. There are no designated cycling facilities on this section of Bridgeport Road/Caroline Street.

Erb Street from Caroline Street to King Street is a one-way road (in the easterly direction) with two travel lanes from Caroline Street to west of Albert Street and three travel lanes from west of Albert Street to King Street. There is a designated left-turn lane on Erb Street at Albert Street and vehicles can also turn left onto Albert Street from the adjacent through lane. Erb Street is classified as a Neighbourhood Connector – Main Street in the Regional Context Sensitive Corridor Guidelines and has a posted speed limit of 50km/hour. The abutting land use on Erb Street is a combination of commercial and institutional properties. Traffic control signals exist at the intersections of Erb Street/Caroline Street and Erb Street/King Street. Sidewalks exist on both sides of Erb Street and there are no designated cycling facilities. The existing storm sewer, City watermain and sanitary sewers are approaching the end of their service life and require replacement.

Albert Street from Bridgeport Road to Erb Street is a one-way, two lane roadway under
the jurisdiction of the City of Waterloo. As part of this Class EA Study, the City is considering improvements to Albert Street to enhance parking, pedestrian and cycling facilities.

2. Transportation Considerations

The Region of Waterloo’s Transportation Master Plan (TMP), updated in 2010, is a high-level strategic plan that assesses existing and future travel patterns for the Regional transportation system. The goals of the plan are to optimize the transportation system, promote transportation choice, foster a strong economy and support sustainable development. Bridgeport Road/Caroline Street and Erb Street provide important transportation links within the City of Waterloo, bringing travelers to and from Uptown Waterloo as well as east-west across the City. The TMP recommends that, within the project area, priority be given to walking, cycling, and public transit rather than driving alone, and aims to improve the cycling and pedestrian networks in the project area. The TMP does not identify a need to widen these sections of roadways.

The Regional Active Transportation Master Plan (ATMP) identifies Bridgeport Road/Caroline Street as an on-road cycling route with sidewalks on both sides of the roadway. There is insufficient space to maintain three (3) travel lanes for vehicles and include a designated cycling facility on Bridgeport Road from King Street to Albert Street without the removal of one through lane of traffic. The Project Team has confirmed that two through lanes on Bridgeport Road/Caroline Street from King Street to Erb Street, combined with a new designated right-turn lane on Bridgeport Road at Albert Street, is adequate to accommodate long-term forecast traffic volumes without undue delay or congestion.

Through consultation with the City of Waterloo’s Advisory Committee on Active Transportation and the Region’s Active Transportation Advisory Committee, the installation of a boulevard multi-use trail is being proposed under the Project Team's Recommended Design Concept along the north side of Bridgeport Road/Caroline Street in lieu of on-road cycling lanes in order to allow two-way movement of cyclists along this stretch of roadway. Since Bridgeport Road and Caroline Street are one-way streets within the project area, the Project Team believes that a boulevard multi-use trail providing two-way movement for cyclists is preferred over on-road or segregated cycling lanes, which would provide only one direction of travel. Additionally, the proposed boulevard trail on the north side of Bridgeport Road/Caroline Street would connect to the existing Iron Horse Trail at the intersection of Erb Street and Caroline Street and the two trail connections northwest of Dupont Street to Waterloo Park.

The ATMP also recommends a two-way cycle track on Erb Street within the project limits. Due to the extremely close proximity of the buildings on Erb Street, there is no room to accommodate cycling facilities within the roadway corridor in the project area without removal of an existing travel lane. A separate, broader study to consider
implementation of a two-way cycle track on Erb Street from Caroline Street to Margaret Avenue will be completed by the Region of Waterloo in the future. This study will consider removal of a travel lane on Erb Street from Caroline Street to Margaret Avenue to accommodate an on-road two-way cycle track. Until this study is completed, the transportation implications of removing a travel lane on Erb Street from Caroline Street to Margaret Avenue are unknown. Accordingly, the Project Team’s Recommended Design Concept does not include any designated cycling facilities on Erb Street within the project area. However, should the Region’s separate study ultimately recommend a two-way cycle track be implemented on Erb Street from Caroline Street to Margaret Avenue, the two-way cycle track on Erb Street from King Street to Caroline Street could, under the Project Team’s Recommended Design Concept, be implemented through means of revised roadway line markings and signage without the need for additional construction. Further, this could be incorporated into the planned 2018 construction of Erb Street if approved by that time. The Project Team does not recommend the implementation of a two-way cycle track on Erb Street from King Street to Caroline Street until the traffic implications of removing a through lane on Erb Street from Caroline Street to Margaret Avenue are known.

The ATMP also recommends sidewalks on each side of Bridgeport Road/Caroline Street and Erb Street. Sidewalks currently exist on the each side of these roads with the exception of a missing section on the south side of Bridgeport Road from Albert Street to Dupont Street. Construction of this missing section of Sidewalk is proposed under the Project Team’s Recommended Design Concept.

Bridgeport Road/Caroline Street from King Street to Erb Street and Erb Street from Caroline Street to King Street are within the Urban Core Area of the City of Waterloo and need to prioritize walking, cycling and public transit. Accordingly, the Project Team considered pedestrian crossings on Erb Street at the Albert Street intersection and on Caroline Street at the Dupont Street intersection. The Region’s current practice regarding mid-block pedestrian crossing facilities precludes the installation of a designated pedestrian crossing within 125m of a signalized intersection on a one-way road (200 metres on a two-way road). The intersection of Albert Street and Erb Street is located approximately 70 metres from the intersection of King Street and the intersection of Caroline Street and Dupont Street is located approximately 100 metres from the intersection of Caroline Street and Erb Street, accordingly these locations do not meet the minimum required distance for a mid-block pedestrian crossing.

3. **Public Consultation**

Plans for the proposed improvements were presented to area residents, businesses and stakeholders at a Public Consultation Centre (PCC) held at the Waterloo Clay and Glass Gallery on January 27, 2016. Notices for this PCC were mailed out to property and business owners within the project limits. Notices were also placed in the local
newspaper and road-side signs were placed in the vicinity to advise the public of the meeting. Staff from the Region of Waterloo and the City of Waterloo was present at the PCC to meet the public, receive input and respond to questions.

The PCC was attended by approximately sixty (60) people. Comments received by the Project Team were generally supportive of the proposed improvements. The Project Team received seven (7) comment sheets at the PCC and thirteen (13) e-mails following the PCC. All written comments received are included in Appendix ‘C’ of this Report. The Project Team’s responses to the written comments received are included in Appendix ‘D’ of this report.

The plans presented at the PCC are generally the same as the improvements proposed under the Project Team’s Recommended Design Concept. Minor changes to the proposed design based on public comments received have been reflected in the Recommended Design Concept.

4. **Recommended Design Concept**

Based on review of the technical studies completed for this project, relevant Regional policies, practices and guidelines and all public and agency comments received for this project, the Project Team is recommending that Regional Council approve the Recommended Design Concept for improvements to Bridgeport Road/ Caroline Street from King Street to Erb Street and to Erb Street from Caroline Street to King Street described as follows:

**Bridgeport Road/ Caroline Street from King Street to Erb Street:**

- Complete replacement of the pavement structure including new concrete curb and gutter;
- Replacement of the storm sewers;
- Replacement of the City’s watermain and sanitary sewer from King Street to 100 metres west of Albert Street;
- Construction of a 4.0 metre wide boulevard multi-use trail on the north side of Bridgeport Road from King Street to Dorset Street;
- Construction of a 3.0 metre wide boulevard multi-use trail on the north side of Bridgeport Road/Caroline Street from Dorset Street to Erb Street;
- Replacement of the existing 1.50 metre wide sidewalk on the south side of Bridgeport Road from King Street to Albert Street with 2.0 metre wide sidewalk;
- Construction of new 2.50 metre wide sidewalk on the south side of Caroline Street from Albert Street to Dupont Street;
- Replacement of the existing 1.50 metre wide sidewalk on the south/ east side of Caroline Street from Dupont Street to Erb Street with 2.0 metre wide sidewalk;
- Removal of the existing westbound curb lane on the north side of Bridgeport Road/Caroline Street from King Street to Erb Street to accommodate the proposed boulevard multi-use trail;
- Construction of a new designated westbound right-turn lane on Bridgeport Road...
at Albert Street; and
- Enhanced boulevard landscaping where space permits.

Erb Street from King Street to Caroline Street:
- Complete replacement of the pavement structure including new concrete curb and gutter;
- Replacement of the storm sewers;
- Replacement of the City’s watermain and sanitary sewer on Erb Street from King Street to Caroline Street;
- Replacement of the existing 1.50 metre wide sidewalk on the north side of Erb Street from 90 metres east of Caroline Street to 30 metres west of King Street with a 2.50 metre wide sidewalk;
- Replacement of the existing 2.0 metre wide sidewalk on the south side of Erb Street from Caroline Street to 100 metres west of King Street with a 2.50 metre wide sidewalk; and
- Removal of the existing designated left-turn lanes on Erb Street at Albert Street.

Please refer to Appendix “B” for drawings of the Project Team’s Recommended Design Concept for Bridgeport Road/Caroline Street, Erb Street and Albert Street.

The Recommended Design Concept for improvements to Albert Street from Erb Street to Bridgeport Road was approved by City of Waterloo Council on May 30, 2016 and is described in Appendix ‘E” this Report.

This report was previously presented to Planning and Works Committee on May 24, 2016. Letters advising of the recommendations in this Report TES-DCS-16-12 were mailed on May 2, 2016 to abutting property owners and those who registered at the January 27, 2016 Public Consultation Centre and were hand-delivered to tenants of directly abutting properties. At the May 24, 2016 meeting, Committee deferred this report to June 14, 2016 and requested staff to review the construction timing as discussed further in Section 8 of this report.

5. Property Requirements

The Recommended Design Concept does not require the acquisition of any property.

6. Heritage Impacts

Portions of the proposed works occur within the City of Waterloo’s MacGregor-Albert Neighbourhood Heritage Conservation District. There are a number of properties either abutting the roadway within the project area or located in close proximity to the project area that are designated under the Ontario Heritage Act, in addition to a number of non-designated properties with cultural heritage value or interest.

Construction of the proposed improvements to Bridgeport Road/Caroline Street, Erb
Street and Albert Street will be confined to the existing rights-of-way and is not expected to adversely impact any heritage properties.

Region and City Heritage Planning staff is being kept apprised of the plans for this project by the Project Team.

7. Estimated Project Costs

The estimated project cost to construct the roadway improvements and a portion of the storm sewer replacement on Erb Street and Bridgeport Road/Caroline Street improvements described the Project Team’s Recommended Design Concept for Bridgeport Road/Caroline Street, Erb Street and Albert Street is approximately $3,200,000. The City of Waterloo is responsible for the cost of the improvements to Albert Street, the replacement of the City’s watermain and sanitary sewer and a portion of the storm sewer replacement costs in an estimated amount of $1,200,000.

8. Construction Schedule

Construction of this project is currently scheduled to occur in 2018 in the Region’s 2016 Transportation Capital Program. In response to requests from Committee members at the May 24, 2016 Planning and Works Committee Meeting to defer construction to 2019, staff have confirmed that construction could be rescheduled to occur in 2019 with no scheduling impacts to other area projects. Staff will request and consider ongoing input from the Uptown Waterloo BIA, the City of Waterloo and other stakeholders regarding the timing of this project. Staff will provide the recommended timing of construction for this project through the development of the annual Transportation Capital Program.

9. Traffic Management during Construction

It is anticipated that through traffic will be maintained on Bridgeport Road/Caroline Street during construction with lane restrictions in effect. It will be necessary to fully close Erb Street from King Street to Caroline Street to through traffic in order to complete the construction. Through traffic and transit service will be detoured via Caroline Street and Allen Street. Local and emergency traffic will be maintained during construction on Erb Street.

Pedestrian access will be maintained along each street during construction. Where the sidewalk is close to deep excavations, the sidewalk will be separated from the work area by temporary fencing. Signage will be erected in order to direct pedestrians through the project area.

Emergency Medical Services will be advised of the traffic restrictions during the construction period. Grand River Transit (Route 5) and ION service will be maintained during construction through the intersection of Caroline Street and Erb Street.
10. **Next Steps**

Subject to approval of the Recommended Design Concept by Council, a Notice of Completion will be filed for this Class Environmental Assessment Study by means of advertisements in local newspapers and mailings to adjacent property owners, tenants and agencies, and the Project File will be placed on the public record for review for a period of 30 days. If no unresolved concerns are brought forward within the 30 day review period, preparation of the detailed design for the proposed works will be initiated.

**Corporate Strategic Plan:**

The recommended improvements to Bridgeport Road/Caroline Street and Erb Street support Focus Strategic Plan Objective 2.3 to build infrastructure for, and increase participation in, active forms of transportation (cycling and walking).

**Financial Implications:**

The Region’s approved 2016 Ten-Year Transportation Capital Program includes funds of $3,230,000 in years 2016 to 2019 inclusive for the roadway improvements and a portion of the storm sewer replacement on Erb Street and Bridgeport Road/Caroline Street to be funded from the Roads Rehabilitation Reserve Fund. The project budget will be reviewed as part of the development of the 2017 Transportation Capital Program and 10-year Capital Forecast to reflect the scheduled timing of construction.

**Other Department Consultations/Concurrence:**

Nil

**Attachments**

Appendix A – Study Area Key Plan

Appendix B – Drawings of the Recommended Design Concept

Appendix C – Written Comments Received at the January 27, 2016 Public Consultation Centre

Appendix D – Project Team Response to Public Comments Received

Appendix E – Recommended Design Concept for Improvements to Albert Street

**Prepared By:**  Jim Ellerman, Project Manager

**Approved By:**  Thomas Schmidt, Commissioner, Transportation & Environmental Services
Appendix “B” – Recommended Design Concept

BRIDGEPORT ROAD
(DORSET STREET TO KING STREET)
TYPICAL SECTION
N.T.S.

2.00m SIDEWALK
3.35m ONE-WAY LANE
3.65m ONE-WAY LANE
1.0m CONC
4.00m MULTI-USE TRAIL

SOUTH PROPERTY LINE
APPROX. 15.25m
NORTH PROPERTY LINE
BRIDGEPORT ROAD
(ALBERT STREET TO DORSET STREET)
TYPICAL SECTION
N.T.S.
CAROLINE STREET
(ERB STREET TO ALBERT STREET)
TYPICAL SECTION
N.T.S.
ERB STREET
(CAROLINE STREET TO KING STREET)
TYPICAL SECTION
N.T.S.
Appendix “C”

Public Comments Received from the January 27, 2016
Bridgeport Road/Caroline Street, Erb Street and Albert Street Reconstruction
Public Consultation Centre

Comments:

Proposed car lane widths are 3.65 meters on Bridgeport Road, and 3.35 meters on Albert Street. Wide lanes encourage motorists to speed, and increase the probability of collisions, as well as the severity of injuries when collisions occur. Since all of Streets are intended to carry motor vehicle traffic with a speed limit of 50 kilometres per hour, suggests that lane widths on Bridgeport/Caroline and Albert Street be no wider than 3.25 meters (which is the width allowed for each vehicle lane in the plan for Erb Street).

Erb should not be made three lanes with a sharrow lane, as planned; Some other way to maintain options in case a two-way cycle track on Erb between Caroline and Margaret is approved should be pursued.

A boulevard should be provided on Erb Street (perhaps if it turns out that Erb will have a cycle track). Having to walk directly adjacent to vehicle traffic lanes make for an extremely hostile experience, and not including a boulevard along Erb will mean foot traffic will be diminished.

A crosswalk should be provided – the report noted that counts of people crossing Erb at that location were insufficient to justify a crosswalk, but the count is lower than if a safe crossing were provided: currently, crossing at Albert Street is dangerous and most people would naturally be hesitant to undertake it.

Comments:

Intersections: Use crossrides, cycling must be accommodated on crossings for the Multiuse trails. Also, intersections with King should be protected. Finally, the intersection with Caroline is the most important intersection to get right, hopefully there will be some flexibility after Grandlinq is finished.

Albert: The bike lane is too narrow, 1.5 m minimum please (not including gutter). As well, the bike lane should be contraflow, with sharrows in the through lane, parking should be moved to the right for the contraflow bike lane on the left. Also, the bike lane should continue all the way to Erb St. Sewers should be moved out of the bike lane if possible.

Caroline: The multiuse trail should be 4 m wide because of the grade, and it should connect with adjacent trails on either side of the creek/lake.
Erb St: Needs improvement, sharrows are inappropriate here. The shoulder is unnecessary. TriTAG’s proposed design is a big improvement and I recommend using it. Removing the shoulder, adding a crossing, and making the right lane a turning only lane I believe are substantial improvements. My modifications would be to move the crossing back so that it occurs at the dividing island, and thus only requires pedestrians to cross 2 lanes, and to narrow the lane with sharrows to only 3 m wide.

Comments:

My understanding is that there will no longer be a “no right on red” sign for right turns at Albert turning onto Caroline. Please make sure that this actually happens. We are sick of having an unnecessary traffic jam outside our driveway.

Please consider placing pedestrian crossings away from some intersections, preferably with a “safe refuge” allowing pedestrians to cross one lane at a time.

Please consider “lines of sight”. The control box at Bridgeport/Albert hides adults. Children and those in wheelchairs are almost invisible here. It would be nice if cars were no required to stop here, and pedestrian crossing displaced up Albert to allow pedestrians to be visible to cars, and vice-versa.

Most of our traffic problems are caused by the Caroline/Erb intersection. I am amazed that there is no plan for this! My suggestion is to take the pedestrians off two sides of this intersection, and turn CIGI into a large one-way system.

Pedestrian crossings on the exits of two-lane intersections are dangerous. That is why they don’t exist in Europe.

Comments:

I think the painted shoulder on Erb between Caroline and Erb should be removed along with what looks to be seven or so proposed parallel parking spots in front of the Knox church and the curb brought out to where the painted shoulder would have ended.

a) this will reduce the distance people need to travel to cross Erb safely at Albert

b) for most people parallel parking on the right is challenging enough, attempting it on the un-natural and un-practiced left on a very busy street with fast moving traffic will be much harder. This will result in reduced safety and traffic flow for all road users.

The parallel parking on the left side of Albert seems unnatural; would it be better on the right?

The information sheet speaks of a lack of pedestrian crossings as evidence that safer crossing measures are not needed at Erb at Albert, but perhaps people do not cross because it is not safe; absence of evidence is not evidence of absence.

What about adding a diagonal crossing/scramble from north-west (Clay and Glass) to south-east (Waterloo Town Square) parallel to the LRT track that is activated whenever
the Ion comes through? The intersection will be at full stop every few minutes anyway, why not let the activate transportation users take full advantage of the stoppage?

I feel like this project, if implemented as is, would kill any future chance to make both Erb and Bridgeport bi-directional though which I think is the ideal solution. I would hope that the region and city would consider this potential implication prior to finalizing on this design. I would prefer to see Erb and Bridgeport both made in to two-way roads (one lane each direction) with a centre turn lane. Don’t two-way left turn lane (TWLTL) roads have as much capacity as a multi-lane road without a left turn lane? If that is the case, and since Erb and Bridgeport are not near reaching those capacities along the majority of their stretches, according to 2014 regional AADT data, it would make sense to make them more liveable, safer, and efficient/connected while not reducing the capacity. The two directional travel is also adding to the connectivity (more ways to get to the same place) of the street network and so if there is a crash or construction there are alternatives.

The crossing of Albert at Erb is vastly improved. The current multi-lane nature of Albert St is dangerous and T-intersection design reduces crossing distance, and turning speeds.

**Comments:**

**Albert:**

Lane width seems high for a non-arterial road, especially at the south end before bike Lane begins.

I would consider reverting Albert to two-way traffic rather than adding parking if not, possibly contra-flow bike lane

radius of left turn from Erb to Albert is much improved from ex., but the radius still seems high which will encourage turns at high speeds. Pedestrians will not have right-of-way (no stop sign or light), it will still be a difficult crossing.

**Erb:**

Sharrows are totally inappropriate in this application

**Bridgeport/Caroline:**

like the multi-use trail

like the lane configuration
Comments:

Adding a multi-use trail along Caroline provides a great bicycle link between King St and multiple trail entrances for Waterloo Park, and finally allows northbound cycle traffic up Caroline.

Crossing Albert on the north side of Erb will be made much easier. The current multi-lane off-ramp nature of Albert St is dangerous, making walking around the old Police Station unpleasant. The new T-intersection design reduces crossing distance, turning speeds, and even introduces new green space.

Reducing Caroline to two lanes helps solve the problem of traffic backing up in the right hand lane of Bridgeport east of King. Now traffic intending to go beyond King will use the centre lane, while those turning onto King and Regina Streets will be on the left and right hand lanes, distributing traffic better across the three lanes.

Albert St still needs a legal way to cycle southbound. By moving the parking to the east side of the road, there could be a contra-flow southbound bikelane on the west side, with the northbound lane shared between cars and bicycles, with a more appropriate use of sharrows. This also puts the parking on the traditional right-hand side, which will be easier for drivers to use. Parallel parking is tricky enough, and even more so when it’s on the opposite side of the car.

If the bicycle route along Bridgeport/Caroline is a multi-use trail, then why is there a southbound on-street bike lane and bike box approaching Erb? There is no way for bicycles to access the on-road bike lane from the trail, and if they could, it would be unsafe to merge cross the constant stream of right turning traffic. The intersection design assumes that cyclists are on the road instead of the multi-use trail, when the reverse should be true. We can’t keep ending trails at crosswalks, asking cyclists to dismount to continue. With the first cross-ride in Waterloo now in service at Erb/Peppler, there is now precedent for a two-way crossing on the west side of Caroline, which will finally allow the connection of the Laurel and Iron Horse trails.

The sharrows proposed for Erb St are inappropriate. Sharrows work on low speed roads, not major high-speed multi-lane arteries. Sharrows are not a replacement for dedicated cycling infrastructure, and 2016 should be the year we stop pretending they are.

The width of Erb St is drastically wider than the planned use. There is no need for 3 through lanes and a painted shoulder lane. Staff mention a potential possibility for on-road cycle tracks, “without the need for additional construction,” but it would require waiting for “a separate, broader study to consider implementation of a two-way cycle track on Erb Street from Caroline Street to Margaret Avenue [which] will be completed by the Region of Waterloo in the future.” In the meantime, Erb will remain gratuitously wide. A pedestrian crossing at Erb/Albert is dismissed, because there are fewer than
250 people crossing day, a number that is unlikely to change if Erb remains wide and hostile. Bridges are not built by counting the number of people swimming across a river; crosswalks should not be dismissed because few are willing to unsafely cross a high-speed 4-lane arterial.

Here is a potential way to correct some of these issues. The right hand lane of Erb is used as a turn lane for the WTS entrance, and for King St. To prevent the speeding, cars cannot use it to drive from Caroline to King, only allowing cyclists to continue through, in what will now be a much lower-speed lane. The painted shoulder on the north of Erb is now removed, with the sidewalk moved south where it was. A pedestrian crossover is installed at Albert, allowing direct access from Albert to The Shops at Waterloo Town Square.

Comments:

In general, I am strongly in support of the preferred alternative. In particular, I support the multi-use trail along Bridgeport. As someone who bikes frequently, I think this is more appropriate than on-road bike lanes here and will connect well with the planned uptown streetscape. I also support the replacement of the existing wide off-ramp to Albert with a safer and slower left-turn with better ability to cross Albert on foot.

I am not in support of implementing sharrows on Erb. While this was explained as a temporary measure until another study can be complete, I believe that this would be a misapplication of sharrows on a high volume road.

However, I do believe that creating a contiguous two-way cycling corridor on Erb through uptown is an important goal, so I look forward to what can be achieved with a two-way bike lane or multi-use trail segment.

I would ask the project team to look for ways to improve the ability for pedestrians to cross Erb between Caroline and King, near Albert.

Comments:

I feel that cyclists should travel in the same direction as cars do therefore only one bike lane if the street is one way.

Comments:

Generally in agreement with the proposed design. Do not think proposed reduction in lanes will have much of an impact. I support the addition of the multi-use trail.

Concerns are elimination of the channelized left turns on and off of Albert. I understand the marked pedestrian crossing at Erb and Albert, but why not use space for a left turn lane with yield to pedestrians. Left turn from Albert to Caroline looks tight with elimination of island.
Comments:

While I applaud the direction of more bike lanes and a more walkable core, a number of the changes proposed are going to have a very significant negative impact on my office building and cause extreme frustration – much like what we are currently seeing with the ION construction. Marsland Centre has approximately 350 people working in it plus the visiting clientele. Most people arrive and depart en masse at the start & end of regular business days. I agree that Albert Street traffic flow can be supported by narrowing to one lane. However, eliminating the dedicated left from Erb Street onto Albert is an error. There isn’t enough vehicle stacking room from King to your proposed T-intersection on Albert. Traffic will be significantly hindered in getting to 20 Erb. Trucks – deliveries, garbage, moving, shredding service, mail, couriers etc will also find the one lane 90 degree left very problematic. I realize that Albert is not a truck thoroughfare but deliveries to us and the library happen daily. Leaving the dedicated left but narrowing it down to one lane will both slow traffic and will provide a much shorter and safer pedestrian crossing than currently exists with the wide two lane racetrack.

Similarly, you drawing showing the elimination of the dedicated left turn lane from Albert onto Bridgeport/Caroline and choking it down to one northbound Albert lane at that intersection is going to be a nightmare. Vehicles leaving Marsland Centre presently looking to head up Erb towards Westmount cannot exit from Dupont onto Caroline unless very aggressive moves are taken as no one will let you in. The approach many tenants take is to head north on Albert and loop around onto Caroline at the back of the line. By narrowing Caroline down, you are going to aggravate the increasingly congested traffic. If Caroline gets backed up from Erb to Albert, which we currently see very often happening, and there is a car waiting to turn left from the chokepoint lane on Albert with nowhere to go and blocking all cars behind on Albert you have essentially created a full gridlock scenario. My suggestion – narrow Albert to one lane but keep the dedicated left as it is now.

The comment about removing the channelized island on Albert and Caroline is also an error. The island provides a pedestrian safety zone while still allowing unimpeded traffic flow.

What the changes have not addressed is the mid-block pedestrian crossing of Erb Street. This is where I see the most pedestrian issues currently. Marsland Centre has three main pedestrian entrances. See attached for clarification. Location A is the set of steps exiting mid-block beside the horticultural park and is far more heavily used than location B. This crossing of Erb is also heavily used for pedestrian traffic by Knox/Library/Perimeter and the trail through the Horticultural park across Erb to Waterloo Square / Atrium/ Angies etc. I would suggest a mid-block pedestrian activated crosswalk – it will only slow traffic when actually being used and the midblock location
provides ample car stacking space from the cross walk to Caroline St. People are inherently lazy and will not walk all the way to King to turn around and walk back the other side. This is a safety issue.

The other dangerous pedestrian hotspot that I see regularly and heavily used is crossing Caroline at Dupont to pick up the trail beside Perimeter – again people will not walk to the corner and Dupont is a natural entry to the trails around Silver Lake and entry to the Park.

Final comments – the proposed sidewalk on Caroline between Albert and Dupont on the library side where none exists now is an absolute waste of money. With a new separated multi use trail on the other side of the road, the sidewalk on the library side will never be used and no properties front on it.

Bridgeport Road is a main one way entry from the expressway into and through the Uptown Waterloo core and then carries up Erb Street towards Westmount. Erb Street acts as the major thoroughfare from Waterloo’s core back out to the expressway. To keep Uptown core business strong and vibrant, we actually want traffic flow through the core and we don’t want traffic diverted elsewhere. Every street in the City doesn’t have to have bike lanes or become a walking trail. Some streets still have to function to get people from A to B in an efficient and stress free manner.

**Comments:**

I’m pleased to see improved pedestrian and cyclist facilities in the preferred concepts. I like the way that the Erb/Albert intersection has been normalized, with improved pedestrian crossing.

It isn't clear how cyclists will move from multi-use trail on Caroline to the protected stop line at the corner of Erb & Caroline. Perhaps once Grandlinq finalizes their plans?

**Comments:**

Overall I think the proposed changes are a big improvement. I just have concerns about a few mismatches in capacity between different parts of the project and some other relatively minor points.

First, you have Bridgeport Rd. Westbound at two through lanes, and Erb St. Eastbound at three through lanes. This makes no sense; Erb St. and Bridgeport Rd. together form a single arterial running through town. How many two-way roads in town have a different number of lanes in the two directions? I would suggest making both streets have two through lanes. This frees up lots of space on Erb St. for bicycle lanes and better sidewalks or multi-use trails, and matches the capacity of the two roads together to Erb St. West of Caroline.
On a similar note, you still have the right turn from Bridgeport onto Erb at one lane. This again makes no sense. The turn lane is part of the Westbound flow along Bridgeport and Erb all the way across the city, which as noted above form a single arterial. How many other four-lane roads in the Region have a single intersection at which one of the directions is constricted to a single lane? Note: please don't respond that the intersection itself is the responsibility of the LRT project. It's the responsibility of every project to work together with related projects.

Albert St. should have contra-flow bicycle lanes. With eliminating the redundant vehicle lanes as you are already planning, there should be space for this.

There should be a pedestrian crossing of Erb St. at Albert, and Caroline at Dupont. The justification for not doing so (low pedestrian counts) is utterly bogus on major wide streets such as these (it's fine for narrower streets where people will cross in the absence of a signal). If the same decision-making was used for bridges, none would ever get built because how many people swim across, using a winch to pull their cars behind them, before the bridge is built? No, what must be done is an evaluation of how many people *would* use a crossing if it were built. These signals could be synchronized with the other signals in the area in such a way that they impose essentially no additional burden on through traffic.

Finishing on a positive note, I'm very happy to see a substantial pedestrian island at Bridgeport and Erb. If the right-turn lane could move further from the intersection, making the island bigger, that would be even better. The multi-use trail on Bridgeport is another big positive. I'm looking forward to seeing construction of an improved version of this plan.

**Comments:**

The intersection at Erb and Albert is much improved for the safety of pedestrians.

It is too bad that there is no discussion about changing Erb and Bridgeport to two-way streets.

It would be good to see more traffic calming measures in the Erb St section of your project. If the speed limit is maintained at 50km/h, you can be sure traffic will be going 60 km/h.

**Comments:**

Pleased that there will be no property requirement on 22 Bridgeport Rd. Suggest that prior to construction building inspections be undertaken. Church is historic building with pipe organ. The Church Sanctuary building is a key component of the heritage district in which it is located.
Concerned with the placement of a multi-use trail across the church’s property. The trail, as proposed, will pass in front of the church’s main entrance and are concerned that the intermixing of cyclists and pedestrians, specifically congregation members, many of whom are elderly could result in an unsafe condition for the pedestrians. Requests the Region reconsider the placement of the trail - suggests the following alternatives: (1) the trail be located on the opposite side of the road and sidewalk be placed on the church side of Bridgeport Road (2) Sidewalk be placed on the church side and a short stretch of either on-road bicycle lane or off-road segregated bicycle lane be provided from Dorset Street to Albert Street. Based on the drawings and suggested cross-section at this location it would appear that there is sufficient room to provide this alternative and we are wondering why it doesn’t appear to have been explored.

As per subsequent discussions with church staff, the region is willing to explore alternative solutions for the addition of private sidewalk facilities for access to the church entrance.

Comments:

This is a welcome improvement. More biking facilities are always good to see, especially segregated ones. The reconfiguration of the Erb/Albert intersection is especially important, as it currently renders walking on the north side of Erb very unpleasant.

Comments:

Though the plan has many highlights there are also significant shortcomings that keep the proposal from providing an equitable complete streets design in what is the most walkable area in our Region.

Firstly, the width of the proposed lanes falls outside the realm of best practices for safety of drivers, pedestrians and people on bikes. Multiple studies (link) have indicated that lanes wider than 3.25 m widths encourage speeding, which in turn increases the likelihood of accident and fatality in the case of pedestrian or cyclist impact. I understand the Regional standard calls for wider lanes but Uptown sees significantly higher pedestrian and cyclist traffic than most of the Region and should be held to a higher standard. Small changes in this respect can have a massive impact in saving lives (link) and all efforts should be made to mandate narrower lane widths in this high active-use area to improve safety.

Another major way in which safety can be improved is by moving the curb along Erb Street, where the proposal calls for it to abut the sidewalk and bringing it against the travel lane. This has the potential to improve walkability along the street by provide a grass median along the north side of the street to enhance the perceived and actual safety along the road for pedestrians. If this were to happen, the lane markings could also be adjusted to provide a smaller buffer along the North of Erb and a buffer between...
the through lane and the sidewalk on the South side of Erb. Today, this road sees little pedestrian traffic on account of feeling highly hostile to those street users. A likely increase in foot traffic will arise as a result of the significant volume of residents that are starting to call the Barrel Yards home and making their way to the businesses along King Street. All efforts should therefore be made here to enhance the pedestrian experience and encourage active use.

Additionally, a crosswalk should be provided at Albert Street to facilitate a better pedestrian connection. A vision of 0 pedestrian deaths (link) has been embraced by many municipalities around the world and should be a goal for our Region too. Personally, I have worked at the Marsland Centre for nearly a decade and know of co-workers who pick driving to businesses on the South side of Erb over walking because of the lack of a crossing here and others who are discouraged from patronizing the business they look out across the street because it would take too long to get there by walking to one of the crossings at King or Caroline. As stated above, this is a highly walkable area of our Region and should be held to a higher standard in that regard as a result.

The Albert street changes that have been proposed are great but could be improved by moving the parallel parking lane to the opposite side of the street. Without relocating the bike lane, the parked vehicles could serve as the Region’s first protected bike lane (link) by creating a safety buffer between moving traffic and the people on bikes. Many find it difficult to parallel in the traditional manner and will find it even harder to do so on the "wrong" side of the street. This could also address the issue of eliminating the left turn off Albert and onto Caroline by maintaining the short crosswalk distance at the intersection and while allowing for safe left turns off Albert with the travel lane on the left of the road.

Though the proposed EA for a trail on the North end of Erb Street is not completed in time for this project, a justification for suddenly widening Erb Street from a two lane road to a three lane road at this particular point must also be questioned. Vehicular left turns off the Bridgeport side of Caroline are minimal and likely to remain so. Vehicular right turns off Caroline onto Erb from the opposite direction are also going to remain limited given the ION related narrowing of the street. Traffic increases at this point will therefore be negligible. Without the need to widen Erb today it would be much easier to implement a bike trail along the North end of Erb street, should the EA indicate it is warranted. This would further enhance active use of the street by provide a measure of safety acceptable to those 8 to 80 years old (link). As proposed though, sharrows are completely inappropriate (link) on all but very minor roads.

Though again outside of the scope of this project, a consideration must be made to how the Erb and Caroline streets intersection is handled. Anything that can be done to alter the design of this intersection should be considered and pursued because this
intersection is a very important juncture for trail users in the city of Waterloo. It is for this reason, that the Erb/Caroline intersection is more than likely to become the busiest active transportation juncture in the Region over the coming years. Safety to all active users must therefore be benchmark setting and a bike box that forces trail users around right turning vehicles onto Caroline street, as proposed today is unsafe. A Dutch style junction along the north end of the intersection that connects to the trail on the South side of Caroline and the potential trail along Erb would significantly improve safety at this intersection and encourage use. There are many applied examples around the world of how to implement such an intersection with this video (link) serving as a great jumping off point.

I am excited to see attention is being given and changes are proposed to improve active use, safety and usability of this important area in the city of Waterloo and believe that with some of the above changes, this area of our Region can not only improve but become a hallmark of city planning that will be used as a benchmark throughout the Region and beyond.
Appendix “D”

Project Team Response to Public Comments Received from the January 27, 2016 Public Consultation Centre

The main comments received from the public followed by the Project Team’s response are noted below.

Comment - Support for the proposed improvements (7 comments)

The Project Team believes that the proposed improvements are generally well supported by the public.

Comment - Request for a pedestrian crossing on Erb Street at Albert Street (7 comments)

The Region’s current practice regarding mid-block pedestrian crossing facilities precludes the installation of a designated pedestrian crossing within 125m of a signalized intersection on a one-way road (200 metres on a two-way road) to avoid traffic queuing into the adjacent intersection. The intersection of Albert Street and Erb Street is located approximately 70 metres from the intersection of King Street and Erb Street and accordingly does not meet the minimum required distance for a mid-block pedestrian crossing.

Comment - Request to remove the proposed sharrows on Erb Street (6 comments)

Sharrows are green, on-road paint markings advising motorists that a travel lane is to be shared between vehicles and cyclists. The sharrows identified on the plans presented at the January 26, 2016 PCC on Erb Street from Caroline Street to King Street were proposed as an interim solution to provide a shared-use lane for vehicles and cyclists. However, upon further review of the comments received from the public and Advisory Committees, the Project Team has eliminated the sharrows on Erb Street from Caroline Street to King Street in the Recommended Design Concept.

Comment - Request for southbound cycling facilities on Albert Street (5 comments)

The preliminary plans for the proposed improvements presented at the January 26, 2016 Public Consultation Centre included only a one-way cycling lane in the northbound direction on Albert Street, in line with the direction of vehicular travel. Upon review of the comments received, the Project Team is now recommending a raised 1.5 metre southbound contra-flow cycling facility on Albert Street from Bridgeport Road to Erb Street and a shared-use lane for vehicles and cyclists in the northbound direction. This contra-flow cycling lane is separated from vehicular traffic by a raised
curb and gutter.
While contra-flow cycling facilities are not common in Waterloo Region, they have been installed successfully throughout a number of cities within Ontario and the rest of North America.

Comment - Provide cycling ‘cross-rides’ at intersections (3 comments)

A cross-ride is essentially a modified crosswalk that designates a specific area alongside a crosswalk for cyclists to cross without having to dismount their bicycle. There are 3 standard cross-ride applications summarized in Ontario Traffic Manual Book 18 – Cycling Facilities. Pavement markings indicating either separate spaces for cyclists and pedestrians, or mixed crossings, can be provided. Currently, the Region has implemented one cross-ride as a pilot project and will be monitoring how it functions over the next several months. If the pilot project is successful, a policy or practice will be developed to set out the specific design guidelines and applications for implementing cross-rides. The Project Team will review the application of cross-rides within the project limits during the detailed design stage of the project based on the Regional policy/practice established over the next months.

Comment - The painted asphalt area approaching Albert Street is unnecessary (3 comments)

The painted asphalt area on the north side of Erb Street approaching Albert Street has been provided to accommodate a future left-turn lane to ease traffic congestion if the two-way cycle track on Erb Street from Caroline Street to Margaret Avenue as recommended in the ATMP is ultimately approved and implemented. As the painted asphalt area can easily be converted to a dedicated left-turn lane by means of pavement markings, this will avoid the need for any future construction works to accommodate a future two-way cycle track on Erb Street.

Comment - Albert Street cycling facility is too narrow (3 Comments)

From the comments received, the Project Team has further reviewed the proposed design concept and is now recommending a raised 1.5 metre southbound contra-flow cycling facility on Albert Street from Bridgeport Road to Erb Street. While contra-flow cycling facilities are not a common occurrence in Waterloo Region, they have been installed successfully throughout a number of cities within Ontario and the rest of North America. The proposed contra-flow cycling lane on Albert Street will be raised and separated from traffic by curb and gutter.

Comment - Need to address congestion at the Erb Street and Caroline Street Intersection (3 Comments)

Based on forecast 2028 traffic volumes, the intersection of Caroline Street and Erb Street will operate acceptably under the Recommended Design Concept. The
narrowing of Bridgeport Road/Caroline Street from three (3) to two (2) lanes may improve traffic flow by better channelizing traffic and reducing weaving between lanes. The intersection will continue to be monitored for possible improvements in the future following the ION construction.

**Comment - Suggestion to Revert Erb Street and Caroline Street from one-way to two-way Roadways (2 comments)**

Converting these roads from one-way travel to two-way travel would affect the broader road network and is beyond the scope of this Class EA Study.

**Comment - Convert the Third Lane on Erb Street to a right-turn lane for Waterloo Town Square (2 Comments)**

The future implementation of a two-way cycle track on Erb Street, if approved, will require the removal of a travel lane to accommodate the cycle track. Under this condition, Erb Street would be reduced to two lanes of travel and both lanes would be required in order to accommodate through traffic volumes.

**Comment - Maintain a dedicated left-turn lane on Erb Street at Albert Street (2 comments)**

With 3 through lanes on Erb Street as proposed under the Recommended Design Concept, a dedicated left-turn lane from Erb Street to Albert is not required based on the traffic warrants. However, should the 2-way cycle track be implemented on Erb Street in the future, thereby reducing the number of through lanes on Erb Street from three to two, a dedicated left-turn from Erb Street to Albert would be provided. The “painted shoulder” on Erb Street identified in the Recommended Design Concept has been provided in order to accommodate this future left-turn lane without the need for further construction. The Project Team notes that it also received four comments indicating support for the proposed change to the intersection of Erb Street and Albert Street.

**Comment - Provide a dedicated left-turn lane on Albert Street at Caroline Street (2 comments)**

Under the Recommended Design Concept, there is a single lane of through traffic on Albert Street and no dedicated left-turn lane from Albert Street to Caroline Street. Based on existing and forecast traffic projections, the intersection of Albert Street and Caroline Street will operate acceptably with no dedicated left-turn lane. By narrowing the width of the intersection on Albert Street at Caroline Street, a shorter crossing distance is achieved for pedestrians.

**Comment - Lanes are too wide, promoting higher speeds (2 Comments)**

The preferred lane width for Regional arterial roadways is 3.35 metres except for curb
lanes on four-lane roadways with no bike lanes where the preferred lane width is 3.65 metres. Curb lane widths are designed to accommodate larger vehicles such as buses and to provide some snow storage in winter. The Recommended Design Concept proposes lane widths ranging from 3.35 metres to 3.65 metres for the curb lanes on Bridgeport Road/Caroline Street and 3.25 metres for the curb lanes on Erb Street. The lane widths on Erb Street are less than desirable but match the existing lanes widths.

**Comment - Parallel parking should be located on the east side of Albert Street rather than the west side the roadway (2 Comments)**

From the comments received, the Project Team has further reviewed the proposed design concept and is now recommending a raised 1.5 metre southbound contra-flow cycling facility on Albert Street from Bridgeport Road to Erb Street with the on road parallel parking on the east side of Albert Street.

**Comment - Consider pedestrian crossing on Caroline Street near Dupont Street (1 comment)**

The Region’s current policy regarding mid-block pedestrian crossing facilities precludes the installation of a crosswalk within 125m of a signalized intersection on a one-way roadway to avoid traffic queuing into the adjacent intersection. The intersection of Caroline Street and Dupont Street is located approximately 100 metres from the intersection of Caroline Street and Erb Street and accordingly does not meet the minimum required distance for a mid-block pedestrian crossing.

**Comment - No need for the proposed sidewalk on the east side of Caroline Street from Dupont Street to Albert Street (1 Comment)**

The ATMP recommends sidewalks on each side of Bridgeport Road/Caroline Street and Erb Street. Sidewalks currently exist on the each side of Bridgeport Road/Caroline Street from King Street to Erb Street, with the exception of a missing section on the south side of the road from Albert Street to Dupont Street. Also, the Region’s approved Pedestrian Charter recommends sidewalks on both sides of Regional roadways where feasible. The addition of the missing section of sidewalk on Bridgeport Road/Caroline Street from Albert Street to Dupont Street will provide greater opportunity for pedestrians to access the Urban Core Area and public transit.

**Comment - Provide traffic calming measures on Erb Street (1 Comment)**

Regional practice does not allow for the use of hard “on-road” traffic calming measures on Regional arterial roadways due to adverse effects on emergency service vehicle response times, noise from vehicles passing over the speed humps and general delays to traffic.
Comment - Sewers should be kept out of cycling lanes (1 Comment)

The Recommended Design Concept includes on-road cycling lanes only on Albert Street. The location of sewers will be reviewed during the detailed design phase of the project. Sewer grates and lids will be kept out of cycling facilities to the greatest extent possible. Also, side-inlet catch basins will be used where possible where on-road cycling facilities are present.

Comment - Extend the bike lane on Albert Street to Erb Street (1 Comment)

The plans presented at the January 27, 2016 PCC proposed terminating the on-road cycling on Albert Street lane north of Erb Street. From the comments received, the Project Team reviewed the proposed design concept following the PCC and is now recommending a raised 1.5 metre southbound contra-flow cycling facility on Albert Street from Bridgeport Road to Erb Street and a shared-use lane for vehicles and cyclists in the northbound direction, thus extending cycling facilities on Albert to Erb Street, which is reflected in the Recommended Design Concept.

Comment - Provide a boulevard between sidewalk and the road on Erb Street (1 comment)

Due to the constrained corridor of Erb Street from Caroline Street to King Street, there is limited space for a boulevard. In lieu of the addition of boulevards, the Recommended Design Concept includes wider sidewalks on Erb Street where possible.

Comment - Allow a diagonal or “scramble” crossing at Caroline Street and Erb Street during the ION crossing phase (since vehicle traffic will be fully closed during this phase anyway) (1 Comment)

A pedestrian scramble, also known as scramble intersection, is a pedestrian crossing system that stops all vehicular traffic and allows pedestrians to cross an intersection in every direction, including diagonally, at the same time.

The design and construction of the Erb Street and Caroline Street intersection is being completed under the Region’s ION project. Once the operational details of the LRT trains at the intersection of Erb Street and Caroline Street are established, options for pedestrian/cycling crossing opportunities could be investigated.
Appendix “E”

Recommended Design Concept for Albert Street from Bridgeport Road/Caroline Street to Erb Street

- Complete replacement of the pavement structure including new concrete curbs;
- Replacement of the City’s watermain, sanitary sewer and storm sewer;
- Conversion of the existing westerly curb lane on Albert Street from Erb Street to Bridgeport Road/Caroline Street from a through lane to a shared use lane for vehicles and cyclists heading in the northbound direction;
- Conversion of the existing easterly curb lane on Albert Street from Erb Street to Bridgeport Road/Caroline Street from a through lane to an on-road parallel parking lane;
- Construction of a southbound raised cycling lane on the west side of Albert Street from Erb Street to Bridgeport Road/Caroline Street;
- Replacement of the existing 2.0 metre wide sidewalk on the west side of Albert Street from Erb Street to Bridgeport Road/Caroline Street with a 1.50 metre wide sidewalk, to accommodate the proposed raised cycling lane;
- Replacement of the existing 1.50-2.50 metre wide sidewalk on the east side of Albert Street from Erb Street to Bridgeport Road/Caroline Street with a 2.0 metre wide sidewalk;
- Removal of the existing channelized islands at the intersection of Bridgeport Road/Caroline Street and Albert Street.
Region of Waterloo
Transportation and Environmental Services
Design and Construction

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016
File Code: C04-30 / 5994
Subject: Contract 2016-126, Westmount Road North (Regional Road 50)
Retaining Wall Replacement at University Avenue, City of Waterloo - Approval of Additional Contract Expenditure

Recommendation:
That the Regional Municipality of Waterloo approve an additional contract expenditure of $555,000 on Contract 2016-126 (Westmount Road Retaining Wall Replacement at University Avenue, City of Waterloo) to extend the length of the proposed retaining wall to accommodate a future multi-use trail.

Summary:
Contract 2016-126 was awarded to Xterra Construction Inc. on March 30th 2016 in the amount of $542,328.70 plus taxes (Council Report COR-TRY-16-26). The contract includes the replacement of an existing gabion-basket retaining wall on the east side of Westmount Road immediately north of University Avenue in the City of Waterloo. The existing retaining wall is deteriorating and needs replacement.

Initial work on a separate study indicated that a multi-use trail along the east side of Westmount Road would be desirable and would require an extension of the existing retaining wall. Construction of a possible multi-use trail in the future would be subject to completion of the study and Council approval of funding.

Savings could be achieved if the retaining wall under Contract 2016-126 is extended now for a possible future multi-use trail, rather than only replacing the wall where it is required today. Staff is therefore recommending that Council approve an additional contract expenditure of $555,000 (102%) on Contract 2016-126 to cover extra retaining wall costs required to provide sufficient boulevard width for a possible future multi-use trail.
The mid-review report of the 2016 Transportation Capital Budget includes an increase in this project’s budget which if approved would allow for this additional contract expenditure.

Report:

1. Background

Contract 2016-126 was awarded to Xterra Construction Inc. on March 30th 2016 in the amount of $542,328.70 plus taxes (Council Report COR-TRY-16-26). The contract includes the replacement of an existing gabion-basket retaining wall on the east side of Westmount Road immediately north of University Avenue in the City of Waterloo. The wall separates Westmount Road from the adjacent Laurel Creek and is deteriorating and is in need of replacement. The new wall is a sheet pile system with a life expectancy in excess of 75 years and construction is expected to start in August 2016.

A separate study is also underway that is investigating Active Transportation options along the entire 1.7km Westmount Road corridor from University Avenue north to Columbia Street. Work on this study indicates that a multi-use trail on the east side of Westmount Road is desirable along this corridor to provide pedestrian and cyclist facilities to service the University of Waterloo church colleges, residences and other parts of the campus. Recently work on this study identified that a future multi-use trail would require an extension of the existing retaining wall. Construction of a possible multi-use trail in the future would be subject to completion of the study and Council approval of funding.

The Region received very competitive pricing for the current retaining wall replacement. Savings could be achieved if the retaining wall under Contract 2016-126 is extended now for a possible future multi-use trail, rather than only replacing the wall where it is required today. By extending the wall in 2016 rather than under a separate future contract when a multi-use trail is constructed, there would be savings on overall construction costs for the retaining wall as well as less disruption to the travelling public. It would therefore be beneficial to complete the additional wall work while the Region has a contractor already working under the current contract in 2016 as it eliminates the need to re-tender a separate contract and have another contractor mobilize at a later date.
2. Additional Contract Scope and Cost

Contract 2016-126 includes 65 lineal metres of sheet piling. In order to accommodate a future multi-use trail, the length of the wall must be increased by 88 metres to a new total length of 153 metres. Beyond this length, Laurel Creek turns away from the roadway and there is sufficient boulevard space without a retaining wall to accommodate a future multi-use trail.

The Contractor has indicated that they would extend their tendered unit prices for the additional retaining wall length, if approved, to accommodate a future multi-use trail. There were nine competitive bids received for the early-2016 tender and staff feel that the low bidder’s unit prices represent good value for the work to be performed. The cost of the additional retaining wall is estimated to be approximately $555,000 which represents 102% of the original contract value.

In accordance with Section 36 of the Region’s Purchasing By-law, staff must obtain Council approval for contract over-expenditures in excess of 10% of the original approved contract value. Accordingly, staff is recommending that Council approve an additional contract expenditure of $555,000 on Contract 2016-126 to cover extra retaining wall costs required to provide sufficient boulevard width for a future multi-use trail.

3. Additional Budget

A report on the Mid-Year Review of the 2016 Transportation Capital Budget is being tabled at the June 14 2016 Planning and Works Committee meeting. The mid-year review report recommends that additional funds be included in this project’s budget which would allow for the extension of the retaining wall for the future multi-use trail. If the Mid-Year Review report is approved, there will be sufficient project budget to extend the retaining wall for a future multi-use trail.

Corporate Strategic Plan:

Award and completion of this contract will meet one or more of the strategic objectives under the Region’s Corporate Strategic Plan Focus Areas “Thriving Economy” and “Sustainable Transportation”.

Financial Implications:

The tender for Contract 2016-126 closed 27% (or $243,000) under the original project budget. The contract savings of approximately $243,000 were returned to the Roads Rehabilitation Reserve Fund. Additional funding of $555,000 would be needed to construct the additional retaining wall, to be funded 100% from Development Charges.

The Region’s 2016 Mid-Year Review of the 2016 Transportation Capital Budget includes a recommended budget increase on this project from $880,000 to $1,305,000,
which would allow for the extension of the retaining wall to accommodate the future multi-use trail. The overall $1,305,000 project cost includes the construction contract costs plus engineering and testing and would be funded $650,000 (49.8%) from the Roads Rehabilitation Reserve Fund and $655,000 (50.2%) from Development Charges.

Other Department Consultations/Concurrence:

Nil

Attachments

Nil

Prepared By: Ken Brisbois, Project Manager, Design and Construction

Approved By: Thomas Schmidt, Commissioner - Transportation and Environmental Services
Region of Waterloo
Transportation and Environmental Services
Design and Construction

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016  File Code: C2016-10 / 05656, 05702
Subject: Consultant Selection – Preliminary Design, Public Consultation, Detailed Design, Contract Administration and Construction Inspection Services for Proposed Improvements on Westmount Road (South of Victoria Street to Glasgow Street) and on Victoria Street (Lawrence Avenue to Fischer-Hallman Road), City of Kitchener

Recommendation:

That the Regional Municipality of Waterloo enter into a Consultant Services Agreement with Associated Engineering Ltd. of Kitchener, Ontario to provide consulting engineering services for preliminary design, public consultation, detailed design, contract administration and construction inspection services for proposed improvements on Westmount Road (South of Victoria Street to Glasgow Street) and on Victoria Street (Lawrence Avenue to Fischer-Hallman Road), City of Kitchener at an upset limit of $637,680.00 plus applicable taxes for the preliminary design and detailed design phases, with contract administration and construction inspection to be paid on a time basis in an estimated amount of $380,000.00 as described in Report TES-DCS-16-14 dated June 14, 2016.

Summary:

The Region of Waterloo is planning improvements on Westmount Road (South of Victoria Street to Glasgow Street) and on Victoria Street (Lawrence Avenue to Fischer-Hallman Road) in the City of Kitchener. The project includes a total distance of approximately 2,750 metres and the project limits are shown on the key map provided in Appendix “A”. Construction of the improvements is tentatively scheduled to occur in 2020 and the planning work of this project must commence in 2016 in order to allow sufficient time for public consultation, property acquisitions and utility relocations.
The proposed improvements on Westmount Road and on Victoria Street include rehabilitation of the roadway, sidewalk replacement, traffic signal modernizations, illumination, pedestrian refuge islands and the installation of cycling facilities. In addition, there are sections of watermain and sewers to be replaced on behalf of the City of Kitchener.

In order to meet the 2020 construction timeline, an engineering consultant must be hired now to undertake the preliminary design, detailed design and construction services as Region staff are currently committed to other capital projects.

A consultant selection process was conducted in accordance with the Region’s Purchasing By-Law and the Evaluation Team recommends that Associated Engineering Ltd. of Kitchener, Ontario be retained to undertake this assignment at an upset fee limit of $637,680.00 plus applicable taxes for the preliminary design and detailed design phases, with contract administration and construction inspection to be paid on a time basis in an estimated amount of $380,000 as described in Report TES-DCS-16-14 dated June 14, 2016.

Report:

1. Background

The Region of Waterloo is planning improvements on Westmount Road (South of Victoria Street to Glasgow Street) and on Victoria Street (Lawrence Avenue to Fischer-Hallman Road) in the City of Kitchener. The project includes a total distance of approximately 2,750 metres and the project limits are shown on the key map provided in Appendix “A”.

Westmount Road and Victoria Street are fully urbanized 4-lane roadways with a combination of residential, commercial, institutional and public uses, including the City’s Victoria Hills Community Centre, Gzowski Park, Monarch Woods Park and Filsinger Park / Henry Sturm Greenway. Both Westmount Road and Victoria Street are identified in the Region’s Transportation Corridor Design Guidelines as “Neighborhood Connectors (Avenue)” and are to be supportive of active transportation and transit. These roadways act as the primary transportation corridors in the area, provide transit service for many residents in the adjacent neighborhoods and accommodate approximately 40,000 vehicles on a daily basis.

The proposed improvements on Westmount Road and Victoria Street include rehabilitation of the roadways, sidewalk replacement, traffic signal modernizations, illumination and pedestrian refuge islands, as well as replacement of sections of watermain and sewers on behalf of the City of Kitchener. The rehabilitation of the roadways also provides an opportunity to consider the installation of cycling facilities on these sections of Westmount Road and Victoria Street, both of which are designated
on-road cycling routes in the Region’s Active Transportation Master Plan.

Planning of these improvements will be completed in accordance with the Schedule ‘A+’ requirements of the Municipal Class Environmental Assessment. This project is being led by a Project Team including staff representatives from the Region and the City of Kitchener, as well as Ward 8 Councillor Zyg Janecki.

Regional staff is fully committed to other capital projects at this time and therefore staff recommends that an external consultant be hired to complete this project. Regional staff has determined that it is necessary to commence the planning and engineering for this project immediately following approval in order to provide sufficient time to complete the design phases of the assignment, acquire property and complete utility relocations in advance of construction in 2020.

2. Consultant Selection

An invitation for Letters of Interest to provide planning, public consultation and engineering services for this project was advertised in The Waterloo Region Record newspaper on March 11, 2016, on the Region’s website and on the Ontario Public Buyers Association website. Eight (8) consultants submitted Letters of Interest. Following a detailed review of the submissions, four (4) firms were short-listed based on their qualifications. The detailed work plans and upset fee quotes for design activities, plus an estimate of fees for contract administration and construction inspection services from the short-listed consultants were then reviewed and a final selection was made based on the evaluation criteria.

The four (4) short-listed consultants were: Associated Engineering, IBI Group, Meritech and Walter Fedy.

The consultant selection committee consisted of:

- Eric Saunderson, Senior Project Manager, Design and Construction, Regional Municipality of Waterloo;
- Hanan Wahib, Senior Transportation Planning Engineer, Transportation, Regional Municipality of Waterloo; and
- Zyg Janecki, Ward 8 Councillor, City of Kitchener.

The evaluation criteria used for selecting the successful consultant were in accordance with the Region’s Purchasing By-law and included price as a factor in the selection process. These evaluation criteria and their respective weightings were as follows:

Quality Factors

| Project Approach and Understanding | 35% |

Docs# 2127477
Experience of the Project Manager 20%
Experience of the Project Support Staff 10%
Experience on Similar Projects 15%

**Equity Factors**
Current Workload for Region 3%
Local Office 2%

**Price Factor**
Upset Price 15%

The Letters of Interest submitted by the four (4) short-listed consultants demonstrated a good understanding of the project, capable project teams, and experience on similar projects. When considering all quality, equity and price factors, the submission from Associated Engineering Ltd. scored the highest. Associated Engineering Ltd. also had the lowest upset fee submission. Based on the above evaluation criteria, including the review of the detailed work plans, project approach, schedules and upset fees provided, the Project Team recommends that Associated Engineering Ltd. be retained to provide the preliminary design, public consultation, detailed design, contract administration and construction inspection services for this project.

3. **Scope of Work**

For this engineering assignment, the consultant will: undertake a complete review of required infrastructure for existing and future conditions; investigate a number of alternatives to accommodate new cycling facilities in both corridors; develop and assess transportation improvement/reconstruction alternatives including potential lane reductions on Victoria Street (between Westmount Road and Lawrence Avenue); conduct a public participation program to solicit feedback on the preferred design alternative; complete the preliminary and detailed design; assess the advantages and disadvantages of different construction staging alternatives; prepare contract drawings, specifications, and tender documents; obtain all necessary agency approvals; assist during the tendering period; provide contract administration and site inspection services during construction; prepare record drawings; and provide post-construction services during the warranty period. A breakdown of the recommended consultant’s upset fee is included in Appendix “B” attached to this report.

4. **Schedule**

Subject to Council’s approval of the consultant assignment, the proposed implementation schedule is as follows:
5. **Consultant’s Upset Fee**

The short-listed consultants provided an upset fee for professional services for public consultation and engineering design with an estimate of contract administration and construction inspection fees. For roadway projects, the time required for contract administration and construction inspection can vary significantly depending on weather conditions, unforeseen developments during construction, contractor performance, and other unknown variables. Because an upset fee does not lend itself well to these types of services, it has been the Region’s practice for road projects to pay for contract administration and construction inspection services on a time basis. It is recommended that this same practice be followed for this project. For budgetary purposes, Region staff has estimated the cost of contract administration and construction inspection services to be $380,000.00, which is based on the preliminary estimate of fees submitted by Associated Engineering Ltd. and a review of costs on similar projects.

**Corporate Strategic Plan:**

The completion of the proposed improvements on Westmount Road and Victoria Street would meet one or more of the Strategic Objectives under the Region’s Corporate Strategic Plan Focus Areas “Thriving Economy”, “Sustainable Transportation” and “Environment and Sustainable Growth”.

**Financial Implications**

The Region’s 2016 Ten Year Transportation Capital Program (TCP) includes $7,900,000 for the Region’s share of the proposed improvements on Westmount Road and on Victoria Street, to be funded from the Roads Rehabilitation Reserve Fund ($7,330,000, 93%) and from Development Charges ($570,000, 7%).

Associated Engineering Ltd.’s total fees for the preliminary and detailed design and contract administration/construction inspection are within the consulting fee allowance.
provided for in the total budget for this project, and represent 12.9% of the project budget, which is considered reasonable for a project of this scope. The 2016 Ten Year TCP includes a design budget of $200,000 for this project in 2016, which is sufficient funding to cover the scheduled consultant expenditures in 2016.

Other Department Consultations/Concurrence:

Nil

Attachments

Appendix A: Project Key Plan
Appendix B: Breakdown of Consultant’s Upset Fee

Prepared By: Eric Saunderson, Senior Project Manager, Design and Construction
Approved By: Thomas Schmidt, Commissioner, Transportation and Environmental Services
Appendix “A”

Key Plan

City of Kitchener

WESTMOUNT ROAD WEST SOUTH OF VICTORIA STREET TO GLASGOW STREET AND VICTORIA STREET LAWRENCE AVENUE TO FISCHER-HALLMAN ROAD CITY OF KITCHENER
Appendix “B”

Consultant’s Upset Fee - Associated Engineering Ltd.

Preliminary design, public consultation, detailed design and tendering for Westmount Road (South of Victoria Street to Glasgow Street) and Victoria Street (Lawrence Avenue to Fischer-Hallman Road), City of Kitchener.

Project Initiation, Data Collection and Background Review = $165,235.00

Class EA and Preliminary Design = $243,475.00

Detailed Design and Approvals = $182,330.00

Contract Documents and Tendering = $46,640.00

Total Upset Fee = $637,680.00
Region of Waterloo
Transportation and Environmental Services
Design and Construction

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016
File Code: 08317 - B
Subject: C2016-08 Consultant Selection – Detailed Design and Services during Construction for the New Hamburg Wastewater Treatment Plant Upgrades

Recommendation:

That the Regional Municipality of Waterloo enter into an Agreement for Professional Consulting Services with Stantec Consulting Ltd., to provide engineering services during the detailed design and services during construction for the New Hamburg Wastewater Treatment Plant (WWTP) Upgrades, the Township of Wilmot, at an upset fee limit of $1,510,624.00 plus applicable taxes.

Summary:

A Request for Consulting Engineering Services for the New Hamburg WWTP Upgrades was advertised in the Waterloo Region Record, Daily Commercial News and on the Region’s Purchasing website. A consultant selection process was followed in accordance with the Region’s Purchasing By-Law 04-093 for the procurement of goods and services and included price as a factor. When considering Quality, Equity and Price Factors, the submission from Stantec Consulting Ltd. of Kitchener, Ontario, scored the highest. The consultant evaluation team therefore recommends that Stantec Consulting Ltd. be retained to undertake this assignment for a total upset fee of $1,510,624.00 plus applicable taxes.

Report:

Background

The New Hamburg WWTP is located on Haysville Road, and provides tertiary treatment for wastewater generated in the communities of Baden and New Hamburg in Wilmot...
Township. The WWTP is owned by the Regional Municipality of Waterloo and operated under contract by the Ontario Clean Water Agency (OCWA).

The New Hamburg WWTP is an activated sludge plant with tertiary sand filtration and a rated capacity of 5,200m³/day. The treatment process consists of preliminary treatment, secondary treatment through Sequencing Batch Reactors (SBRs), tertiary sand filtration and Ultraviolet (UV) effluent disinfection. The treated effluent is continuously discharged into the Nith River.

In 2015 the Region completed a Class Environmental Assessment Study, Schedule C and Conceptual Design for the expansion of the New Hamburg WWTP. This study recommended that the plant treatment capacity be expanded from 5,200m³/day to 6,900m³/day.

The following work is planned to increase of the plant treatment capacity from 5,200m³/day to 6,900m³/day and includes:

- Construction of the additional sequencing batch reactor (SBR);
- Installation of the additional aeration blower and upgrade to SBR’s aeration;
- Installation of the motorized bar screen in the Headworks;
- Installation of the additional tertiary filter unit;
- Expansion of the UV disinfection system;
- Construction of a new natural gas line to the plant;
- Construction of the earth berm in the storage basin; and
- SCADA upgrades.

**Consultant Selection:**

In order to meet the scheduled September 2017 construction start date for the proposed work, a multi-disciplinary engineering consultant must be retained now to undertake the design, approvals, tendering, and contract administration for this work. On February 16, 2016, the Region of Waterloo placed advertisements on its website, the Waterloo Region Record and Daily Commercial News, inviting submissions from consultants for a Stage 1 proposal for detailed design and services during construction for the New Hamburg WWTP Upgrades. Six proponents submitted proposals. The consultant evaluation team shortlisted three proponents and requested Stage 2 – Workplan and Upset Fee submission. The following three proponents submitted a Stage 2 Proposal - detailed Workplan and Upset Fee:

- Stantec Consulting Ltd.;
- CIMA Canada Inc.; and
- Hatch Mott MacDonald Ltd.
Each proposal was reviewed by the consultant evaluation team consisting of: Tammy Bellamy, Senior Project Engineer (Water Services), Jorge Cavalcante, Manager, Engineering Planning (Water Services), and Jerry Borovicka, Project Manager, Environmental Projects (Design and Construction). The consultant selection process was carried out in accordance with the Region of Waterloo’s Purchasing By law 04-093 for the procurement of goods and services, and included price as a factor. The evaluation criteria were subdivided into Quality, Equity, and Price factors as follows:

**Quality factors**

- Project Approach and Understanding 25%
- Experience of the Project Manager 20%
- Experience of the Project Support Staff 20%
- Experience on Similar Projects 15%

**Equity Factors**

- Current Workload for Region 3%
- Local Office 2%

**Price Factor**

- Upset Price 15%

The consultant evaluation team evaluated the detailed work plans in the Stage 2 proposals of the three shortlisted proponents prior to opening the Upset Fee Envelopes. The Workplan of one of the proponents did not meet the Request for Proposal requirements. Therefore the consultant evaluation team returned the Upset Fee Envelope to this proponent unopened. The remaining two Upset Fee Envelopes were opened and evaluated.

When considering all Quality, Equity, and Price Factors, the consultant evaluation team evaluated the submission from Stantec Consulting Ltd. as the highest overall score with the lowest upset fee. Therefore, the consultant evaluation team recommends that Stantec Consulting Ltd. be awarded this assignment for an Upset Fee of $1,510,624.00 plus applicable taxes.

**Scope of Work**

The scope of work for the consulting assignment for the detailed design and services during construction for the New Hamburg WWTP Upgrades includes the following tasks:

- Task 1: Project initiation, background review and workshop with engineering and operations staff;
Task 2: Detailed design;

Task 3: Approvals;

Task 4: Tender administration and support;

Task 5: Contract administration and on-site construction inspection services; and

Task 6: Post-construction services.

Schedule

Subject to Council's approval of this assignment, it is anticipated that detailed design will commence in July 2016. It is anticipated that following the completion of the detailed design, construction will take place from fall 2017 to fall 2019.

Corporate Strategic Plan:

Award of this consulting assignment meets the 2015-2018 Corporate Strategic Plan objective to protect the quality and quantity of our water resources under Strategic Focus Area 3: Environment and Sustainable Growth.

Financial Implications:

The Region’s approved 2016 Wastewater Capital Budget and Forecast provides a total budget for project #8317 (Baden/New Hamburg Expansion) of $11,795,000 from 2016 to 2020. A total of $1,600,000 was allocated for engineering fees for this assignment. The consultant’s upset fee of $1,510,624.00 plus applicable taxes is within estimated cost for the engineering work for this project.

Other Department Consultations/Concurrence:

NIL

Attachments:

Appendix A: Breakdown of Consultant’s Upset Fees

Prepared By: Jerry Borovicka, Project Manager, Design and Construction

Approved By: Thomas Schmidt, Commissioner, Transportation and Environmental Services
Appendix A: Breakdown of Consultant’s Upset Fees

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Region of Waterloo
Planning Development and Legislative Services
Legal Services

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016

File Code: L07-90

Subject: Authorization to Expropriate Lands (2\textsuperscript{nd} Report) for Franklin Blvd Improvements (Regional Road 36) Project – Year 2 North (200m North of Clyde Road to 200m North of Avenue Road) and Year 2 South (125m South of Champlain Boulevard to 200m South of Main Street), in the City of Cambridge

Recommendation:

That Council of the Regional Municipality of Waterloo approve the expropriation of lands for the purpose of reconstruction of Franklin Boulevard from 200m North of Clyde Road to 200m North of Avenue Road (Year 2 North), and from 125m South of Champlain Boulevard to 200m South of Main Street (Year 2 South), in the City of Cambridge, in the Region of Waterloo as detailed in Report PDL –LEG -16-27 dated June 14, 2016, described as follows:

**Fee Simple Partial Taking:**

1. Part of Lot 7, Concession 12, being Parts 44, 53, 54 and 55 on 58R-18803 (Part of PIN 22656-0164 (LT)) (265 Avenue Road, City of Cambridge);
2. Part of Lot 7, Concession 12, being Parts 40, 41 and 42 on 58R- 18803 (Part of PIN 03813-0012 (LT)) (800 Franklin Boulevard, City of Cambridge);
3. Part of Lot 7, Concession 12, being Parts 27, 28, 29 and 30 on 58R-18803 (Part of PIN 03813-0013 (LT)) (710 Franklin Boulevard, City of Cambridge);
4. Part of Lot 7, Concession 12, being Parts 23, 24, 25 and 26 on 58R-18803 (Part of PIN 03813-0014 (LT)) (700 Franklin Boulevard, City of Cambridge);
v. Part of Lot 7, Concession 12, being Part 22 on 58R- 18803 (Part of PIN 03813-0015 (LT)) (692-696 Franklin Boulevard, City of Cambridge);
v. Part of Lot 7, Concession 12, being Part 21 on 58R- 18803 (Part of PIN 03813-0016 (LT)) (686 Franklin Boulevard, City of Cambridge);
vii. Part of Lot 15, Registered Plan 648, being Part 19 on 58R- 18803 (Part of PIN 03813-0100 (LT)) (654 Franklin Boulevard, City of Cambridge);
viii. Part of Lot 15, Registered Plan 648, being Part 18 on 58R- 18803 (Part of PIN 03813-0101 (LT)) (650 Franklin Boulevard, City of Cambridge);
ix. Part of Lot 15, Registered Plan 648, being Part 17 on 58R- 18803 (Part of PIN 03813-0102 (LT)) (2 Athlone Road, City of Cambridge);
x. Part of Lot 1, Registered Plan 648, being Part 3 on 58R- 18800 (Part of PIN 03813-0120 (LT)) (1 Athlone Road, City of Cambridge);
xi. Part of Lot 15, Registered Plan 1415, being Part 56 on 58R- 18803 (Part of PIN 22657-0225 (LT)) (111 Bayne Crescent, City of Cambridge);
xii. Part of Lot 14, Registered Plan 1415, being Parts 58 and 61 on 58R- 18803 (Part of PIN 22657-0227 (LT)) (107 Bayne Crescent, City of Cambridge);
xiii. Part of Lot 1, Registered Plan 1498, being Part 16 on 58R- 18803 (Part of PIN 03825-0059 (LT)) (4 Hilborn Avenue, City of Cambridge);
xiv. Part of Lot 6, Registered Plan 609, being Part 13 on 58R- 18803 (Part of PIN 03825-0055 (LT)) (657 Franklin Boulevard, City of Cambridge);
xv. Part of Lot 10, Registered Plan 609, being Part 1 on 58R- 18803 (Part of PIN 03825-0007 (LT)) (721 Franklin Boulevard, City of Cambridge);
xvi. Part of Block E, Registered Plan 1368, being Parts 5 and 6 on 58R- 18802 (Part of PIN 22673-0017 (LT)) (Land on SW Franklin Boulevard and Champlain Boulevard, City of Cambridge);
xvii. Part of Lot 5, Concession 10, being Parts 6 and 11 on 58R- 18801 (Part of PIN 03824-0099 (LT)) (200 Franklin Boulevard, City of Cambridge);
xviii. Part of Lot 1, Registered Plan 1433, being Part 4 on 58R- 18802 (Part of PIN 22674-0063 (LT)) (551 Champlain Boulevard, City of Cambridge);
xix. Part of Lot 5, Concession 10, being Parts 2 and 3 on 58R- 18801 (Part of PIN 03843-0008 (LT)) (330 Dundas Street South, City of Cambridge);
xx. Part of Block 38, Registered Plan 58M-241, being Parts 14, 15 and 18 on 58R- 18801 (Part of PIN 03845-0520 (LT)) (205, 225 & 235 Franklin Boulevard and 311 Dundas Street South, City of Cambridge);
xxi. Part of Lot 8, Registered Plan 1434, being Parts 1, 2 and 3 on 58R- 18802 (Part of PIN 03843-0042 (LT)) (550 Champlain Boulevard, City of Cambridge);

Permanent Easement - Drainage:

The right and easement, being an easement in gross, for itself, its successors
and assigns and anyone authorized by it, in perpetuity to, at any time enter upon
the following properties for purposes of constructing, installing, maintaining,
inspecting, altering, moving, replacing, reconstructing, enlarging and repairing, as
applicable, pipes, catch basins, swales, ditches and other works and
appurtenances thereto for the purpose of the transfer or transmission and
management of storm water, both above and below the ground and for every
such purpose and for all purposes necessary or incidental to the exercise of the
rights hereby created, through, over, upon, along and across the lands, and for
all such purposes together with the free, unimpeded and unobstructed access for
itself, its successors and assigns, servants, agents, contractors, workmen and
anyone authorized by it, and vehicles, supplies and equipment at all times and
for all purposes and things necessary for or incidental to the exercise and
enjoyment of the right and easement:

xxii. Part of Lot 7, Concession 12, being Parts 51 and 52 on 58R-18803 (Part
of PIN 22656-0164 (LT)) (265 Avenue Road, City of Cambridge);
xxiii. Part of Lot 7, Concession 12, being Part 64 on 58R- 18803 (Part of PIN
03813-0014 (LT)) (700 Franklin Boulevard, City of Cambridge);
xxiv. Part of Lot 1, Registered Plan 648, being Part 2 on 58R- 18800 (Part of
PIN 03813-0119 (LT)) (640 Franklin Boulevard, City of Cambridge);
xxv. Part of Lot 4, Registered Plan 609 and Part of Block 76 Registered Plan
1498, being Part 1 on 58R- 18800 (Part of PIN 03825-0132 (LT)) (639
Franklin Boulevard, City of Cambridge);
xxvi. Part of Block 38, Registered Plan 58M-241, being Part 23 on 58R- 18801
(Part of PIN 03845-0520 (LT)) (205, 225 & 235 Franklin Boulevard and
311 Dundas Street South, City of Cambridge);

Permanent Easement – Retaining Wall Maintenance:

The right and easement, being an easement in gross, for itself, its successors
and assigns and anyone authorized by it, in perpetuity to, at any time enter upon
the following properties for purposes of constructing, installing, maintaining,
inspecting, altering, moving, replacing, reconstructing, enlarging and repairing, as
applicable, a retaining wall, noise barrier and/or fence, through, over, upon, along
and across the lands, and for all such purposes together with the free,
unimpeded and unobstructed access for itself, its successors and assigns,
agents, contractors, workmen and anyone authorized by it, and
vehicles, supplies and equipment at all times and for all purposes and things
necessary for or incidental to the exercise and enjoyment of the right and
easement:

xxvii. Part of Lot 10, Registered Plan 609, being Part 2 on 58R- 18803 (Part of
PIN 03825-0007 (LT)) (721 Franklin Boulevard, City of Cambridge);
xxviii. Part of Lot 5, Concession 10, being Parts 7, 9 and 10 on 58R- 18801 (Part
of PIN 03824-0099 (LT)) (200 Franklin Boulevard, City of Cambridge);
Permanent Easement – Hydro Aerial:

The right and easement, being an easement in gross, for itself, its successors and assigns and anyone authorized by it, in perpetuity to, at any time enter upon the following properties for purposes of constructing, installing, inspecting, repairing, altering, enlarging, replacing, correcting, operating, and maintaining aerial hydro installations and infrastructure overhead, including cables, pipes, conduits of all kinds, all appurtenances thereto, and maintaining required clearance areas for same, herein referred to as the aerial utility plant, which may be determined necessary from time to time through, over, upon, along and across the lands, and for all such purposes together with the free, unimpeded and unobstructed access for itself, its successors and assigns, servants, agents, contractors, workmen and anyone authorized by it, and vehicles, supplies and equipment at all times and for all purposes and things necessary for or incidental to the exercise and enjoyment of the right and easement:

xxix. Part of Lot 7, Concession 12, being Parts 47, 50 and 52 on 58R-18803 (Part of PIN 22656-0164 (LT)) (265 Avenue Road, City of Cambridge);

xxx. Part of Lot 7, Concession 12, being Parts 35, 36, 37, 38, and 39 on 58R-18803 (Part of PIN 03813-0012 (LT)) (800 Franklin Boulevard, City of Cambridge);

xxxi. Part of Lot 7, Concession 12, being Parts 31, 32, 33 and 34 on 58R-18803 (Part of PIN 03813-0013 (LT)) (710 Franklin Boulevard, City of Cambridge);

xxxii. Part of Lot 14, Registered Plan 1415, being Parts 59 and 60 on 58R-18803 (Part of PIN 22657-0227 (LT)) (107 Bayne Crescent, City of Cambridge);

xxxiii. Part of Lot 1, Registered Plan 1498, being Part 15 on 58R-18803 (Part of PIN 03825-0059 (LT)) (4 Hilborn Avenue, City of Cambridge);

xxxiv. Part of Lot 10, Registered Plan 609, being Part 6 on 58R-18803 (Part of PIN 03825-0007 (LT)) (721 Franklin Boulevard, City of Cambridge);

xxxv. Part of Lots 13 and 14, Registered Plan 1415, being Parts 62 and 63 on 58R-18803 (Part of PIN 22657-0228 (LT)) (103 Bayne Crescent, City of Cambridge);

xxxvi. Part of Block E, Registered Plan 1368, being Parts 7, 8, and 11 on 58R-18802 (Part of PIN 22673-0017 (LT)) (Land on SW Franklin Boulevard and Champlain Boulevard, City of Cambridge);

xxxvii. Part of Lot 5, Concession 10, being Part 8 on 58R-18801 (Part of PIN 03824-0099 (LT)) (200 Franklin Boulevard, City of Cambridge);

xxxviii. Part of Block 38, Registered Plan 58M-241, being Parts 19, 22 and 23 on 58R-18801 (Part of PIN 03845-0520 (LT)) (205, 225 & 235 Franklin Boulevard and 311 Dundas Street South, City of Cambridge);
Permanent Easement – Hydro Anchor:

The right and easement, being an easement in gross, for itself, its successors and assigns and anyone authorized by it, in perpetuity to, at any time enter upon the following properties for purposes of constructing, laying down, installing, inspecting, repairing, altering, enlarging, replacing, correcting, operating, and maintaining hydro installations and infrastructure, both under ground and overhead, including cables, pipes, conduits of all kinds, all necessary poles, supporting wires and braces and other equipment and appurtenances thereto, herein referred to as the utility plant, which may be determined necessary from time to time through, over, upon, along and across the lands, and for all such purposes together with the free, unimpeded and unobstructed access for itself, its successors and assigns, servants, agents, contractors, workmen and anyone authorized by it, and vehicles, supplies and equipment at all times and for all purposes and things necessary for or incidental to the exercise and enjoyment of the right and easement:

xxxix. Part of Lot 7, Concession 12, being Parts 43, 45, 46,48 and 49 on 58R-18803 (Part of PIN 22656-0164 (LT)) (265 Avenue Road, City of Cambridge);

xl. Part of Lot 6, Registered Plan 609, being Part 14 on 58R-18803 (Part of PIN 03825-0518 (LT)) (647 Franklin Boulevard, City of Cambridge);

xli. Part of Lot 10, Registered Plan 609, being Parts 4 and 5 on 58R-18803 (Part of PIN 03825-0007 (LT)) (721 Franklin Boulevard, City of Cambridge);

xlii. Part of Lot 10, Registered Plan 609, being Part 7 on 58R-18803 (Part of PIN 03825-0008 (LT)) (711 Franklin Boulevard, City of Cambridge);

xliii. Part of Block E, Registered Plan 1368, being Parts 9 and 10 on 58R-18802 (Part of PIN 22673-0017 (LT)) (Land on SW Franklin Boulevard and Champlain Boulevard, City of Cambridge);

xliv. Part of Lot 5, Concession 10, being Part 1 on 58R-18801 (Part of PIN 03843-0286 (LT)) (350 Dundas Street South, City of Cambridge);

xlv. Part of Block 38, Registered Plan 58M-241, being Parts 12, 13, 16, 17, 20 and 21 on 58R-18801 (Part of PIN 03845-0520 (LT)) (205, 225 & 235 Franklin Boulevard and 311 Dundas Street South, City of Cambridge);

Temporary Easement – Hydro Anchor:

The right and easement, being a temporary easement in gross, for the free and unobstructed, right, interest and easement terminating on the 31st day of December, 2018, for itself, its successors and assigns, and anyone authorized by it, on over, under and through the following property for the purposes of constructing, laying down, installing, inspecting, repairing, altering, enlarging, replacing, correcting, operating, and maintaining hydro installations and infrastructure, both under ground and overhead, including cables, pipes, conduits...
of all kinds, all necessary poles, supporting wires and braces and other equipment and appurtenances thereto, herein referred to as the utility plant, which may be determined necessary from time to time through, over, upon, along and across the lands, and for all such purposes together with the free, unimpeded and unobstructed access for itself, its successors and assigns, servants, agents, contractors, workmen and anyone authorized by it, and vehicles, supplies and equipment at all times and for all purposes and things necessary for or incidental to the exercise and enjoyment of the right and easement:

Xlviii Part of Lot 10, Registered Plan 609, being Part 3 on 58R-18803 (Part of PIN 03825-0007 (LT)) (721 Franklin Boulevard, City of Cambridge);

And that staff be instructed to register a Plan of Expropriation for the property within three months of the granting of the approval to expropriate the property, as required by the Expropriations Act;

And that the registered owners be served with a Notice of Expropriation and a Notice of Possession for the property after the registration of the Plan of Expropriation and the Regional Solicitor is authorized to take any and all actions required to enforce such Notices including but not limited to any application pursuant to Section 40 of the Expropriations Act;

And that all above-referenced fee simple partial takings situated adjacent to an existing Regional public highway be acquired for road widening purposes and therefore be deemed to form part of the adjacent public highway in accordance with subsection 31(6) of the Municipal Act, 2001, S. O. 2001, c.25;

And that if no agreement as to compensation is made with an owner, the statutory Offer of Compensation and payment be served upon the registered owners of the property in the amount of the market value of the interests in the land as estimated by the Region’s appraiser in accordance with the Expropriations Act;

And Further That the Regional Solicitor be authorized to discontinue expropriation proceedings or any part thereof, in respect of the above described lands, or any part thereof, upon the registration on title of the required documentation to complete the transaction or if determined by the Commissioner of Transportation and Environmental Services that such lands, or any part or interest thereof, are not required for the subject Project.

**Summary:**

NIL

**Report:**

Regional Council has approved the reconstruction of the Franklin Boulevard (Regional Road 36) corridor from Pinebush Road to Myers Road, in the City of Cambridge (the “Project”). The Environmental Assessment was approved by Council in March 2010 and
by the Ministry of Environment in July 2011. This study investigated the need to increase traffic capacity on Franklin Boulevard and approved constructing roundabouts at the major intersections and reconstructing Franklin Boulevard with 4 lanes and a continuous raised centre median.

As a result of the potential for significant impacts of construction on traffic and the local community, the Franklin Boulevard improvements are planned and/or being completed in phases as follows (see attached Sketch Project Area in Appendix “A”):

**Year 1 South** – Main St. to Clyde Rd.
- Main Street roundabout – Currently under construction, to be completed by late Summer 2016
- Savage Drive roundabout – Currently open to traffic with surface course paving to be completed by late Summer 2016
- Clyde Road roundabout – Currently under construction, to be completed by late Summer 2016

**Year 1 North** – Bishop St. to Pinebush Rd.
- Bishop Street roundabout – Currently open to traffic with surface course paving to be completed by late Summer 2016
- Sheldon Drive roundabout – Currently open to traffic with surface course paving to be completed by late Summer 2016
- Pinebush Road roundabout – Currently under construction, to be completed by late Summer 2016

**Year 2 South** – Champlain Blvd. to Main St.
- includes roundabouts at Champlain Blvd. and Dundas St.
- utility relocation planned in 2016, road construction start planned in 2017

**Year 2 North** – Clyde Rd. to Avenue Rd.
- includes roundabout at Avenue Rd.
- utility relocation planned in 2016, road construction start planned in 2017

Avenue Rd. to Can-Amera Pkwy. – On Hold
- includes potential roundabouts at Saginaw Pkwy. and Can-Amera Pkwy. and signals at Glamis Rd.
- Council decision on this section won’t be made until Year 1 roundabouts have been in place for a year and an operational analysis has been conducted.
- earliest construction 2020, potentially later if roundabouts are not recommended and EA Addendum is required

All of the Year 1 properties have been expropriated and possession of the required land was obtained on October 31st, 2014.

The implementation of the Year 2 improvements directly impacts 32 properties as shown in Appendix “A” to this report. In the vicinity of the affected properties utility relocations are scheduled to commence in the fall of 2016, and road construction is scheduled to start in 2017.
Land acquisitions as outlined in the Recommendation are required from 28 of the privately-owned properties and they are fee simple partial takings for road widening purposes, roundabouts, multi-use trails and transit shelters. Permanent easements for Hydro, drainage and retaining walls are as indicated in the Recommendations of this Report, while one temporary Hydro anchor easement is also required. Acquisitions of two additional partial takings from Hydro One-owned property known municipally as 666 Franklin Boulevard and their transmission lands on the easterly side of Franklin Boulevard are required. City of Cambridge-owned partial takings are required from vacant land at the north-west corner of Franklin and Champlain Boulevards and from a walkway which runs between Bayne Crescent and Franklin Boulevard. These four (4) additional properties have not been included in the expropriation, as a negotiated agreement is expected.

Council approved the commencement of expropriation of the subject properties on February 23, 2016 as detailed in report PDL-LEG-16-12. The appropriate forms under the Expropriations Act were served in order to initiate formal proceedings under the Act for these properties. All of the affected property owners were previously contacted by Legal Services staff and informed of the project as well as the Region’s intention to commence the expropriation process and the Region’s Expropriation Information Sheet was provided to each of them. The affected property owners have also been provided with offers to purchase. Legal Services staff contacted all property owners and informed them of the Region’s intention to continue with the expropriation process in order to ensure that the construction timeline is maintained, including this report being presented to Council, as detailed in the Region’s Expropriation Information Sheet.

Council approval of the expropriations is being sought at this time to permit registration of the Plans of Expropriation this summer and possession of the required lands and interests in the fall of 2016 so that the majority of advance utility relocation work can be completed before winter which will facilitate the overall construction time line. Legal Services staff has been negotiating property acquisitions over the past several months and intends to continue negotiations with property owners in an effort to achieve settlements of their claims under the Act.

Upon Council approval of the expropriation of the properties, such approval will be endorsed upon on a certificate of approval on the Plan of Expropriation for those properties not acquired under agreement. The Plan will then be registered within three months of the approval. Ownership of the property vests with the Region upon the registration of the Plan. Notices of Expropriation and Notices of Possession are then served upon all registered owners, including tenants as shown on the assessment roll. The Region will take possession of the required lands at least 3 months after service of the Notice of Possession.

After the registration of the Plans of Expropriation and prior to the taking of possession
of the property the expropriating authority is required to serve the registered owners with an offer in full compensation for their interests in the land. The offer must be accompanied by the immediate payment of one hundred (100%) of the appraised market value of the land to the registered owners as estimated by the Region’s appraiser. The registered owners are also to be served with a report appraising the market value of the property, which report formed the basis for the offer of compensation.

The expropriation process is proceeding to ensure that the Region has possession of the land for advance utility relocations in 2016 and construction of the Franklin Boulevard roadway improvements at these locations in 2017.

The expropriation of the lands is on an “as is” basis and upon closing, the Region assumes all responsibility for the lands.

The Project Area and Affected Subject Properties are shown attached as Appendix “A”. A list of the individual and corporate owners of the fee simple interest in the subject lands is attached as Appendix “B”. Regional staff have conducted corporate profile searches of affected corporate property owners and the directors and officers are listed for each. This list does not include tenants, easement holders or holders of security interests in the subject lands.

**Corporate Strategic Plan:**

Implementation of this Project is in furtherance of Strategic Objective 2.4 which is to optimize road capacity to safely manage traffic and congestion.

**Financial Implications:**

The Region’s approved 2016 Transportation Capital Program includes a budget of $15,355,000 in 2016, $11,000,000 in 2017 and $980,000 in 2018 for Project 05549 RR36 Franklin Boulevard from Myers Road to Hwy 401 to be funded from the Regional Development Charges Reserve Fund.

**Other Department Consultations/Concurrence:**

Transportation and Environmental Services and Financial Services staff have been consulted in the preparation of this Report.

**Attachments**

Appendix “A” – Sketch Project Area and Affected Subject Properties

Appendix “B” – Corporate Profiles
Appendix "A" – Sketch Project Area and Affected Subject Properties
City-Owned Lands

Hydro-Owned Lands

Private Property Owners
Appendix “B” – Corporate Profiles

265 Avenue Road, City of Cambridge
  - Owner: Polish Club Cambridge
  - Annual Return: 6/15/2012
  - Directors/Officers:
    Jan Adams, Barbara Adams, Mary Cylwik, Grzegorz Dorozynski, Anna
    Kowalewska, Stella Kosuch, Andrew Szuba, Urszula Wlakowski,

800 Franklin Boulevard, Cambridge
  - Owner: FGP Franklin Limited
  - Annual Return: 4/9/2015
  - Directors/Officers:
    William Andrew Moffat

700 Franklin Boulevard, Cambridge
  - Owner: 4+ Real Estate Holdings Inc.
  - Annual Return: 4/18/2015
  - Directors/Officers:
    Albert Budding, Susan Budding

647 Franklin Boulevard, Cambridge
  - Owner: Centre Communautaire Francophone de Cambridge
  - Annual Return: 8/9/2008
  - Directors/Officers:
    Louise Bell, Lucien Bolduc, Normand Goulet, Deanna Guitard, Carloyn Jackson,
    Paul Andre Lemay

Land at South West Corner Franklin Boulevard and Champlain Boulevard
  - Pino Holdings Limited
  - Annual Return: 2/18/2015
  - Directors/Officers:
    Sandra Baldrey

200 Franklin Boulevard, Cambridge
  - Owner: Riocan Holdings Inc.
  - Annual Return: 11/12/2015
  - Directors/Officers:
    Raghunath Davloor, Cynthia Devine, Jonathan Gitlin, Naftali Sturm
350 Dundas Street South, Cambridge
- Owner: Freure Blair Crossing Limited
- Annual Return: 5/30/2015
- Directors/Officers:
  - David H Freure, Harold Freure

330 Dundas Street South, Cambridge
- Owner: Klotzco Holdings Inc.
- Annual Return: 1/27/2015
- Directors/Officers:
  - Mark Richard Edward Klotz, Michael James Klotz

205, 225 and 235 Franklin Boulevard & 311 Dundas Street South
- Owner: Camrich Holdings Ltd.
- Annual Return: 1/24/2015
- Directors/Officers:
  - Hoongkee Keem, Meensun Keem
0Region of Waterloo
Planning Development and Legislative Services
Legal Services

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016

File Code: L07-90

Subject: Authorization To Expropriate Lands (1st Report) for Improvements to Fountain Street (Regional Road 17) City of Cambridge from Kossuth Road / Fairway Road to Cherry Blossom Road (Phase 1)

Recommendation:

That The Regional Municipality of Waterloo direct and authorize the Regional Solicitor to take the following actions with respect to the expropriation of lands for the reconstruction of Fountain Street North, City of Cambridge, in the Region of Waterloo as detailed in report PDL-LEG-16-45 dated June 14, 2016:

1. Complete application(s) to the Council of the Regional Municipality of Waterloo, as may be required from time to time, for approval to expropriate land, which is required for the improvements to Fountain Street North and described as follows:

Fee Simple Partial Taking:

a) Part Block 5, Plan 58M-302, being Part 4 on 58R-18928, part of PIN 22628-0148 (LT)(1090 Fountain Street North, City of Cambridge);
b) Part Block 7, Plan 58M-302, being Parts 1 and 2 on 58R-18928, part of PIN 22628-0150 (LT)(1100 Fountain Street North, City of Cambridge);
c) Part Lots 19 and 20, Beasley’s Broken Front Concession, being Part 5, 58R-18928 and Part Lot 22, Beasley’s Broken Front Concession, being Part 1, on 58R-18942, part of PIN 03755-0013 (LT)(1055-1065 Fountain Street North City of Cambridge)
d) Part Lot 19, Beasley’s Broken Front Concession, being Part 4, 58R-18938, part of PIN 22740-0034 (LT)(2150 Fountain Street North, City of Cambridge)
e) Part Lot 19, Beasley’s Broken Front Concession, being Parts 2, 3, 6, 7, 8, and 9, 58R-18938, part of PIN 22740-0051 (LT)(south west corner of Fountain Street and Allendale Road, City of Cambridge)

f) Part Lot 19, Beasley’s Broken Front Concession, being Part 1, 58R-18938 part of PIN 03755-0043 (LT)(1105 Fountain Street North City of Cambridge)

Temporary Easement Partial Taking:

a) Part Block 7, Plan 58M-302, being Parts 7 and 8, 58R-18928, part of PIN 22628-0150 (LT)(1100 Fountain Street North, City of Cambridge);

b) Part Lot 19, Beasley’s Broken Front Concession, being Part 5, 58R-18938, part of PIN 22740-0034 (LT)(2150 Fountain Street North, City of Cambridge);

2. Serve notices of the above application(s) required by the Expropriations Act;

3. Forward to the Chief Inquiry Officer any requests for a hearing that may be received;

4. Attend, with appropriate Regional staff, at any hearing that may be scheduled;

5. Discontinue expropriation proceedings or any part thereof, in respect of the above described lands, or any part thereof, upon the registration on title of the required documentation to complete a transaction whereby the required interests in the lands are conveyed or if determined by the Commissioner of Transportation and Environmental Services that such lands, or any part or interest thereof, are not required for the subject project; and

6. Do all things necessary and proper to be done, and report thereon to Regional Council in due course.

Summary: NIL

Report:

Regional Council approved roadway improvements to Fountain Street from Kossuth Road / Fairway Road to Cherry Blossom Road on April 1, 2015 as detailed in Report TES-DCS-15-04. The project improvements include widening Fountain Street from Kossuth Road / Fairway Road to Maple Grove Road from two lanes to four lanes with centre median, re-paving the existing four lanes on Fountain Street from Maple Grove Road to Cherry Blossom Road, constructing a new roundabout at the intersection of Fountain Street and Maple Grove Road, and adding new boulevard multi-use trails on both sides of Fountain Street through the entire project limits.
Construction of Phase 1, which includes construction of the roundabout at Fountain Street and Maple Grove Road, the resurfacing of Fountain Street from Maple Grove Road to Cherry Blossom Road and construction of new boulevard multi-use trails, is currently scheduled for 2018. Reconstruction of Fountain Street from Cherry Blossom Road to Highway 401, including construction of new boulevard multi-use trails, previously approved separately by Council on November 4, 2014 in Report E-14-120, will also be undertaken under the same contract in 2018.

Construction of Phase 2 of Fountain Street, from north of Maple Grove Road to Kossuth Road / Fairway Road will be completed after 2018, based on ongoing coordination with planned commercial development on Fountain Street.

Land acquisitions for Phase 1 as outlined in the Recommendation will be required from seven (7) property owners. The acquisitions include fee simple partial takings from seven (7) properties and temporary easements from two (2) of these seven properties, for construction of the new roundabout and new boulevard multi-use trails.

All of the affected Phase 1 property owners, or their representatives, have been contacted by Legal Services Real Estate staff by one or more of the following means: in-person meeting, telephone, written correspondence and/or e-mail, to discuss the required acquisitions and have been informed of the Region’s intention to commence the expropriation process, including this Report going forward, to ensure project timelines are met. All property owners have been provided with the Region’s Expropriation Information Sheet explaining the expropriation process. A copy of the Expropriation Information Sheet is attached as Appendix “C”. The owners have further been advised it is the Region’s intent to seek a negotiated settlement prior to completion of the expropriation process and that the process has been commenced only to ensure possession of the required lands by the date set by Project staff in order to keep the project timeline in place. There is also an acquisition of a partial taking required from the City of Cambridge that has not been included in the expropriation as a negotiated agreement is expected. Should a negotiated settlement be reached with property owners and a conveyance of the required acquisition be completed before the Expropriation process is complete, that property will be dropped from the Expropriation process by the Regional Solicitor.

The expropriation of the lands is on an “as is” basis and upon acquisition the Region assumes all responsibility for the lands.

The subject lands are shown on the sketch attached as Appendix “A”.

A separate Expropriation Report for Phase 2 of the Fountain Street project from north of Maple Grove Road to Fairway Road/Kossuth Road is currently scheduled for late 2016 or early 2017.
Corporate Strategic Plan:

This Project supports the following two strategic objectives of the Corporate Strategic Plan: to optimize existing and new road capacity to safely manage traffic throughout Waterloo Region, and to develop, promote and integrate active forms of transportation (cycling and walking).

Financial Implications:

The Region’s approved 2016 Transportation Capital Budget includes $230,000 in 2016 and $4,330,000 in 2017-2020 for Fountain Street North from Highway 401 to Maple Grove Road (Project 05927) to be funded from the Roads Rehabilitation Reserve Fund (81%, $3,710,000) and Development Charge Reserve Fund (19%, $850,000). The Region’s approved 2016 Transportation Capital Budget also includes $500,000 in 2016 and $13,350,000 in 2017-2020 for Fountain Street North from Maple Grove Road to Kossuth Road (Project 07303) to be funded from the Development Charge Reserve Fund. Sufficient funding for the acquisitions outlined within this report is available in the 2016 project budget.

Other Department Consultations/Concurrence:

Transportation and Environmental Services staff have been consulted in the preparation of this Report.

Attachments

Appendix “A” – Sketch of Subject Lands

Appendix “B” – Corporate Profiles

Appendix “C” – Copy of Expropriation Information Sheet

Prepared By: Fiona McCrea, Solicitor, Property

Approved By: Debra Arnold, Regional Solicitor, Director of Legal Services
Appendix “B”

1. 1090 Fountain Street North, Cambridge  
   Owner: Custom Properties Inc.  
   Annual Return: January 20, 2010  
   Directors/Officers: Andrew Moffat, William Andrew Moffat, Robert Scott Walker  
   Fee Simple Partial Taking

2. South-west corner of Fountain Street and Allendale Road, Cambridge  
   Owners:  
   a) D5D Enterprises Limited  
   Annual Return: October 17, 2015  
   Directors/Officers: Brian R. Calder  
   b) Ratford Enterprises Inc.  
   Annual Return: March 28, 2015  
   Directors/Officers: Fred Ratford  
   Fee Simple Partial Taking

3. 1100 Fountain Street North, Cambridge  
   Owner: 1100 Fountain Street Inc.  
   Annual Return: July 4, 2015  
   Directors/Officers: Harprett Aroras, Paul Mathew, Shaheen Morar, Faisal Susiwala  
   Fee Simple Partial Taking and Temporary Grading Easement

4. 1055-1065 Fountain Street North, Cambridge  
   Owner: Toyota Motor Manufacturing Canada Inc.  
   Annual Return:  
   Directors/Officers: Brian Krinock, Jiim Lentz, Diana Galassi  
   Fee Simple Partial Taking

5. 1105 Fountain Street North, Cambridge  
   Owner: CP REIT Ontario Properties Limited  
   Annual Return: July 30, 2015  
   Directors/Officers: John Morrison, Bart Munn, Adam Walsh  
   Fee Simple Partial Taking
The following information is provided as a general overview of the expropriation process and is not legal advice. For complete information, reference should be made to the Ontario Expropriations Act as well as the more detailed information in the Notices provided under that Act.

Expropriation Information Sheet

What is Expropriation?

Governmental authorities such as municipalities, school boards, and the provincial and federal governments undertake many projects which require them to obtain land from private property owners. In the case of the Regional Municipality of Waterloo, projects such as the construction or improvement of Regional Roads sometimes require the purchase of land from private property owners. In many cases, the Region of Waterloo only needs a small portion of the private property owner’s lands or an easement for related purposes such as utilities, although in certain instances, entire properties are required.

Usually the governmental authority is able to buy the land required for a project through a negotiated process with the affected property owners. Sometimes, however, the expropriation process must be used in order to ensure that the land is obtained within a specific timeline. Put simply, an expropriation is the transfer of lands or an easement to a governmental authority for reasonable compensation, including payment of fair market value for the transferred lands, without the consent of the property owner being required. In the case of expropriations by municipalities such as the Region of Waterloo, the process set out in the Ontario Expropriations Act must be followed to ensure that the rights of the property owners provided under that Act are protected.
IMPORTANT NOTE: The Region of Waterloo tries in all instances to obtain lands needed for its projects through a negotiated agreement on mutually acceptable terms. Sometimes, the Region of Waterloo will start the expropriation process while negotiations are underway. This dual approach is necessary to ensure that the Region of Waterloo will have possession of all of the lands needed to start a construction project on schedule. However, it is important to note that Regional staff continues to make every effort to reach a negotiated purchase of the required lands on mutually agreeable terms while the expropriation process is ongoing. If agreement is reached, expropriation proceedings can be discontinued and the land transferred to the Region of Waterloo in exchange for payment of the agreed-upon compensation.

**What is the process of the Region of Waterloo under the Expropriations Act?**

- Regional Council considers a request to begin an application under the Expropriations Act to obtain land and/or an easement for a specific Regional project. No decision is made at this meeting to expropriate the land. This step is simply direction for the Region of Waterloo to provide a “Notice of Application for Approval to Expropriate” to affected property owners that the process has started to seek approval to expropriate the land.

- As stated in the Notice, affected property owners have 30 days to request a Hearing to consider whether the requested expropriation is “fair, sound and reasonably necessary in the achievement of the objectives” of the Region of Waterloo. This Hearing is conducted by a provincially-appointed Inquiry Officer. Prior to the Hearing, the Region of Waterloo must serve the property owner with a Notice setting out its reasons or grounds for the proposed expropriation. **Compensation for lands is not determined at this Hearing.** The Inquiry Officer can order the Region of Waterloo to pay the property owner up to $200.00 as compensation for the property owner’s costs in participating in this Hearing, regardless of the outcome of the Hearing.

- If a Hearing is held, a written report is provided by the Inquiry Officer to the property owner and the Region of Waterloo. Council must consider the Report within 90 days of receiving it. The Report is not binding on Council and Council may or may not accept the findings of the Report. After consideration of the Report, Council may or may not approve the expropriation of the land or grant approval with modifications. A property owner may wish to make written and/or verbal submissions to Council at the time that it is considering the Report.

- If no Hearing is requested by the property owner, then Council may approve the expropriation of the land after expiry of a 30 day period following service of the Notice of Application for Approval to Expropriate.
• If Council approves the expropriation then, within 3 months of this approval, the Region of Waterloo must register a Plan at the Land Registry Office that describes the expropriated lands. The registration of this Plan automatically transfers title of the lands to the Region of Waterloo, instead of by a Deed signed by the property owner.

• Within 30 days of registration of the Plan, the Region of Waterloo must serve a Notice of Expropriation on the affected property owner advising of the expropriation. Within 30 days of this Notice, the property owner may serve the Region of Waterloo with a Notice of Election selecting the valuation date under the *Expropriations Act* for calculation of the compensation.

• In order to obtain possession of the expropriated lands, the Region of Waterloo must also serve a Notice of Possession setting out the date that possession of the land is required by the Region of Waterloo. This date has to be 3 months or more from the date that this Notice of Possession is served on the affected property owner.

• Within 3 months of registration of the Plan, the Region of Waterloo must provide the affected property owner with payment for the full amount of the appraised fair market value of the expropriated land or easement and a copy of the appraisal report on which the value is based. If the property owner disagrees with this amount, and/or claims other compensation and/or costs under the *Expropriations Act*, the compensation and/or costs matter may be referred to a provincially-appointed Board of Negotiation in an effort to reach a mediated settlement and/or an appeal may be made to the Ontario Municipal Board (OMB) for a decision. In any event, the Region of Waterloo continues in its efforts to reach a negotiated settlement with the affected property owner prior to the OMB making a decision.
Region of Waterloo
Transportation and Environmental Services
Transit Services

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016  
File Code: D28-60(A)

Subject: Electronic Fare Management System Update

Recommendation:

For information.

Summary:

Regional Council approved the acquisition of an Electronic Fare Management System (EFMS) to be supplied by Scheidt & Bachmann on June 25, 2014, as described in Report F-14-085.

Beginning this July, the Region will begin installing new fare equipment on GRT buses, shown in Appendix 1, as part of the EFMS project. This project will then introduce smart card based electronic payment for all Region provided transit service in the fall of 2016, including the launch of the new EasyGO Fare Card, shown in Appendix 2. This card is an electronic purse and will store the value of prepaid cash, prepaid bus rides or in the case of bus passes and U-Passes allow for unlimited use each month or semester.

The Region is implementing the EFMS to make it easier for customers to obtain and use transit fares, integrate fare payment on ION service and will provide staff with improved travel data to assist with planning service improvements and developing new fare products. In addition, EFMS will provide the capability to integrate emerging payment technologies such as Open Payment or payment using mobile phones.

Before the launch of electronic payment, new fareboxes will be installed on buses, the system will be tested, EasyGO Fare Cards will begin to be issued to customers and retailers will begin to be equipped to support the new card system. In addition, a web portal will be launched to allow customers to manage their card accounts, and load fare products to cards for themselves and family members.
Following the introduction of electronic payment, GRT’s current paper tickets and bus passes will be phased out and paper transfers will be limited to cash paying customers only. A chart describing the customer experience for each of the payment options is outlined in Appendix 3.

EasyGO Fare Card holders will be able to register their card to an account. This will allow customers the option of loading their card using the new web portal. Registration will allow balances to be transferred should a card be lost or stolen. A negative card balance, valued at a single ride, will also be allowed for registered customers. This ride will be paid for when the customer refills their EasyGO fare card. Registration will be mandatory for concession customers but optional for all others.

Once cards are distributed, staff will begin to transition away from the current paper fare media. A communication plan is being developed to ensure customers know when the fare system will change, including notification of when GRT will stop selling and accepting paper passes and tickets. This transition will be complete before the fare equipment is installed on ION platforms in late 2017.

Implementation of EFMS and Proof of Payment on ION creates a requirement for the Region to undertake a fare enforcement program. ION fares will be paid on the platform and customers will be required to carry proof that a fare was paid. There will be no staff present to validate fares while customers board. Instead, inspectors will randomly check cards and tickets. A report will be presented at the August 9th meeting of the Planning & Works Committee recommending a Fare Enforcement Strategy.

In addition to beginning to roll-out new fare equipment for EFMS, during the summer 2016 staff will:

- Continue to work to develop agreements with U-Pass partners to integrate U-Pass with EFMS;
- continue to work with Community Services and community agencies to develop acceptable replacement processes for pass and ticket programs, and;
- work to finalize plans for EasyGO Fare Card rollout, retailer transition to new Point of Sale equipment, and the transition from current fare media to electronic media only.

Report:

The Region’s new Electronic Fare Management System (EFMS) is a stored value card-based electronic payment system for transit fares. The system centres on the use of the new EasyGO Fare Card to store fare products or cash value. Customers will pay for travel on all Regional transit modes using this new fare card.
The Region is implementing an electronic fare system for transit to help ensure seamless integration of all GRT bus, MobilityPLUS and ION LRT service. Fares and transfers will be accepted across GRT bus, ION LRT and MobilityPLUS services. The ION LRT will use a Proof-of-Payment (POP) fare system where fares are paid prior to boarding, and customers must carry proof that a fare has been paid while riding. With EFMS, fares paid on any transit mode can be validated as proof of payment on ION LRT, while fares paid on LRT platforms will also act as transfers to other transit modes.

The EFMS will also help make it easier for customers to buy transit fares by providing more purchase options, including the new Ticket Vending Machines (TVM), a web portal and in person at a transit terminal or retail fare agent. By making it easier to purchase fares, it will become easier to use the transit system. In addition the system will provide the Region with more detailed transit revenue data that will support creation of future fare types that also support achievement of the systems financial goals.

Stored value card based electronic payment for transit service is in operation throughout North America. In Ontario, the cities of Brantford, Kingston and London have implemented systems. As well, the Presto fare system, offered by Metrolinx, is in operation on GO Transit service as well as on local transit in the Cities of Brampton, Hamilton and Mississauga, Ottawa, the Town of Oakville and the Regional Municipalities of Durham and York. Presto is also in the process of being implemented in the City of Toronto.

While EFMS is a new technology for the Region, is will also act as a platform to support future fare payment technologies should the Region wish to implement them. EFMS can be expanded upon to include Open Payment, where credit/ debit cards can be used for transit fare payment and smartphone payment.

The project includes replacement fareboxes for GRT buses, handheld validators (HHV’s) for MobilityPLUS, Kiwanis Transit and BusPLUS vehicles, Ticket Vending Machines (TVMs) and Platform Validators (PVs) for ION platforms, card reload equipment for GRT Customer Service Terminals and Retail Fare Agents and a web portal to allow customers to manage their own cards. More information about EFMS equipment is included as Appendix 1.

EFMS will introduce new fare media to customers, and will eventually replace all current tickets, transfers and passes. The EasyGo Fare Card will be used for most applications and is a standard, credit card sized smart card. A variant of the EasyGO Fare Card with a photograph of the customer will be used for special programs where transit is free (ie: MobilityPLUS customers on GRT, Veterans, etc). In addition, a paper ticket/ transfer will be introduced that incorporates a 2D barcode for cash paying customers, and in future, a disposable, paper smart card that is not reloadable will be available from the Ticket Vending Machines (TVMs). Pictures of these fare media are included as Appendix 2.
The system is being provided by Scheidt & Bachmann Canada. This firm is the Canadian division of a global fare payment system provider. The Canadian headquarters of the vendor are located in Cambridge, ON. Selection of Scheidt & Bachmann was through an open Request for Proposals (RFP) process and recommended to Regional Council on June 25, 2014 (Report F-14-085)

Schedule

The EFMS will be rolled out in three stages

<table>
<thead>
<tr>
<th>Phase</th>
<th>Key functions delivered</th>
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<tbody>
<tr>
<td>Phase 1: Summer 2016</td>
<td>• New fareboxes, using current tickets and passes</td>
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</tbody>
</table>
| Phase 2: September 2016 – Summer 2017 | • Smart Card payment capability  
• Web portal commissioned  
• Customer service terminals  
• Field testing/ pilot  
• Retail transition  
• Card rollout  
• Fare media transition for customers |
| Phase 3: December 2016 – Fall 2017 | • Delivery & testing of ION fare equipment  
• Installation at ION platforms  
  o Final installation timing will be dependent on ION construction timelines and planned start of service  
  o Ticket Vending Machine (TVM) at each platform/ direction  
  o One Platform Validator (PV) at each end of each platform  
• TVM Installation at GRT Terminals  
  o Ainslie Street Terminal  
  o Cambridge Centre  
  o The Boardwalk  
  o Conestoga Mall |

Fare Product Changes

The EasyGO Fare Card will be the region’s new smart card for transit payment. The card will store passes, value, and transfers for transit fare payment. To use the card, the
customer would bring it close to the clearly marked card reader on the new farebox, Handheld Validator (HHV), Platform Validator (PV) or Ticket Vending Machine (TVM).

Unlimited use Monthly Passes will be able to be stored on the EasyGO Fare Card. When the card is issued to the customer, it is given access to a set of fares that would be available to that customer. For example, a card issued to a senior would have access to the Reduced Pass, and a card issued to someone using the TRIP program would have access to the TRIP pass.

The EasyGO Fare Card will carry a declining balance of value to be used for fare payment. This Stored Value will replace the current paper tickets. When a customer presents a card containing Stored Value to a reader the price of a ticket ride is deducted from the card and a 90 minute transfer is written to the card memory. The price of Stored Value rides will correspond to the price of current tickets.

The EFMS will also include a non-reloadable paper smart card for occasional users. This card will be available from Ticket Vending Machines on ION platforms. Paper smart cards will be able to be purchased with between 5 and 15 E-rides and will not be able to be re-used. Unused E-rides remain valid as long as they are stored on the card however, the card has a limited usable life.

A new paper ticket/transfer will be introduced with the new fareboxes. The new ticket is printed when requested, for customers who pay cash using the farebox. The new ticket is also printed for each single trip purchase made using the TVM. The ticket/transfer includes an encrypted 2D-barcode that stores the route and time of issue, and the 90 minute expiry time of the ticket. To redeem the ticket, the barcode is presented to an optical scanner included on each piece of fare equipment. If the scanner reads that the ticket has not expired, it validates the ride. The automated validation will eliminate any ambiguity associated with redemption of current paper transfers.

Other than these new EasyGO fare products, the system only accepts coins at the farebox and does not process paper cash bills.

EasyGO Fare Cards will need to be given a defined expiry date when issued to customers to ensure cards are replaced before they wear out. Because of this, access to concession fares will be adjusted to be age-based where possible. This means that the current Reduced Pass for High School Students will become a Youth pass for people between the ages of 13 and 19. The card will automatically expire when the holder leaves the concession age bracket. Other potential new fare categories may also require future policy changes.

It is possible that some EasyGO card holders may choose to share their cards with others. There is no mechanism to quickly identify that a person using the card is not its owner. As with today, customers using concession or discounted fare products must be
prepared to provide proof of eligibility if asked by an operator, or in future, by a fare inspector.

For customers whose card would allow them some form of free access to the transit system, the card will include a photograph, as shown in Appendix 2. This is not feasible for all transit customers but will be used for:

- High School students whose pass is paid for by Waterloo Region Student Transportation,
- MobilityPLUS customers to replace the MobilityPLUS photo ID card, and to validate their free access to conventional transit, and
- Community Services clients registered in the TAPP program.

**Registration**

EFMS Cards can be registered to an account in the EFMS database. The account records the holder’s name and contact information, for customer service use. If the customer wishes, the account can be configured for web access to allow the customer to load the card remotely. For cards that will have access to fares other than Adult Stored Value and Passes, (concession cards), registration will be mandatory. Registration will be optional for Adult (non-concession) cards.

Registration provides customers with a number of advantages including balance protection, negative balance and automated loading. If a registered card is reported lost or stolen, GRT will be able to prevent it from being used and transfer any balance on the card to a replacement. A registered card also can go into a negative balance of one ride before it will stop being usable. The registered customer would repay the value of this ride when reloading the card. Finally, registered users can configure their card via the web to automatically reload Stored Value once a pre-set balance is reached, or to load next months pass automatically.

**Data Gathering**

The system will have the capability to accommodate future fare products and strategies. Initially, EFMS will replicate the Region’s current fare strategy. As data are gathered regarding fare purchase and use rates by fare type, the Region will be able to make better informed decisions on future fare strategies.

While EFMS may collect customers’ personal data, this will be stored separately from travel data. Personal information will only be stored for customer service purposes and to allow customers to manage their own cards using the web portal. Fare purchase rates and travel data will be made available for analysis, but will not be able to be associated with any personal information.
U-Pass

U-Pass programs will be implemented via a list of valid cards. Using this list, student access to transit service under the U-Pass program can be granted or revoked within 24 hours. Validation of the U-Pass will be automated based on the card’s presence on the list. The process will eliminate any ambiguity associated with U-Pass usage by eliminating the need for a transit operator to manually verify eligibility and by providing rapid updating of valid card lists.

Automated U-Pass validation will be implemented in stages during Phase 2, based on the availability of card technology at the universities and the developing capability of the system. When the transition is complete in 2017, the EFMS will then have the capability to track U-Pass usage levels by contract. The Region’s U-Pass contracts will also need to be updated to reflect changing roles and responsibilities in this operating environment, including use of EFMS data for invoice generation.

Customer Media Change

Once a sufficient number of EasyGO Fare Cards are in service, the Region will announce dates on which current paper passes and tickets will not be sold or accepted. At least six months’ notice will be given before GRT stops accepting tickets. The transition will be performed fairly rapidly, to ensure that it is complete before the launch of the ION LRT, as the Proof of Payment environment on this line does not allow for acceptance of current fare media.

Retail Transition

A transition program for third party retailers will be necessary for the success of the launch of the EasyGO fare card. Customers who cannot, or do not wish to use the web portal to load cards will require a fare agent to load their card. Cards will be able to be reloaded at Charles Street and at Ainslie Street Terminals, as well as at 250 Strasburg Road. However, these locations will not be sufficient to support the volume of monthly pass loads alone. Region staff will work to ensure third party retailers, including Customer Service desks at Regional offices are prepared to provide this service to customers.

The transition will be challenging as each retailer will require an Attended Add Value Machine (pictured on page 13) to interact and add value onto the GRT fare card. This device will require an internet connection and will not be suitable for small retail counters. As well, due to the cost of the machine the number of retailers will be reduced.

Community Service Agencies

Elimination of current paper passes and tickets and the transition to electronic media
will also require a change in the business processes of community service agencies. The capability exists within EFMS to accommodate pass based programs like TRIP and TAPP. However, EFMS does not allow for the distribution of a single ride in the form of a ticket. Staff is working with agencies who engage in this practice to develop an acceptable alternative.

Presto integration

In Report No. P-13-106, dated November 12, 2013, Regional Council approved acquisition of the EFMS via a RFP process. Prior to this decision, staff completed a Request for Information process to determine whether the Region's fare system needs could be met by a reasonable number of system vendors and to review the potential of procuring the Presto fare system by negotiating a Memorandum of Understanding with Metrolinx in comparison with issuing a Request for Proposals (RFP).

At that time, the Presto system did not include some of the important EFMS functionality that the Region would require, including fareboxes, integration of Mobility PLUS and provision of a U-Pass. Presto is working on development of solutions for some of these gaps. In addition, because of ongoing development of the Presto hardware, software and business model, Metrolinx had not finalized operating or capital costs for the system in relation to installation in the Region.

EFMS will implement the currently agreed upon Connect-to-GO subsidy program where a GO Transit customer who shows a valid fare can ride to the GO Train station for $0.50 and the difference between this rate and the full ticket price is subsidized by GO Transit. Staff has been working with Metrolinx to develop a more seamless integration between the EFMS and the Presto card system that would benefit both inter and intra-regional transit customers.

Fare Enforcement is new to the Region

Electronic Fares and the Proof of Payment environment on ION will require that the Region undertake a fare enforcement strategy. EFMS will provide inspection devices that will allow inspectors to check that customers are carrying valid fare media. A report will be presented at the August 9, 2016 meeting of the Planning & Works Committee detailing the policy changes that will be associated with this.

Implementation Challenges

The EFMS implements a technology that is new to the Region and that requires a significant amount of change to internal business processes as well as those of external partners and to customer activities. The degree of change, and the technological scope of the EFMS system, which will impact multiple internal and external parties, will present
a number of challenges. Staff is working to address and minimize these challenges, and will work to minimize any effect on customers.

Reported transit ridership may be affected by the change to the electronic fare management system since it will provide a more accurate number of rides based on actual usage. Currently, GRT currently reports ridership for bus passes based on an expected average number of riders for each pass sold. This is an industry standard process and is based on customer surveys. For GRT monthly pass ridership is currently estimated at 55 rides per month. EFMS will precisely monitor the number of rides each pass holder takes, and the actual figure is expected to be different than the estimated figure. In addition, some customers may choose to share their EasyGO Fare Card, and the effect of this may be a small reduction in pass sales. More precise validation of U-Pass eligibility may also cause a reduction in ridership. Conversely, the improved accuracy of the 90 minute transfer validation should cause ridership to increase as there will be no ambiguity around when a transfer expires.

Not enough data is available on any of the above to say with a degree of certainty exactly what their cumulative effect will be, although some systems have experienced a 10 to 15% ridership reduction based on tracking actual ridership data through EFMS.

Overall transit revenue should not be significantly affected by the new system, although a revenue risk exists from the potential sharing of cards by customers. The method by which revenue is reported will change and the timing of revenue reporting may change. Currently ticket revenue is recorded as soon as the tickets are sold. With stored value, the revenue would be deferred and only recorded as revenue when the fare is paid.

**System Hosting**

Staff is currently in discussions regarding contracting with Scheidt & Bachmann to host the EFMS system, including the application of all transactions, database management and credit card processing. Contracting out system hosting was not part of the original vision for EFMS, but provides some advantages including improved disaster recovery and a reduction of the Region’s responsibilities for Payment Card Industry Data Security Standards (PCI/DSS) assessment. A report detailing system hosting and its attendant costs will be presented at the August 9 meeting of the Planning & Works Committee.

**Next Steps**

Two reports will be presented at the August 9 meeting of the Planning & Works Committee recommending policy changes associated with implementation of Fare Enforcement and the Proof of Payment environment on ION and another outlining the plans for hosting the e-commerce or back-end system for processing EFMS transactions.

In addition, staff will:
- develop agreements with the universities around implementation of valid card lists, and to modify U-Pass payment terms appropriately
- continue to work with community agencies to develop acceptable replacement processes for pass and ticket programs
- develop a plan for card rollout, to be implemented this fall
- continue to communicate with customers to ensure that they are prepared for new fareboxes which are expected to be installed in the first week of July.

**Corporate Strategic Plan:**

Supports the implementation of Council’s Strategic Focus area 2.1: Create a public transportation network that is integrated, accessible, affordable and sustainable.

**Financial Implications:**

The approved 2016 GRT Capital Budget includes $4,911,000 (Project 66059) to complete the EFMS project for conventional transit, MobilityPLUS and Bus Plus services. The project costs are budgeted to be funded from development charges (approximately $894,000) and debentures (approximately $4.02 million with debt service funded as part of the RTMP funding strategy). The approved 2017 Rapid Transit Capital Budget includes $3,798,000 for EFMS implementation on ION.

Operation and maintenance of EFMS will incur ongoing expenses. The system has a two year warranty which will expire in stages between 2018 and 2020. As the warranty expires, hardware and software maintenance costs will phase in. The total annual cost of hardware and software maintenance for EFMS will be $497,500.

**Other Department Consultations/Concurrence:**

EFMS is being implemented by the Transit Services division, with the assistance of Finance, Treasury Services, Legal, Information Technology Services and Rapid Transit.

**Attachments**

- Appendix 1: EFMS Equipment Summary
- Appendix 2: EFMS Fare Media
- Appendix 3: Customer Experience Summary

**Prepared By:** Gethyn Beniston, Project Manager, Transit Services

**Approved By:** Thomas Schmidt, Commissioner Transportation & Environmental Services
Appendix 1: EFMS Equipment Summary

**Electronic validating farebox**

- Rapid coin validation of up to 10 coins per second
- Integrated smart card reader
- Integrated encrypted 2D barcode ticket printer
- Integrated optical reader for barcode ticket validation
- Colour LCD passenger display shows:
  - Amount deposited
  - fare validated/ not validated from smart card
  - time remaining on transfer
- operator console shows:
  - status of all systems
  - passenger fare type paid
  - card rejection with reasons
  - barcode ticket/ transfer rejection with reason

**Handheld Validator (HHV) for busPLUS, MobilityPLUS and Kiwanis Transit**

- Integrated smart card reader
- Integrated encrypted 2D barcode ticket printer
- Integrated optical reader for barcode ticket validation
- Colour LCD display shows:
  - fare validated/ not validated from smart card
  - time remaining on transfer
Ticket Vending Machines (TVM) for ION Platforms

- Passenger friendly colour touchscreen display with intuitive user interface
- Accepts coins, bills, credit cards & debit cards
- Issues paper tickets with encrypted 2D barcodes for single journeys
- Integrated optical reader for barcode ticket validation
- Capable of dispensing reloadable smart cards, either carrying no value or loaded with value
- Dispenses limited use preloaded smart cards
- Reloads customer smart cards
- Designed in accordance with ADA and AODA guidelines; includes headphone jack, braille lettering and tactile elements

Platform Validators (PV) Fare Transaction Processors

- Low power, low maintenance device for mounting on ION platforms, for fast processing of fare payment validation
- Colour LCD display to provide rapid transaction status
- Accepts smart card payment
- Includes optical reader for barcode ticket processing
<table>
<thead>
<tr>
<th>Attended Add Value Machine for GRT Customer Service Locations and Retail Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Desktop Point of Sale for issuance and loading of EasyGO Fare Cards</td>
</tr>
</tbody>
</table>
Appendix 2: EFMS Fare Media

4. EasyGO Fare Card

4. EasyGO Fare Card with Picture

4. New Ticket/ Transfer

4. Limited Use/ Disposable EasyGO Fare Card
## Appendix 3: Customer Experience Summary

<table>
<thead>
<tr>
<th>Payment Method</th>
<th>On Conventional Transit</th>
<th>On MobilityPLUS, BusPLUS and Kiwanis Transit</th>
<th>On ION LRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>• Customer deposits coins in the new farebox</td>
<td>• Customer deposits coins in the existing farebox</td>
<td>• Customer selects single ride on Ticket Vending Machine (TVM)</td>
</tr>
<tr>
<td></td>
<td>• Farebox does not accept bills or make change</td>
<td>• Operator records cash fare using the HandHeld Validator (HHV)</td>
<td>• Customer pays single ride fare using coins, bills, Credit or Debit Cards.</td>
</tr>
<tr>
<td></td>
<td>• Invalid coins are rejected</td>
<td>• On BusPLUS, tickets can be requested for cash payment. The operator would print the ticket from the HHV</td>
<td>• TVM will issue change as appropriate</td>
</tr>
<tr>
<td></td>
<td>• Farebox display keeps a running total of coins inserted and fare remaining</td>
<td>• Ticket is valid for 90 minutes and includes an encrypted 2D barcode</td>
<td>• Contactless payment is available for Credit/Debit users</td>
</tr>
<tr>
<td></td>
<td>• A Ticket (transfer) can be requested anytime before fare payment is complete by pressing the transfer button below the customer display</td>
<td>• When the fare has been paid, the ticket is printed</td>
<td>• TVM issues single ride ticket</td>
</tr>
<tr>
<td></td>
<td>• Ticket (transfer) is valid for 90 minutes and includes an encrypted 2D barcode</td>
<td>• On BusPLUS, customer presents paper ticket barcode to optical scanner on HHV</td>
<td>• Ticket is valid for 90 minutes and includes an encrypted 2D barcode</td>
</tr>
<tr>
<td></td>
<td>• When the fare has been paid, the ticket is printed</td>
<td>• If ticket is valid, HHV makes a positive tone and indicates a valid transfer on the display</td>
<td></td>
</tr>
<tr>
<td>Stored Value (replaces paper tickets)</td>
<td>Monthly Pass Customers</td>
<td>U-Pass</td>
<td>MobilityPLUS Free on Conventional</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------------------</td>
<td>--------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>• Customer presents EasyGO Fare Card containing Stored Value to the smart card reader on the farebox (Conventional Transit), Handheld Validator (MobilityPLUS, BusPLUS, Kiwanis Transit), Platform Validator (ION LRT) or Ticket Vending Machine (ION LRT).</td>
<td>• Customer presents EasyGO Fare Card containing a valid monthly pass to the smart card reader on the farebox (Conventional Transit), Handheld Validator (MobilityPLUS, BusPLUS, Kiwanis Transit), Platform Validator (ION LRT) or Ticket Vending Machine (ION LRT).</td>
<td>• University student holding a valid U-Pass presents Student ID card to the smart card reader on the farebox (Conventional Transit), Handheld Validator (MobilityPLUS, BusPLUS, Kiwanis Transit), Platform Validator (ION LRT) or Ticket Vending Machine (ION LRT).</td>
<td>• EasyGO Fare Card with photo replaces the existing MobilityPlus ID.</td>
</tr>
<tr>
<td>• If sufficient value is present on the card, a fare is deducted, an positive tone is played, and the farebox indicates that the fare was accepted</td>
<td>• If a valid pass is detected, the ride is recorded, farebox makes a positive tone and indicates that a valid monthly pass was used on the display</td>
<td>• If the card holder has paid the U-Pass fee, the ride is validated, a positive tone is played and the display indicates a valid U-Pass including the name of the partner student association</td>
<td>• Card contains code indicating the bearer’s right to ride GRT bus and ION LRT for no fare</td>
</tr>
<tr>
<td>• a transfer is encoded in the memory of the EasyGO Fare Card for 90 minutes</td>
<td></td>
<td></td>
<td>• When presented to the smart card reader on the farebox, Platform Validator or Ticket Vending Machine, ‘Free on Conventional’ is validated and no fare is deducted.</td>
</tr>
</tbody>
</table>
Region of Waterloo
Transportation and Environmental Services
Transit Services

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016  File Code: D28-20

Subject: Family and Children’s Services Transit Update

Recommendation:
For information.

Summary:
Grand River Transit was asked by Council to look at providing transit service to the area around Family & Children’s Services and The Family Centre facilities on Hanson Ave. in Kitchener. Currently the shortest walk distance from these facilities to the closest bus stop is over 700 metres.

A new service operating out of Forest Glen Plaza is scheduled to begin in the Fall of 2016 and would utilize the BusPLUS contracted service. Options for routes in the area have been developed and staff are hosting a Public Consultation Centre on June 23rd, 2016 to obtain feedback from customers. The final routing and schedules will be brought back to Committee in August 2016.

Report:
At the Planning and Works Committee meeting on September 15th, 2015, “it was requested that an issue paper come forward during this year’s budget regarding providing some sort of transit service to [Family and Children’s Services and surrounding area] whether it be BusPLUS or another bus service.” This was in response to the Report TES-TRP-15-20 Pedestrian Access Improvements for the Hanson/Hayward Industrial and Alpine Village Area, Kitchener, Class Environmental Assessment – Project Update.
A Budget Issue Paper approved for the 2016 Budget, outlined a new transit service for this area using the BusPLUS service contracted by GRT. The new service would operate using smaller buses and pending final approval, would operate for approximately 12 hours per day, Monday to Friday. This route is anticipated to be anchored out of the Forest Glen Plaza transit terminal, where connections can be made to several other transit routes.

Options for the new route to serve Family and Children’s Services, The Family Centre and surrounding residential developments have been developed (Attachment 1). These options will be presented at a Public Consultation Centre (PCC) in June to obtain feedback and comments from the local community. The PCC is scheduled as follows:

**Thursday June 23rd**
3:00 p.m. to 7:00 p.m.
The Family Centre, Gymnasium
65 Hanson Ave., Kitchener

Public comments and feedback from the PCC will be taken into consideration when developing the final preferred routing. A report will be brought back to Committee on August 9th summarizing public comments and outlining the final route and schedule. Pending final approval, this route is scheduled to begin service September 5th, 2016.

**Public Notification and Advertising**

In advance of the Public Consultation Centre, notification will be sent out via various means including:

- Roadside signs erected at major intersections in the area;
- Notices of proposed service improvements and changes posted on the GRT website: [www.grt.ca](http://www.grt.ca);
- Comment forms available online and at the PCC;
- Mass emailing sent to those who subscribe to our rider e-alerts; and,
- Information will be sent out via GRT social media sites (Facebook and Twitter).

At all times when internet based comments are invited, provision will also be made for comments to be submitted by telephone, fax or conventional mail.

**Corporate Strategic Plan:**

Focus Area 2: Sustainable Transportation: This new service will contribute to Strategic Objective 2.1 Create a public transportation network that is integrated, accessible affordable and sustainable.
Financial Implications:

Council approved a budget issue paper as part of the 2016 Budget, allocating $178,000 to operate this new service. Costs for the PCC are covered within the Transit Services operating budget.

Other Department Consultations/Concurrence:

Budget and funding for this has been reviewed with the Finance Division

Attachments

Attachment 1 – Route Options

Prepared By: Chantelle Thompson, Planner, Transit Services

Approved By: Thomas Schmidt, Commissioner, transportation and Environmental Services
Attachment 1: Route Options

Route Option 1

Other GRT Routes

Forest Glen Plaza

0 125 250 500 Meters

Hanson Ave

The Family Centre

Family Children Services

Homer Watson Blvd

Lemonis Lewis Way

Block Line Rd

Block Line Rd

Fallowfield Dr

Bleams Rd

Stratford Rd
Region of Waterloo
Transportation and Environmental Services
Transportation

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016 File Code: T01-20/50

Subject: Traffic Control Signals on Westmount Road (Regional Road 50) and Union Boulevard, in the City of Kitchener

Recommendation:
For information.

Summary:
In June 2015, based on the current traffic counts, staff had identified that traffic control signals were warranted at the Westmount Road (Regional Road 50) and Union Boulevard intersection. At that time, southbound traffic on Westmount Road routinely “backed up” through the Union Boulevard intersection during peak periods. Staff determined that in order to consider new traffic control signals at the Westmount Road and Union Boulevard intersection, traffic flow along Westmount Road between Union Boulevard and Glasgow Street had to be improved.

Staff recommended reconfiguring the lanes on Westmount Road to include four through lanes without dedicated left-turn lanes which was approved by Regional Council on September 23, 2015. At that time, Regional Council requested that staff defer the installation of traffic control signals at the Westmount Road/Union Boulevard intersection and report back to Regional Council regarding the need for traffic control signals at the Westmount Road/Union Boulevard intersection in 2016. At the time, Council questioned whether or not the improvements to the Westmount Road/Glasgow Street intersection would result in traffic control signals not being justified at the Westmount Road/Union Boulevard intersection.
Based on new traffic counts conducted in 2016, traffic volumes entering and exiting the Westmount Road/Union Boulevard intersection have significantly decreased. Staff believe that the decrease is likely due to a combination of area construction and the recent reconfiguration of travel lanes at the Westmount Road/Glasgow Street intersection.

In light of the new lower traffic turning volumes at the Westmount Road/Union Boulevard intersection, traffic control signals need to be reassessed. Staff is recommending the deferral of the installation of traffic control signals at this location until such time that the need for signals can be reassessed based on representative traffic volumes. Staff plan to reassess the need for traffic control signals at this location using traffic counts obtained after the completion of construction within the general area of King Street and Caroline Street. It is anticipated that this construction will be completed in late 2016.

1.0 Background

In 2015 based on current traffic counts, staff had determined that the Westmount Road and Union Boulevard intersection required traffic control signals. However, given that the southbound traffic queued from Glasgow Street through the Union Boulevard intersection regularly, the proposed new traffic control signals at the Westmount Road and Union Boulevard intersection were anticipated to experience operational problems. As a result of these observations of queuing, staff determined that traffic flow along Westmount Road between Union Boulevard and Glasgow Street therefore had to be improved. Site visits and observations determined that the southbound queues typically extended through and beyond the Union Boulevard intersection.

To improve traffic flow along Westmount Road approaching Glasgow Street and to ensure safe and efficient operation of traffic control signals at the Westmount Road/Union Boulevard intersection, staff recommended reconfiguring the lanes on Westmount Road approaching Glasgow Street to provide two southbound through lanes. This revised lane configuration was approved by Council on September 23, 2015. However, Regional Council requested that staff defer the installation of traffic signals and report back in 2016 regarding the need for traffic control signals at the Westmount Road/Union Boulevard intersection. At the time, Council questioned whether or not the improvements to the Westmount Road/Glasgow Street intersection would result in traffic control signals not being justified at the Westmount Road/Union Boulevard intersection or if queuing would be sufficiently reduced on Westmount Road.

2.0 Existing Conditions

Westmount Road is a north/south roadway with two lanes in each direction. Where it intersects Union Boulevard there is a shared though/right-turn lane and a shared through/left-turn lane in both the northbound and southbound directions. Westmount
Road is free flow and Union Boulevard is stop controlled. The AADT entering the Westmount Road/Union Boulevard intersection is 19,859 vehicles per day.

Where Westmount Road intersects Glasgow Street there is now a southbound shared though/right-turn lane and a shared through/left-turn lane. In the northbound direction there is also a shared through/right-turn lane and a shared through/left-turn lane. The intersection is controlled by traffic control signals. The Average Annual Daily Traffic (AADT) entering the Westmount Road and Glasgow Street intersection is 30,663 vehicles per day.

The posted speed limit along this section of Westmount Road is 50 km/h.

Appendix A shows a map of the general area and the subject intersections. Appendix B shows the existing lane configuration at the Westmount Road and Union Boulevard intersection. Appendix C shows the current lane configuration (approved in 2015) at the Westmount Road/Glasgow Street intersection.

3.0 Westmount Road at Glasgow Street Operation Review

3.1 Operational Review

Prior to the lane reconfiguration in 2015, southbound motorists on Westmount Road frequently queued from Glasgow Street through to the Union Boulevard intersection (approximately 310 metres). Observations of operations with the revised lane configuration show that southbound motorists along Westmount Road now queue back to Claremont Avenue (approximately 165 metres). Under the original lane configuration southbound travel time along Westmount Road between William Street and 200 metres south of Glasgow Street was previously measured at 2 minutes and 12 seconds. Since the lane reconfiguration, the average travel time has been reduced by approximately 50%.

3.2 Collision Review

Based on information provided by the Waterloo Regional Police Services, there have only been three collisions since the lane configuration changes in October 2015 at the Westmount Road/Glasgow Street intersection. Of the three collisions, two collisions involved a northbound motorist attempting a left-turn from Westmount Road onto Glasgow Street. Staff does not believe that the two turning collisions are cause for concern because the Region’s collision prediction model estimates 1.3 turning collisions per year and because the intersection experienced an average of 1.6 turning collisions per year prior to the lane reconfiguration. Staff will continue to monitor left-turn collisions and should turning collisions become problematic, staff would report the information to Region Council and recommend appropriate countermeasures.
4.0 Westmount Road at Union Boulevard Traffic Control Review

In March 2016, staff undertook a turning movement count to collect both vehicular and pedestrian volume during the busiest eight hours of a typical day (7:30 a.m. to 9:30 a.m., 12:00 p.m. to 2:00 p.m. and 3:00 p.m. to 6:00 p.m.).

A review of vehicular volume entering the intersection shows that vehicular volume turning from Westmount Road onto Union Boulevard has decreased significantly. A significant number of southbound motorists are no longer turning left onto Union Boulevard. Also, there is a significant decrease in the number of motorists travelling westbound along Union Boulevard and turning onto Westmount Road. In total, the volume utilizing Union Boulevard has decreased by approximately 1800 vehicles over an eight-hour period when compared to the previous traffic count (June 2014).

As a result of the significantly lower volume, traffic control signals are no longer warranted.

Staff believes that the volume decrease is likely due to the construction along the King Street corridor, including the full closure of the King Street/Union Boulevard intersection. Staff suspects that operational improvements at the Westmount Road/Glasgow Street intersection may also be contributing to the volume decrease.

5.0 Recommendations

In light of the new lower traffic turning volumes at the Westmount Road/Union Boulevard intersection, staff is recommending the deferral of the installation of traffic control signals at this location until such time that the need for signals can be reassessed based on representative traffic volumes. Staff plan to reassess the need for traffic control signals at this location using traffic counts obtained after the completion of construction within the general area of King Street and Caroline Street. It is anticipated that this construction will be completed in late 2016. Staff will also continue to monitor operations and collisions at the Westmount Road/Glasgow Street intersection.

Corporate Strategic Plan:

This report addresses the Region’s goal to optimize road capacity to safely manage traffic and congestion (Strategic Objective 2.4).

Financial Implications:

Nil

Other Department Consultations/Concurrence:

Nil
Attachments:

Appendix A – Map of General Area and Subject Intersection

Appendix B - Westmount Road and Union Boulevard Lane Configuration

Appendix C – Westmount Road and Glasgow Street Lane Configuration After 2015 Lane Changes

Prepared By: Mike Jones, Supervisor, Traffic Engineering

Approved By: Thomas Schmidt, Commissioner of Transportation and Environmental Services
Map of General Area and Subject Intersection
Westmount Road and Union Boulevard
Westmount Road and Glasgow Street Lane Configuration After 2015 Lane Changes
Region of Waterloo
Transportation and Environmental Services
Transportation

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: June 14, 2016   File Code: T04-10/RA

Subject: Proposed Level 2 Pedestrian Crossover Installation at All Roundabouts Under Regional Jurisdiction, in the Region of Waterloo

Recommendation:

That the Regional Municipality of Waterloo amend Traffic and Parking By-law 06-072, as amended, to:

a) Remove from Schedule 18, Rates of Speed, 80 km/h on Fischer-Hallman Road (Regional Road 58) from 375 metres south of Bleams Road (Regional Road 56) to 500 metres north of New Dundee Road (Regional Road 12);

b) Remove from Schedule 18, Rates of Speed, 80 km/h northbound Arthur Street (Regional Road 85) from 1.2 km north of the Highway 85 Limit to 300 metres south of Listowel Road (Regional Road 85);

c) Remove from Schedule 18, Rates of Speed, 80km/h southbound Arthur Street (Regional Road 85) from 1.4 km north of the Highway 85 Limit to 300 metres south of Listowel Road (Regional Road 85);

d) Remove from Schedule 18, Rates of Speed, 80 km/h on Sawmill Road (Regional Road 17) from Arthur Street (Regional Road 85) to 330 metres west of Northfield Drive (Regional Road 22);

e) Remove from Schedule 18, Rates of Speed, 70 km/h on Homer Watson Boulevard/Fountain Street (Regional Road 28) from 400 metres south of Block Line Road to 100 metres west of Preston Parkway;

f) Remove from Schedule 18, Rates of Speed, 70km/h on Fountain Street (Regional Road 17) from Woolwich Street to Cherry Blossom Road;
g) Remove from Schedule 18, Rates of Speed, 80 km/h on Kossuth Road (Regional Road 31) from Fountain Street (Regional Road 17) to Highway 24 (Regional Road 24);

h) Remove from Schedule 18, Rates of Speed, 80 km/h on Fairway Road (Regional Road 53) from 50 metres east of Zeller Drive to Fountain Street (Regional Road 17);

i) Remove from Schedule 18, Rates of Speed, 70 km/h on Highland Road (Regional Road 6) from 2760 metres east of Notre Dame Drive (Regional Road 12) to 50 metres west of Westheights Drive (Westerly Access);

j) Add to Schedule 18, Rates of Speed, 60 km/h on Fischer-Hallman Road (Regional Road 58) from Activa Avenue to 400 metres south of Huron Road;

k) Add to Schedule 18, Rates of Speed, 80 km/h on Fischer-Hallman Road (Regional Road 58) from 400 metres south of Huron Road to 500 metres north of New Dundee Road (Regional Road 12);

l) Add to Schedule 18, Rates of Speed, 80 km/h northbound on Arthur Street (Regional Road 85) from 1.2 km north of the Highway 85 Limit to 400 metres south of Sawmill Road (Regional Road 17);

m) Add to Schedule 18, Rates of Speed, 80 km/h southbound Arthur Street (Regional Road 85) from 1.4 km/h north of the Highway 85 Limit to 400 metres south of Sawmill Road (Regional Road 17);

n) Add to Schedule 18, Rates of Speed, 60km/h on Arthur Street (Regional Road 85) from 400 metres south of Sawmill Road (Regional Road 17) to 400 metres north of sawmill Road (Regional Road 17);

o) Add to Schedule 18, Rates of Speed, 80 km/h on Arthur Street (Regional Road 85) from 400 metres north of Sawmill Road (Regional Road 17) to 300 metres south of Listowel Road (Regional Road (Regional Road 85);

p) Add to Schedule 18, Rates of Speed, 60 km/h on Sawmill Road (Regional Road 17) from Arthur Street to 400 metres east of Arthur Street (Regional Road 85);

q) Add to Schedule 18, Rates of Speed, 80 km/h on Sawmill Road (Regional Road 17) from 400 metres east of Arthur Street to 330 metres west of Northfield Drive (Regional Road 22);

r) Add to Schedule 18, Rates of Speed, 70 km/h on Homer Watson Boulevard/Fountain Street (Regional Road 28) from 400 metres south of Block Line Road to 400 metres west of Dickie Settlement Road
(Regional Road 71);

s) Add to Schedule 18, Rates of Speed, 60 km/h on Fountain Street (Regional Road 28) from 400 metres west of Dickie Settlement (Regional Road 71) to 100 metres west of Preston Parkway;

t) Add to Schedule 18, Rates of Speed, 70 km/h on Fountain Street (Regional Road 28) from Woolwich Street to 400 metres north of Kossuth Road/Fairway Road (Regional Road 28);

u) Add to Schedule 18, Rates of Speed, 60 km/h on Fountain Street (Regional Road 28) from 400 metres north of Kossuth Road/Fairway Road (Regional Road 31/Regional Road 53) to 400 metres south of Kossuth Road/Fairway Road (Regional Road 31/Regional Road 53);

v) Add to Schedule 18, Rates of Speed, 70 km/h on Fountain Street (Regional Road 28) from 400 metres south of Kossuth Road/Fairway Road (Regional Road 31/Regional Road 53) to Cherry Blossom Road;

w) Add to Schedule 18, Rates of Speed, 80km/h on Kossuth Road (Regional Road 31) to 400 metres east of Fountain Street (Regional Road 28) to Highway 24 (Regional Road 24);

x) Add to Schedule 18, Rates of Speed, 60km/h on Kossuth Road (Regional Road 31) from Fountain Street (Regional Road 28) to 400 metres east of Fountain Street (Regional Road 28);

y) Add to Schedule 18, Rates of Speed, 80km/h on Fairway Road (Regional Road 53) from 400 metres east of Zeller Drive to 400 metres west of Fountain Street (Regional Road 28);

z) Add to Schedule 18, Rates of Speed, on Fairway Road (Regional Road 53) from 400 metres west of Fountain Street (Regional Road 28) to Kossuth Road (Regional Road 31);

aa) Add to Schedule 18, Rates of Speed, 70km/h on Highland Road (Regional Road 6) from 2760 metres east of Notre Dame Drive (Regional Road 12) to 400 metres west of Ira Needles Boulevard (Regional Road 70);

bb) Add to Schedule 18, Rates of Speed, 60 km/h on Highland Road (Regional Road 6) from 400 metres west of Ira Needles Boulevard (Regional Road 70) to Westmount Road (Regional Road 50);

c) Add to Schedule 18, Rates of Speed, 70 km/h on Highland Road (Regional Road 6) from 400 metres west of Ira Needles Boulevard (Regional Road 70) to Highview Avenue (Regional Road 31);

c) Add to Schedule 18, Rates of Speed, 70 km/h on Highview Avenue (Regional Road 31) from 400 metres west of Ira Needles Boulevard (Regional Road 70) to Westmount Road (Regional Road 50);

c) Add to Schedule 18, Rates of Speed, 70 km/h on Westmount Road (Regional Road 50) from 400 metres east of Ira Needles Boulevard (Regional Road 70) to 400 metres east of Ira Needles Boulevard (Regional Road 70);

cc) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Bleams Road (Regional Road 56) and Manitou Drive (Regional Road 69) intersection;
dd) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Can-Amera Parkway (Regional Road 80) and Conestoga Boulevard intersection;

ee) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Erb Street (Regional Road 9) and Erbsville Road/Ira Needles Boulevard (Regional Road 70) intersection;

ff) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Fairway Road (Regional Road 53) and Zeller Drive intersection;

gg) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Fischer-Hallman Road (Regional Road 58) and Huron Road intersection;

hh) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Fischer-Hallman Road (Regional Road 58) and Seabrook Drive intersection;

ii) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Fountain Street (Regional Road 28) and Dickie Settlement Road (Regional Road 71) intersection;

jj) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Fountain Street (Regional Road 28) and Blair Road/Morningside Drive intersection;

kk) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Fountain Street (Regional Road 17) and Kossuth Road/Fairway Road (Regional Road 31/Regional Road 53) intersection;

ll) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Franklin Boulevard (Regional Road 36) and Bishop Street (Regional Road 41 intersection);

mm) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Franklin Boulevard (Regional Road 36) and Sheldon Drive intersection;

nn) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Franklin Boulevard (Regional Road 36) and Savage Drive intersection;

oo) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Hespeler Road (Regional Road 24) and Beaverdale Road/Queen Street intersection;

pp) Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Highland Road (Regional Road 6) and Ira Needles Boulevard (Regional Road 70) intersection;
Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Homer Watson Boulevard (Regional Road 28) and Block Line Road intersection;

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Ira Needles Boulevard (Regional Road 70) and Highview Drive/Trussler Road intersection;

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Ira Needles Boulevard (Regional Road 70) and The Boardwalk intersection;

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Lancaster Street (Regional Road 29) and the Bridge Street (Regional Road 52) intersection;

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Pinebush Road (Regional Road 39) and Thompson Drive/Tyler Street

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Sawmill Road (Regional Road 17) and Arthur Street (Regional Road 85) intersection;

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Townline Road (Regional Road 33) and Can-Amera Parkway (Regional Road 80) intersection

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the University Avenue (Regional Road 57) and Ira Needles Boulevard (Regional Road 70);

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Victoria Street (Regional Road 55) and Ira Needles Boulevard (Regional road 70) intersection; and

Add to Schedule 10, Level 2 Pedestrian Crossover, on All Entry and Exits at the Westmount Road (Regional Road 50) and Laurelwood Drive intersection.

Summary:

In January 2016 the Ministry of Transportation (MTO) issued a new regulation (402/15) under the Highway Traffic Act, which established a new traffic-control device called a Level 2 Pedestrian Crossover which consists of signs and pavement markings and when used, provides pedestrians the right of way to cross roadways.

At its regular scheduled meeting on February 10, 2016 Region of Waterloo Council approved an implementation strategy for the Level 2 Pedestrian Crossover as
The approved implementation strategy will introduce the new Level 2 Pedestrian Crossover to the public using a sequential/multi-phased approach as follows:

1. Education Outreach (Website and pamphlet to households) - June 2016;
2. Implementation at all existing roundabouts - Summer/Fall 2016;
3. Develop a priority list for mid-block and other non-roundabout intersection locations - 2016/2017;
4. Monitor compliance and pedestrian safety - 2016/2017; and

A draft educational pamphlet to educate motorists and pedestrians has been prepared. The pamphlet provides clear instructions to motorists regarding what to do when approaching a Level 2 Pedestrian Crossover and how pedestrians are to cross at it. The pamphlet, once finalized, will be sent to all households in the Region.

It is recommended that Phase 2 of the implementation strategy commence and that appropriate By-laws be approved to replace all “Yield to Pedestrians” signage at all Regional roundabouts with the Level 2 Pedestrian Crossover following Phase 1 public education.

1.0 Background

In January 2016 the Ministry of Transportation (MTO) issued a new regulation (402/15) under the Highway Traffic Act, which established a new traffic-control device called a Level 2 Pedestrian Crossover which consists of signs and pavement markings and when used, provides pedestrians the right of way to cross roadways.

In 2009, the Region and local municipalities opted to provide pedestrians the right-of-way at roundabouts as a standard using “Yield to Pedestrian” signs. In February 2016, staff recommended that the Region of Waterloo replace all existing “Yield to Pedestrian” signs with the new Level 2 Pedestrian Crossover signs. It was recommended that the introduction of the Level 2 Pedestrian Crossover be implemented using a sequential/multi-phased approach. At its regular scheduled meeting on February 10, 2016 Regional Council approved an implementation strategy for the Level 2 Pedestrian Crossover as outlined in Report TES-TRP-16-05 (see Appendix A). The approved implementation strategy will introduce the new Level 2 Pedestrian Crossover to the public using a sequential/multi-phased approach as follows:

1. Education Outreach (Website and pamphlet to households) - June 2016;
2. Implementation at all existing roundabouts - Summer/Fall 2016;

3. Develop a priority list for mid-block and other non-roundabout intersection locations - 2016/2017;

4. Monitor compliance and pedestrian safety - 2016/2017; and


Phase 1 included an educational outreach to provide clear instructions to motorists and pedestrians regarding what to do when approaching or crossing at a Level 2 Pedestrian Crossover. Staff have developed a draft educational pamphlet, and once it is finalized, it is planned to send the pamphlet to all households in the Region in June 2016. Staff also plan to update the Region’s website in June 2016. Additionally, Transportation and Waterloo Region Police Services staff are currently discussing an enforcement campaign and strategy.

Phase 2 will replace all existing “Yield to Pedestrian” signs at all roundabouts with Level 2 Pedestrian Crossover signs following the completion of Phase 1 education. The Phase 2 implementation is anticipated to start in July 2016 and is anticipated to take several months to complete.

2.0 Level 2 Pedestrian Crossover

This new traffic-control device consists of new roadside signs and pavement markings and serves to enhance the mobility of pedestrians at mid-block locations and at intersections, including roundabouts.

The Highway Traffic Act regulates the use of the Level 2 Pedestrian Crossover to roadways posted at 60 km/h and under. Drivers approaching a Level 2 Pedestrian Crossover shall stop before entering a crossover when a pedestrian is crossing on the roadway within a pedestrian crossover, shall not overtake another vehicle already stopped at a crossover, and shall not proceed into the crossover until the pedestrian is no longer on the roadway. The driver of any vehicle approaching another vehicle from the rear shall not pass another vehicle within 30 metres of a crossover. A pedestrian shall not leave the curb or other place of safety at a pedestrian crossover and walk, run or move into the path if a vehicle that is so close that it is impractical for the driver to stop. In summary, the legislation has been set up so that legal responsibility is assigned to both the motorist and pedestrian.

3.0 Speed Reduction at Roundabouts

The Level 2 Pedestrian Crossover control is not permitted on roadways with a posted speed limit greater than 60 km/h. As staff plan to implement Level 2 Pedestrian Crossovers at all Regional roundabouts, the posted speed limit must be lowered on the approach to a number of roundabouts listed below:
• Arthur Street at Sawmill (northbound, southbound and westbound);
• Fischer-Hallman Road at Huron Street (northbound, southbound and eastbound);
• Fischer-Hallman Road at Seabrook Drive (northbound and southbound);
• Fountain Street at Blair Road/Morningside Drive (eastbound and westbound);
• Fountain Street at Dickie Settlement Road (eastbound, westbound and northbound);
• Fountain Street at Kossuth Road/Fairway Road (northbound, southbound eastbound and westbound); and
• Ira Needles Boulevard at Highland Road (eastbound and westbound).

Through studies, staff have identified that drivers are naturally slowing down to 60 km/h on high speed roads approximately 400 metres from the roundabout “yield line”. Reducing the posted speed limit to 60 km/h at 400 metres from the roundabout “yield line” therefore follows the Region’s practice to post speed limits at or near the average travel speed of motorists.

Huron Road where it intersects Fischer-Hallman Road falls under the jurisdiction of the City of Kitchener. Huron Road west is currently posted at 80 km/h approaching Fischer-Hallman Road and Huron Road east has a posted speed limit of 60 km/h. In order to lower the posted speed limit on Huron Road approaching Fischer-Hallman Road, the City of Kitchener must pass a By-law reducing the posted speed limit prior to the installation of Level 2 Pedestrian Crossover control on the west approach of Huron Road approaching Fischer-Hallman Road.

4.0 Local Municipalities and Waterloo Regional Police Services Consultation

In early 2016, staff presented the recommended implementation strategy to the Traffic Coordinating Committee which includes staff from the Waterloo Regional Police Services and Area Municipalities. The committee is in agreement with the implementation strategy as presented.

Regional staff also consulted with all local municipal staff regarding the reduction of speed limits to 60 km/h at all affected roundabouts. All municipal staff support the speed limit reductions and the installation of Level 2 Pedestrian Crossovers at roundabouts on Regional roads, and plan to implement Level 2 Pedestrian Crossovers at local municipal roundabouts in the near future.
5.0 Recommendations

Since the Ministry of Transportation issued a new regulation (402/15) under the Highway Traffic Act, which established a new traffic-control device called a Level 2 Pedestrian Crossover, staff is recommending that the Region’s Traffic and Parking By-law 06-072 be amended to reduce the posted speed limit to 60 km/h on the approaches to the following roundabouts:

a. Arthur Street at Sawmill (northbound, southbound and westbound);
b. Fischer-Hallman Road at Huron Street (northbound and southbound);
c. Fischer-Hallman Road at Seabrook Drive (northbound and southbound);
d. Fountain Street at Blair Road/Morningside Drive (eastbound and westbound);
e. Fountain Street at Dickie Settlement Road (eastbound, westbound and northbound);
f. Fountain Street at Kossuth Road/Fairway Road (northbound, southbound eastbound and westbound); and
g. Ira Needles Boulevard at Highland Road (eastbound and westbound).

Changing the posted speed limit as recommended will allow the Region to implement the Level 2 Pedestrian Crossovers at those roundabouts listed above. Staff, however, does not anticipate any changes to driver behaviour following changes to speed limits, as drivers are already naturally slowing down when approaching roundabouts.

It is also recommend that a Level 2 Pedestrian Crossover be implemented on all approaches and exits to and from roundabouts under the Region of Waterloo jurisdiction. The implementation of the Level 2 Pedestrian Crossover will provide pedestrians legislated right-of-way when crossing at roundabouts.

Staff plan to release the educational pamphlet and update the Region’s website in June 2016. Once completed, staff will begin to implement Level 2 Pedestrian Crossovers soon afterward.

Corporate Strategic Plan:

This report addresses the Region’s goal to build infrastructure for and increase participation in, active forms of transportation in cycling and walking (Strategic Objective 2.3)

Financial Implications:

The cost to implement Phases 1 and 2 is estimated to be $250,000. This work is currently not funded; however, it is planned to add sufficient funds to the 2016 Transportation Capital
Budget as part of the 2016 Mid-Year Review, funded from the Roads Rehabilitation Reserve Fund.

Other Department Consultations/Concurrence:
Nil

Attachments:
Appendix A – Report TES-TRP-16-05, Level 2 Pedestrian Crossover Implementation Strategy

Prepared By: Mike Jones, Supervisor, Traffic Engineering

Approved By: Thomas Schmidt, Commissioner of Transportation and Environmental Services
Region of Waterloo
Transportation and Environmental Services
Transportation

To: Chair Tom Galloway and Members of the Planning and Works Committee

Date: February 2, 2016  
File Code: T14-01

Subject: Level 2 Pedestrian Crossover (PXO) Implementation Strategy

Recommendation:

That the Regional Municipality of Waterloo adopt installation warrants and an implementation strategy for the Level 2 Pedestrian Crossover as outlined in report TES-TRP-16-05, dated February 2, 2016.

Summary:

The Ministry of Transportation, Ontario (MTO) issued a new regulation (402/15) under the Highway Traffic Act, effective January 1, 2016, which established a new traffic-control device called a Level 2 Pedestrian Crossover. This new traffic-control device consists of new roadside signs and pavement markings and serves to enhance the mobility of pedestrians at mid-block locations and at intersections, including roundabouts. This new traffic-control device is an alternative to the traditional pedestrian crossover (PXO), now called a Level 1 Pedestrian Crossover. Please refer to Appendices A and B for graphic depictions of the Level 1 and Level 2 Pedestrian Crossovers. This new device is intended for locations where pedestrian volumes are insufficient to meet the warrants for a traffic signal.

According to the Highway Traffic Act, drivers approaching a Level 2 Pedestrian Crossover are required to stop when a pedestrian is crossing the roadway within the crossover. Accordingly, the new legislation also requires that pedestrians share the responsibility of safety by not entering the crossover when a vehicle is so close that it cannot stop.

Regional staff recommends introducing the Level 2 Pedestrian Crossovers to the public using a sequential/multi-phased approach as follows:
February 2, 2016

1. Education Outreach;
2. Implementation at all existing roundabouts;
3. Develop a priority list for mid-block and other non-roundabout intersection locations;
4. Monitor compliance and pedestrian safety; and
5. Begin implementing at mid-block and non-roundabout intersection locations.

Staff recommends the installation of the Level 2 Pedestrian Crossover at all existing roundabouts in 2016 and recommends installation at non-roundabout locations starting in 2017. The cost to implement Phases 1 and 2 in 2016 is estimated to be $250,000. No funding for this work is currently allocated in the 2016 Transportation Capital Program. Subject to Council approval of the implementation strategy, staff will allocate sufficient funds for this work in 2016 as part of the 2016 Mid-Year Review of Transportation Capital Program.

Report:

1.0 Background

The Ministry of Transportation, Ontario (MTO) issued a new regulation (402/15) under the Highway Traffic Act, effective January 1, 2016, which established a new traffic control device called a Level 2 Pedestrian Crossover. This report serves to provide some background on the development and intent of this new traffic control device, recommended installation warrants and an implementation strategy on Regional roads.

In Waterloo Region and in many other municipal road networks, many long stretches of roadway exist today without convenient pedestrian crossing control points. This deficiency is primarily created by a lack of pedestrian traffic control devices to serve the various ranges of pedestrian crossing demand seen throughout the road network.

Prior to January 1, 2016, only a traffic signal (and sub-versions of a traffic signal), a crossing guard and the traditional Pedestrian Crossover (PXO) were available for roadway agencies in Ontario to provide pedestrian crossing control. A traffic signal may seem like an obvious choice to enhance pedestrian mobility; however, in many cases, it may not be appropriate as there may not be sufficient pedestrian crossing demand or traffic volume to justify the installation of a traffic signal. Negative impacts of a traffic signal are not always obvious to the public. For example, a traffic signal may unduly delay both pedestrians and/or motorists, is expensive to install and requires funds to operate and maintain, and in almost all cases, results in an undesirable increase in motor vehicle collisions. In addition, roadway agencies are expected to provide efficient uninterrupted motor vehicle traffic flows along major corridors and are also expected to reduce the number of collisions and injuries occurring on roadways. Roadway agencies therefore need to carefully balance the convenience afforded to pedestrians against an expected increase in collisions following the installation of a traffic signal. To help
February 2, 2016

balance all the needs, roadway agencies rely on guidelines and warrants to help strike a fair and reasonable balance for all users.

In the 1990’s, to address the need to enhance pedestrian mobility, roadway agencies requested that the MTO modify traffic signal standards and warrant methodologies to allow for the adoption of new sub-versions of the traffic signal. These new sub-versions that were adopted were Intersection Pedestrian Signals (IPS) and Midblock Pedestrian Signals (MPS). In addition there was a need to provide an alternative to the traditional Pedestrian Crossover (PXO) sign, now legally named the Level 1 Pedestrian Crossover. Please refer to Appendix A for an illustration of a Level 1 Pedestrian Crossover in operation. Similar to all other traffic control devices, warrant criteria were established to help manage the implementation of these new devices and to strike a balance between motorists and pedestrian needs. The IPS and MPS adopted PXO warrant guidelines that suggested that these devices would be appropriate when 200 or more pedestrians (or equivalent, e.g. 100 children or mobility challenged pedestrians or more) crossed a road over 8 hours in a typical day and where approximately 38% of the pedestrians or more experienced a minimum of 10 seconds of delay.

2.0 New Traffic Control Device (Level 2 Pedestrian Crossover)

Despite the introduction of new traffic control devices in the 1990’s to enhance pedestrian mobility, there was still a need to address locations of crossing demand with low pedestrian volumes. In technical terms, the need can be described as locations that experience between 0 and 200 crossing pedestrians over an 8-hour period of a typical weekday; or the pedestrian demand that traffic signals, IPS or MPS are not appropriate to address. To partially address this “gap” in facility types, the Region of Waterloo for several years now has been installing pedestrian refuge and or median islands which are proven to enhance pedestrian mobility and safety. Where present on Regional roads, however, pedestrians are required to yield the right-of-way to motorists.

Since 2009 the Region of Waterloo and other roadway agencies have been lobbying the Ministry of Transportation to modify Ontario regulations that are seen by transportation professionals as failing to effectively enhance pedestrian mobility in Ontario. In response to this lobbying, the Ontario Traffic Manual (OTM) Book 15 Committee was formed that included staff from the Region and other municipalities across the province and staff from the Ministry of Transportation. The OTM Book 15 Committee worked collaboratively to develop new proposed guidelines and regulations for the use of a new pedestrian traffic control device now referenced in the Highway Traffic Act as a Level 2 Pedestrian Crossover. A typical layout copied from the applicable Regulation governing the configuration of the Level 2 Pedestrian Crossover is attached as Appendix B. The Level 2 Pedestrian Crossover may be used on roads up to 4-lanes wide, at intersections including roundabouts and at right-turn channels.
3.0 Statutory Requirements

The Highway Traffic Act regulates the use of the Level 2 Pedestrian Crossover to roadways posted at 60 km/h and under. Drivers approaching a Level 2 Pedestrian Crossover shall stop before entering a crossover when a pedestrian is crossing on the roadway within a pedestrian crossover, shall not overtake another vehicle already stopped at a crossover, and shall not proceed into the crossover until the pedestrian is no longer on the roadway. The driver of any vehicle approaching another vehicle from the rear shall not pass another vehicle within 30 metres of a crossover. A pedestrian shall not leave the curb or other place of safety at a pedestrian crossover and walk, run or move into the path if a vehicle that is so close that it is impractical for the driver to stop. In summary, the legislation has been set up so that legal responsibility is assigned to both the motorist and pedestrian.

4.0 Installation Warrants

4.1 Intersection and Midblock Locations

Similar to all other traffic control devices, installation guidelines will be followed to determine when and where Level 2 Pedestrian Crossovers may be considered. The following guidelines from the yet-to-be published update of the Ontario Traffic Manual Book 15 are intended to be used to assist staff in considering appropriate Level 2 Pedestrian Crossover locations for intersection and midblock locations.

- 100 or more pedestrians (or equivalent) observed crossing over an 8 hour period;
- No other controlled crossing within 200m;
- Adherence to Ontario Traffic Manual Book 15 lane configuration and traffic volume conditions;
- Posted Speed ≤ 60km/h; and
- All above subject to an assessment using engineering judgement.

4.2 Roundabout Locations

Since the Region and local municipalities opted in 2009 to provide pedestrians the right-of-way at roundabouts as a standard using “Yield to Pedestrian” signs, staff intends to replace all existing “Yield to Pedestrian” signs with Level 2 Pedestrian Crossover signs to stay consistent with past practices. Posted speed limits that exceed 60 km/h would have to be reduced to 60 km/h on approaches to roundabouts in order to legally operate a Level 2 Pedestrian Crossover.
5.0 Optional Level 2 Pedestrian Crossover Treatments

Level 2 Pedestrian Crossovers may be supplemented with optional treatments that include:

- Overhead sign; and
- Rapid Rectangular Flashing Beacon (RRFB)

Guidelines yet to be published have been drafted by the Ontario Traffic Manual Book 15 Committee to provide practitioners guidance regarding when an overhead sign or an RRFB is suggested to be used at a Level 2 Pedestrian Crossover. An RRFB is illustrated in Appendix B and flashes at a high frequency similar to a police or ambulance strobe light.

Staff has been meeting with local area municipal staff to develop Regional/area municipal guidelines related to the implementation of Level 2 Crossovers at roundabouts. Staff has also been discussing these optional treatments with other municipalities in Ontario with roundabouts in operation.

Staff will consider overhead signs and RRFB’s at roundabouts at a later date following discussions with Area Municipal staff, compliance studies and a safety assessment of Level 2 Pedestrian Crossovers at roundabouts.

6.0 Jurisdictional Responsibilities

The Region of Waterloo will be responsible for the installation, operation and maintenance of all Level 2 Pedestrian Crossovers installed on Regional roads and Regional / Area Municipal roadway intersections.

Each respective Area Municipality will be responsible for installation, operation and maintenance of all Level 2 Pedestrian Crossovers installed on Area Municipal roadways and related intersections.

Each respective agency including the Region shall obtain approval from any and all potentially impacted agencies prior to installing any Level 2 Pedestrian Crossing on its respective roadways.

Each respective agency shall ensure appropriate By-laws are enacted prior to installing any Level 2 Pedestrian Crossover on its roadway.

7.0 Educational Outreach

Regional staff believes adequate public education and the development of an implementation strategy is integral to the success of the new Level 2 Pedestrian Crossover device. At this time, the Ministry of Transportation has only updated its website to advise the public of the new Level 2 Pedestrian Crossover. Regional staff
February 2, 2016

has also updated the Region’s website to include similar information. Staff has already developed a conceptual educational pamphlet to educate motorists and pedestrians. The pamphlet will provide clear instructions to motorists regarding what to do when approaching a Level 2 Pedestrian Crossover and how pedestrians are to cross at it. The pamphlet, once finalized, will be sent to all households in the Region.

Regional staff has asked Ministry of Transportation staff whether they intend to provide more explicit information to the public as this device is anticipated to be widely used across Ontario. Ministry of Transportation staff have acknowledged the Region’s request but have not committed to any additional public education at this time. It is Regional staff’s understanding that other municipalities and organizations, including the Regional Public Works Commissioners of Ontario have also requested the Ministry to provide more information to the public about Level 2 Pedestrian Crossovers.

8.0 Implementation Strategy

Regional staff recommends introducing the Level 2 Pedestrian Crossover to the public using a sequential / multi-phased implementation strategy as follows:

1. Education Outreach (Website, Region News, and pamphlet to households) – 2016;

2. Implementation at all existing roundabouts - 2016;

3. Develop an implementation priority list for midblock and non-roundabout intersection related locations - 2016; and


9.0 Consultation with Area Municipalities and Police Services

Staff has presented the recommended implementation strategy to the Traffic Coordinating Committee which includes staff from the Waterloo Regional Police Services and Area Municipalities. All Traffic Coordinating Committee members (excluding members from the Townships of Woolwich and North Dumfries who were not present) are in agreement with the implementation strategy as presented in this report.

10.0 Summary of Pedestrian Traffic Control Devices

The introduction of the new Level 2 Pedestrian Crossover Device helps to provide municipalities the ability to enhance pedestrian mobility in Ontario. This new device now provides municipalities the opportunity to provide pedestrians right-of-way on roadways where other devices are not suitable. A general summary and hierarchy of
the typical pedestrian crossing devices applicable to Regional roads, including the new Level 2 Pedestrian Crossover are included in Appendix C.

**Corporate Strategic Plan:**

This report addresses the Region’s goal to build infrastructure for, and increase participation in, active forms of transportation (cycling and walking) (Strategic Objective 2.3) and to optimize road capacity to safely manage traffic and congestion (Strategic Objective 2.4).

**Financial Implications:**

The cost to implement Phases 1 and 2 of the recommended implementation strategy in 2016 is approximately $250,000. No funding for this work is currently allocated in the 2016 Transportation Capital Program. Subject to Council approval of the implementation strategy, sufficient funds will be allocated as part of the 2016 Mid-Year Review of the Transportation Capital Program, funded from Regional Development Charge Reserve Fund (50%) and Roads Capital Levy Reserve Fund (50%).

**Other Department Consultations/Concurrence:**

Nil

**Attachments**

Appendix A – Traditional Pedestrian Crossover Sign/Level 1 Pedestrian Crossover

Appendix B – Level 2 Pedestrian Crossover

Appendix C – Summary of Pedestrian Crossing Devices

**Prepared By:** Bob Henderson, Manager, Transportation Engineering

**Approved By:** Thomas Schmidt, Commissioner, Transportation and Environmental Services
Appendix A – Traditional Pedestrian Crossover/Level 1 Pedestrian Crossover
Appendix B

Appendix B – Level 2 Pedestrian Crossover

Diagram showing the layout of a Level 2 Pedestrian Crossover with various elements:
- Rapid Rectangular Flashing Beacon and Overhead Sign Optional
- Ladder Crosswalk
- Yield to Pedestrians Line
- 30 m No Passing Zone
- 6.0 m Minimum
- 3.0 m Minimum
- HERE TO CROSSING
- HERE TO CROSSING
- STOP FOR PEDESTRIANS

Report: TES-TRP-16-05
Appendix C – Summary of Pedestrian Crossing Devices

<table>
<thead>
<tr>
<th>Traffic Control Device</th>
<th>Figure</th>
<th>Controlled Crossing</th>
<th>Uncontrolled Crossing</th>
<th>When to Consider</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian Refuge Island</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>Consider when pedestrian crossing volumes range between 0 and 99</td>
<td>Motorists have the right-of-way at all times. Pedestrian refuge islands are proven to enhance pedestrian safety.</td>
</tr>
<tr>
<td>Crossing Guard</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>Area Municipality consideration/jurisdiction</td>
<td>Crossing guards are legally authorized to display a stop sign and when used affords pedestrians the right-of-way.</td>
</tr>
<tr>
<td>Level 2 Pedestrian Crossover (PWX)</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>Consider when pedestrian crossing volumes exceed 99</td>
<td>New Highway Traffic Act regulations provide pedestrians right-of-way at locations displaying appropriate signs and markings.</td>
</tr>
<tr>
<td>Pedestrian Traffic Control Signals (IPS and MPS)</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>Consider when pedestrian crossing volumes exceed 199 and when pedestrians experience sufficient delay as per OTM</td>
<td>Traffic signal control automatically affords pedestrians right-of-way.</td>
</tr>
<tr>
<td>Stop/Yield Control</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>Consider when OTM Book 5 Stop Control Warrant is met</td>
<td>Stop control automatically affords pedestrians right-of-way.</td>
</tr>
<tr>
<td>Roundabout</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>Consider when an Intersection Control Study (ICS) deems a roundabout as the preferred traffic control</td>
<td>Roundabout control automatically affords pedestrians right-of-way.</td>
</tr>
</tbody>
</table>

Note: All controls are subject to appropriate engineering reviews to ensure the control can operate effectively (e.g. appropriate traffic volume conditions and geometric conditions.)
Region of Waterloo
Transportation and Environmental Services
Transportation

To: Chair Tom Galloway and Members of the Planning and Works Committee
Date: June 14, 2016
File Code: T02-04
Subject: Revised 2016 Transportation Base and System Expansion Capital Budget

Recommendation:

Summary:
A mid-year review of the Transportation Base and System Expansion Capital Budget is carried out each year so that variations caused by actual tender results, revised project estimates based on detailed design and changes in project scheduling can be reported.

The revised 2016 Base Capital Budget is proposed to be reduced by $1.82 million (total revised budget $66.6 million) which is primarily attributable to competitive prices achieved through actual tender results, construction deferrals and revised project estimates. These revisions will reduce the amount required from the Roads Rehabilitation Capital and Development Charge Reserve Funds in 2016.

The revised 2016 System Expansion Capital Budget is proposed to be reduced by $9 million (total revised budget $85.85 million) which is primarily attributable to construction deferrals. These revisions will reduce the amount required from the Development Charge and Roads Capital Levy Reserve Funds in 2016.

Overall, the revised 2016 Transportation Base and System Expansion Capital Budgets are proposed to be reduced by $10.87 million (total revised budget $152.45 million).
Report:

Background

Each year a mid-year review of the Transportation Base and System Expansion Capital Budget is carried out so that major variations caused by actual tender results, revised project estimates based on detail design and changes in project scheduling can be reported.

Appendix A summarizes the revisions to the previously approved 2016 Transportation Base and System Expansion Capital Budget.

Project Variations

The following are projects that have been added, deferred or have had their budget revised to a value greater than $500,000 and a summary of the reasons are provided below. Projects in which tenders or Council reports have been previously approved by Regional Council or have budget estimate changes of less then $500,000 are included in the project details (Appendix A).

1. Revised 2016 Transportation Base Capital Budget

The 2016 Transportation Base Capital Budget includes project improvements relating to ensuring the safe, efficient operation and maintenance of the existing road transportation infrastructure and is primarily funded from the Roads Rehabilitation Capital Reserve Fund and Federal Gas Tax funding. These projects include resurfacing, reconstruction, bridge and drainage works, traffic signal modernizations, non-growth related intersection improvements, infill sidewalk and cycling facilities and system management.

a) Regional Road 8 (Weber Street), Forwell Creek Road to Blythwood Road, Waterloo (-$505,000);

The project design, utility relocations and property acquisitions have been deferred to 2017 and the road reconstruction to 2018 to allow for Weber Street to be used as a detour route for the Ministry of Transportation Ontario (MTO) Highway 85 ramp closures in 2017. The Region was notified after the 2016 budget was approved that the MTO will be repairing bridge joints which require complete ramp closures.

b) Regional Road 15 (King Street), Railway tracks to Central Street (-$560,000)

This reconstruction project has been deferred in order to avoid conflict with the adjacent ION Light Rail Transit construction project.
c) Regional Road 41 (Bishop Street) Conestoga Boulevard to Concession Road, Cambridge (+$600,000);

This project budget increase is to allow for the placement of surface asphalt to occur in 2016 instead of 2017, and accommodate additional contract administration costs.

d) Asset Management Program (-$625,000);

Cash flow expenditures for this project have been redistributed within the 2016-2018 timeframe in order to reflect the phased approach for the asset management implementation project.

2. Revised 2016 Transportation System Expansion Capital Budget

The Transportation System Expansion Capital Budget includes project improvements related to the population and employment growth within the Region of Waterloo and is funded from the Roads Capital Levy and Regional Development Charge Reserve Funds. These projects include intersection improvements, traffic signal installations, road widening and road system expansions (new roads and bridges).

a) Regional Road 4 (Ottawa Street), Homer Watson Boulevard (Regional Road 28) to Alpine Road, Kitchener (-$5,770,000);

The ION Light Rail Transit construction project has closed Courtland Avenue for most of 2016. Since this project includes the installation of roundabouts at both Ottawa Street and Alpine Road, Homer Watson Boulevard will require a road closure. This roundabout construction project has been deferred to 2017 to avoid two parallel Regional Road closures.

b) Regional Road 9 (Erb Street) 100m East of Caroline Street (Regional Road 9) to Menno Street, Waterloo (-$1,000,000);

The construction of this project has been deferred to 2018 or 2019 in order to avoid conflict with the ION Light Rail Transit construction project and to coordinate with other planned projects in the area.

c) Regional Road 56 (River Road Extension), King Street (Regional Road 8) to Manitou Drive (Regional Road 69), Kitchener (-$1,790,000);

This project has been delayed as the Ministry of the Environment and Climate Change (MOECC) approval has not been received which has resulted in a delay in acquiring the required properties.
Corporate Strategic Plan:

This report addresses the Region’s Strategic Focus Area 2: Sustainable Transportation

- 2.1 – Create a Transportation Network that is integrated, accessible, affordable and sustainable.
- 2.3 – Build infrastructure for, and increase participation in, active forms of transportation (cycling and walking).
- 2.4 – Optimize road capacity to safely manage traffic and congestion.

Financial Implications:

A mid-year review of the Transportation Base and System Expansion Capital Budgets is carried out each year so that major variations caused by actual tender results, revised project estimates based on detailed design and changes in project scheduling can be reported.

The revised 2016 Base Capital Budget is proposed to be reduced by $1.82 million (total revised budget $66.6 million) which is primarily attributable to construction deferrals and revised project phasing. These revisions will reduce the amount required from the Roads Rehabilitation Capital and Development Charge Reserve Funds in 2016.

The revised 2016 System Expansion Capital Budget is proposed to be reduced by $9 million (total revised budget $85.85 million) which is primarily attributable to competitive contract pricing and project deferrals. These revisions will reduce the amount required from the Development Charge and Roads Capital Levy Reserve Funds in 2016.

Overall, the revised 2016 Transportation Base and Capital System Expansion Capital Budget are proposed to be reduced by $10.87 million (total revised budget $152.45 million).

Other Department Consultations/Concurrence:

Staff from Design and Construction and Finance have been directly involved in the preparation of this report.

Attachments

Appendix A – Revisions to the 2016 Transportation Base and System Capital Budget

Prepared By: Sharon Daniel, Supervisor, Transportation Capital Program

Approved By: Thomas Schmidt, Commissioner, Transportation and Environmental Services
## REVISIONS TO THE 2016 TRANSPORTATION BASE AND SYSTEM EXPANSION CAPITAL BUDGETS

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<thead>
<tr>
<th>($000's)</th>
<th>CFWD</th>
<th>2016 BUDGET</th>
<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
<th>VARIANCE</th>
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<td>58,475</td>
<td>104,840</td>
<td>163,315</td>
<td>152,445</td>
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| REVENUES: |      |             |                  |                   |          |
| SUBSIDY (FEDERAL GAS TAX) | 0    | 25,417     | 25,417           | 25,417           | 0        |
| DEVELOPMENT CHARGE RESERVE FUND (TRANSPORTATION) | 30,046 | 41,215     | 71,261           | 62,271           | -9,990   |
| ROADS REHABILITATION CAPITAL RESERVE FUND | 16,251 | 19,450     | 35,701           | 33,821           | -1,880   |
| CYCLING FACILITY CAPITAL RESERVE FUND | 0    | 603         | 603              | 603              | 0        |
| ROAD CAPITAL LEVY RESERVE FUND | 1,418 | 2,990       | 3,506            | 3,476             | -30      |
| MUNICIPAL COST SHARING | 33   | 65          | 98               | 128               | 30       |
| THIRD PARTY - CP RAIL | 850  | 850         | 850              | 850              | 0        |
| THIRD PARTY - OTHER | 2,879 | 2,879       | 2,879            | 2,879             | 0        |
| DEBENTURES - RDC | 0    | 16,000      | 16,000           | 16,000           | 0        |
| DEBENTURES | 7,000 | 7,000       | 7,000            | 7,000             | 0        |
| | | | | | |
| | 58,475 | 104,840 | 163,315 | 152,445 | -10,870 |

**LEGEND:**
AG = ABOVE GROUND; BG = BELOW GROUND; CF = CYCLING FACILITY; CG = CURB & GUTTER; CIP = COLD-IN-PLACE RESURFACING;
D = DRAINAGE IMPROVEMENTS; DE = DESIGN; DK = BRIDGE DECK REPAIR; DSA = DEEP STRENGTH ASPHALT; EA = ENVIRONMENTAL ASSESSMENT;
EXP = EXPANDED ASPHALT; IPS = PEDESTRIAN SIGNAL INSTALLATION; L = LAND PURCHASE; LA = LANDSCAPING; MOD = TRAFFIC SIGNAL MODERNIZATION;
NO = CONSTRUCTION; PADD = PADDLING; PL = PLANNING; REC = RECONSTRUCTION; RH = REHABILITATION; RES = RECONSTRUCTION WITH STORM SEWERS;
RW = ROAD WIDENING; R1 = RESURFACE-SINGLE LIFT; R2 = RESURFACE-DOUBLE LIFT; RM = RESURFACE-MAJOR; SA = SURFACE ASPHALT; SI = INTERSECTION IMPROVEMENT; SIG = TRAFFIC SIGNAL INSTALLATION; SL = STREET LIGHTING; ST = STORM SEWER INSTALLATION; SW = SIDEWALK INSTALLATION; U = UTILITY RELOCATION
## REVISIONS TO THE 2016 TRANSPORTATION BASE CAPITAL BUDGET

### Expenditures:

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<th>Description</th>
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<th>2016 Total Budget</th>
<th>2016 Revised Budget</th>
<th>Variance</th>
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<td>41,840</td>
<td>39,145</td>
<td>-2,495</td>
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<tr>
<td>Intersection Improvements (Non-Growth)</td>
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<td>3,045</td>
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<td><strong>Total</strong></td>
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<td><strong>50,555</strong></td>
<td><strong>68,415</strong></td>
<td><strong>66,595</strong></td>
<td><strong>-1,820</strong></td>
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### Revenues:

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<th>2016 Total Budget</th>
<th>2016 Revised Budget</th>
<th>Variance</th>
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<tr>
<td><strong>Total</strong></td>
<td><strong>17,860</strong></td>
<td><strong>50,555</strong></td>
<td><strong>68,415</strong></td>
<td><strong>66,595</strong></td>
<td><strong>-1,820</strong></td>
</tr>
</tbody>
</table>

**Legend:**
- AG = Above ground
- BG = Below ground
- CF = Cycling facility
- CG = Curb & gutter
- CIP = Cold-in-place resurfacing
- D = Drainage improvements
- DE = Design
- DR = Bridge deck repair
- DSA = Deep strength asphalt
- EA = Environmental assessment
- EXP = Expanded asphalt
- FPS = Pedestrian signal installation
- L = Land purchase
- LA = Landscaping
- MOD = Traffic signal modernization
- NC = Construction
- PAD = Padding
- PL = Painting
- REC = Reconstruction
- RH = Rehabilitation
- RS = Reconstruction with storm sewers
- RW = Road widening
- RY = Resurface - single lift
- SD = Resurface - double lift
- SM = Resurface - major
- SA = Surface asphalt
- SI = Intersection improvement
- SIG = Traffic signal installation
- SL = Street lighting
- ST = Storm sewer installation
- SW = Sidewalk installation
- U = Utility relocation
<table>
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<tr>
<th>PROJ. NO.</th>
<th>PROJECT DESCRIPTION</th>
<th>AREA MUN</th>
<th>PROJ. LEN (KM)</th>
<th>CFWD</th>
<th>2016 BUDGET</th>
<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
<th>VARIANCE</th>
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TOTAL URBAN RESURFACING: 8.50 25 1,350 1,375 1,575 200

RURAL RESURFACING
### REVISIONS TO THE 2016 TRANSPORTATION CAPITAL BASE BUDGET

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<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
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<td>REG. RD. 15 (KING STREET), Rail Tracks to Lobinger Ln. (RR15)</td>
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<td>REG. RD. 15 (LOBINGER LINE), 0.KM West of Herrgott Rd. (RR10) to Moser-Young Rd.</td>
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### REVISIONS TO THE 2016 TRANSPORTATION CAPITAL BASE BUDGET

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**TOTAL RURAL RESURFACING**

|                | 31.11 | 20 | 5,545 | 5,565 | 5,805 | 240 |

### RECONSTRUCTION AND MAJOR REHABILITATION

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<td>REG. RD. 5 (HUTCHISON ROAD), CROSSHILL S. LIMITS TO CROSSHILL W. LIMITS</td>
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## REVISIONS TO THE 2016 TRANSPORTATION CAPITAL BASE BUDGET

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<td>REG. RD. 17 (SAWMILL ROAD), CONESTOGO BRIDGE TO MUSSELMAN CR. AND REG. RD. 22 (NORTHFIELD DRIVE)-S LIMITS OF CONESTOGO TO COUNTRY SPRING WALK</td>
<td>WOOL</td>
<td>1.49</td>
<td>100</td>
<td>500</td>
<td>50</td>
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<td>0.75</td>
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<td>REG. RD. 43 (MYERS ROAD), BRANCHTON RD. (RR43) TO WATER ST. (RR4)</td>
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### REVISIONS TO THE 2016 TRANSPORTATION CAPITAL BASE BUDGET

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<td>1.83</td>
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## REVISIONS TO THE 2016 TRANSPORTATION CAPITAL BASE BUDGET

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<td>REG. RD. 97 (CEDAR STREET), OSBORNE ST. TO CAMBRIDGE BDYR.</td>
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| TOTAL RECONSTRUCTION AND MAJOR REHABILITATION | 81.51 | 14,670 | 26,970 | 41,840 | 39,145 | -2,495 |

## INTERSECTION IMPROVEMENTS (NON-GROWTH)

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<th>PROJ. NO.</th>
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<tr>
<td>6903</td>
<td>REG. RD. 8 (CORONATION BLVD.) AT CAMBRIDGE MEMORIAL HOSPITAL</td>
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<td>80</td>
<td>80</td>
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| TOTAL INTERSECTION IMPROVEMENTS (NON-GROWTH) | 0.00 | 480 | 220 | 700 | 700 | 0 |

## BRIDGE AND DRAINAGE WORKS

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<th>PROJ. NO.</th>
<th>PROJECT DESCRIPTION</th>
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<th>VARIANCE</th>
<th>REMARKS</th>
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<tr>
<td>7363</td>
<td>REG. RD. 1 (WILMOT EASTHOPE ROAD) AT WILMOT CREEK (#0102)</td>
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<td>0</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100 RH</td>
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<td>REG. RD. 5 (NAZIGER ROAD), AT NITH RIVER (N) (#0502)</td>
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<td>1100</td>
<td>1130</td>
<td>1065 DE</td>
<td>RH</td>
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<td>6841</td>
<td>REG. RD. 14 (KRESSLER ROAD) CULVERT #15014 AND GUIDE RAIL REPAIRS</td>
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<td>RH</td>
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<td>45</td>
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### REVISIONS TO THE 2016 TRANSPORTATION CAPITAL BASE BUDGET

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## Revisions to the 2016 Transportation Capital Base Budget

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### System Management / Other

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## Revisions to the 2016 Transportation Capital Base Budget

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### Traffic Engineering General

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### Infill Sidewalk and Cycling Facilities

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# Revisions to the 2016 Transportation Capital System Expansion Budget

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<td>94,900</td>
<td>85,850</td>
<td>-9,050</td>
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**Legend:**
- AG = Above Ground
- BG = Below Ground
- OF = Cycling Facility
- CG = Curb & Gutter
- CIP = Cold-In-Place Resurfacing
- D = Drainage Improvements
- DE = Design
- DK = Bridge Deck Repair
- DSA = Deep Strength Asphalt
- EA = Environmental Assessment
- EXP = Expanded Asphalt
- IPS = Pedestrian Signal Installation
- L = Land Purchase
- LA = Landscaping
- MOD = Traffic Signal Modernization
- NO = Construction
- PA = Padding
- PL = Planning
- REC = Reconstruction
- RH = Rehabilitation
- RSS = Reconstruction with Storm Sewers
- RW = Road Widening
- R1 = Resurfacing: Single Lift
- R2 = Resurfacing: Double Lift
- RM = Resurfacing: Major
- SA = Surface Asphalt
- SI = Intersection Improvement
- SIG = Traffic Signal Installation
- SL = Street Lighting
- ST = Storm Sewer Installation
- SW = Sidewalk Installation
- U = Utility Relocation
## REVISIONS TO THE 2016 TRANSPORTATION CAPITAL SYSTEM EXPANSION BUDGET

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<td>40</td>
<td>40</td>
<td>40 DE</td>
<td>0</td>
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<td>85%</td>
<td>REG. RD. 4 (OTTAWA STREET), KING ST. (RR15) TO CHARLES ST. (RR64)</td>
<td>KIT</td>
<td>0.09</td>
<td>50</td>
<td>40</td>
<td>90</td>
<td>90 DE</td>
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<td>7294</td>
<td>100%</td>
<td>REG. RD. 4 (OTTAWA STREET), HOMER WATSON BLVD (RR28) TO ALPINE RD.</td>
<td>KIT</td>
<td>405</td>
<td>6230</td>
<td>6635</td>
<td>865 DE</td>
<td>-577</td>
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<td>5</td>
<td>5</td>
<td>5 DE</td>
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<tr>
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<td>REG. RD. 8 (KING STREET) AT DEER RIDGE DR.</td>
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<td>230</td>
<td>240</td>
<td>240 DE</td>
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<td>50</td>
<td>50</td>
<td>50 DE</td>
<td>0</td>
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<td>5389</td>
<td>85%</td>
<td>REG. RD. 9 (ERB STREET), 100M EAST OF CAROLINE ST. (RR9) TO MENNO ST.</td>
<td>WAT</td>
<td>1010</td>
<td>0</td>
<td>1010</td>
<td>10 DE</td>
<td>-1000</td>
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<td>7090</td>
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<td>10</td>
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<td>REG. RD. 12 (NEW DUNDEE ROAD) AT STAUFTER WOODS TRAIL, STAUFTER WOODS SUBDIVISION</td>
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<td>80</td>
<td>900</td>
<td>980</td>
<td>980 DE</td>
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<tr>
<td>5441</td>
<td>55%</td>
<td>REG. RD. 15 (KING STREET) AT GEKR CROSSING - SUBWAY INSTALLATION</td>
<td>KIT</td>
<td>19190</td>
<td>0</td>
<td>19190</td>
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<td>7042</td>
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<td>REG. RD. 15 (KING STREET) AT WATERLOO INN SERVICE ROAD TO BLUE SPRINGS DR.</td>
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<td>0</td>
<td>50</td>
<td>50</td>
<td>50 SA</td>
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<td>7216</td>
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<td>REG. RD. 15 (KING ST) AT CONESTOGO RD.</td>
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<td>7316</td>
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<td>REG. RD. 22 (NORTHFIELD DRIVE), KING ST (RR) 15 TO KRAUS DR.</td>
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<td>810</td>
<td>150</td>
<td>960</td>
<td>960 SA</td>
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<td>5334</td>
<td>55%</td>
<td>REG. RD. 24 (HESPELER ROAD) AT RAILWAY N. OF DUNDAS ST. (RR8) - GRADE SEPARATION</td>
<td>CAM</td>
<td>1000</td>
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<td>1000</td>
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## REVISIONS TO THE 2016 TRANSPORTATION CAPITAL SYSTEM EXPANSION BUDGET

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<th>PROJ. LEN (KM)</th>
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<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
<th>VARIANCE</th>
<th>REMARKS</th>
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<tbody>
<tr>
<td>7279</td>
<td>100%</td>
<td>REG. RDS. 28 &amp; 69; HOMER WATSON BLVD. AT MANITOU DR.</td>
<td>KIT</td>
<td>25</td>
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<td>7186</td>
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<td>7178</td>
<td>50%</td>
<td>ROUNDABOUT EDUCATION PROGRAM</td>
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| TOTAL INTERSECTION IMPROVEMENTS (GROWTH-RELATED) | 0.09 | 24,460 | 9,475 | 33,935 | 27,415 | -6,520 |

## DEVELOPMENT RELATED LEFT AND RIGHT TURN LANES

<table>
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<tr>
<th>PROJ. NO.</th>
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<th>PROJECT DESCRIPTION</th>
<th>AREA MUN</th>
<th>PROJ. LEN (KM)</th>
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<th>2016 TOTAL BUDGET</th>
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<th>VARIANCE</th>
<th>REMARKS</th>
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<td>7309</td>
<td>100%</td>
<td>REG. RD. 28 (FOUNTAIN STREET) AT LIMERICK DR.</td>
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<td>15 DE</td>
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<td>7171</td>
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<td>REG. RD. 53 (COURTLAND AVENUE) AT BLOCKLINE RD.</td>
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<td>0</td>
<td>1105</td>
<td>1105</td>
<td>0</td>
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<tr>
<td>5291</td>
<td>50%</td>
<td>REG. RD. 53 (COURTLAND AVENUE) AT HAYWARD AVE.</td>
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<td>0</td>
<td>200</td>
<td>200</td>
<td>200 DE L</td>
<td>0</td>
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<tr>
<td>7173</td>
<td>100%</td>
<td>DEVELOPMENT RELATED BOULEVARD AND SHOULDER GRADINGS</td>
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<td>0</td>
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<td>100</td>
<td>100</td>
<td>0</td>
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<td>7097</td>
<td>100%</td>
<td>DEVELOPMENT RELATED LEFT AND RIGHT TURN LANES TO BE IDENTIFIED</td>
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<td>100</td>
<td>100</td>
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<td>7180</td>
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<td>PRELIMINARY DESIGN AND POST CONSTRUCTION EXPENDITURES</td>
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<td>0</td>
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<td>200</td>
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| TOTAL DEVELOPMENT RELATED LEFT AND RIGHT TURN LANES | 0.00 | 1,115 | 665 | 1,720 | 1,720 | 0 |

## TRAFFIC SIGNAL INSTALLATIONS

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<tr>
<th>PROJ. NO.</th>
<th>RDC%</th>
<th>PROJECT DESCRIPTION</th>
<th>AREA MUN</th>
<th>PROJ. LEN (KM)</th>
<th>CFWD</th>
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<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
<th>VARIANCE</th>
<th>REMARKS</th>
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| TOTAL TRAFFIC SIGNAL INSTALLATIONS | 0.00 | 1,115 | 665 | 1,720 | 1,720 | 0 |
### REVISIONS TO THE 2016 TRANSPORTATION CAPITAL SYSTEM EXPANSION BUDGET

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<th>PROJ. NO.</th>
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<th>PROJECT DESCRIPTION</th>
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<th>PROJ. LEN (KM)</th>
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<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
<th>VARIANCE</th>
<th>REMARKS</th>
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<tr>
<td>7379</td>
<td>100%</td>
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<td>KIT</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>60 SIG</td>
<td>60</td>
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<td>BRIDGE ST./NEW DUNDEE RD. AT TRUSSLER, TEMPORARY</td>
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<td>7374</td>
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<td>REG. RD. 11 (SAWMIILL ROAD) AT CHARLES ST.,</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>50 SIG</td>
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<tr>
<td>7377</td>
<td>100%</td>
<td>REG. RD. 46 (ROSEVILLE ROAD) AT DICKIE SETTLEMENT</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>50 SIG</td>
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<td>PROJECT ADDITION</td>
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<td>(RR7), TEMPORARY TRAFFIC CONTROL SIGNAL</td>
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<td>7380</td>
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<td>70 SIG</td>
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<td>80</td>
<td>80</td>
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<td>NAFZIGER ROAD</td>
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<td>40</td>
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<td>40</td>
<td>0</td>
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<tr>
<td>9654</td>
<td>100%</td>
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<td>10</td>
<td>10</td>
<td>10</td>
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**TOTAL TRAFFIC SIGNAL INSTALLATIONS**: 0.00 215 0 215 540 325

**ROAD WIDENINGS**

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<th>REMARKS</th>
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<td>90</td>
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<td>400</td>
<td>BUDGET ADDITION</td>
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<td>85%</td>
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<td>100</td>
<td>100 DE L</td>
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<tr>
<td>7327</td>
<td>100%</td>
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<td>500 DE L</td>
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<td>100%</td>
<td>REG. RD. 22 (NORTHFIELD DRIVE), DAVENPORT RD. TO UNIVERSITY AVE.</td>
<td>WAT</td>
<td>1.86</td>
<td>150</td>
<td>100</td>
<td>250</td>
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<td>7111</td>
<td>100%</td>
<td>REG. RD. 28 (HOMER WATSON BOULEVARD), CONESTOGA COLLEGE BLVD. TO DOON SOUTH DR.</td>
<td>KIT</td>
<td>0.84</td>
<td>0</td>
<td>200</td>
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<td>5204</td>
<td>85%</td>
<td>REG. RD. 33 (TOWNLINE ROAD), SAGINAW PKWY. TO CANamera PKWY.</td>
<td>CAM</td>
<td>1.90</td>
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<td>10</td>
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<td>5549</td>
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<td>CAM</td>
<td>8.03</td>
<td>5605</td>
<td>9750</td>
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<td>REG. RD. 38 (MAPLE GROVE ROAD), HESPELER RD. (RR24) TO FOUNTAIN ST. (RR17)</td>
<td>CAM</td>
<td>4.33</td>
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<td>30</td>
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<td>5110</td>
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<td>REG. RD. 55 (VICTORIA STREET), HWY 7 BRIDGE TO EDNA ST. (RR62)</td>
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<td>0.37</td>
<td>10</td>
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<td>210</td>
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<td>CONST. DEFERRED</td>
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<td>REG. RD. 56 (BLEAMS ROAD), STRASBURG RD. TO FISCHER-HALLMAN RD. (RR58)</td>
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<td>1.84</td>
<td>0</td>
<td>150</td>
<td>150</td>
<td>150 DE</td>
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<tr>
<td>7259</td>
<td>100%</td>
<td>REG. RD. 57 (UNIVERSITY AVENUE), KEATS WAY TO ERB ST. (RR9)</td>
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<td>0.58</td>
<td>140</td>
<td>20</td>
<td>160</td>
<td>90 DE</td>
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<td>REVISED ESTIMATE</td>
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<tr>
<td>7122</td>
<td>100%</td>
<td>REG. RD. 58 (FISCHER-HALLMAN ROAD), PLAINS RD. TO BLEAMS RD. (RR56)</td>
<td>KIT</td>
<td>3.14</td>
<td>60</td>
<td>750</td>
<td>810</td>
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### REVISIONS TO THE 2016 TRANSPORTATION CAPITAL SYSTEM EXPANSION BUDGET

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<th>PROJ. NO.</th>
<th>RDC%</th>
<th>PROJECT DESCRIPTION</th>
<th>AREA MUN</th>
<th>PROJ. LEN (KM)</th>
<th>2016 BUDGET</th>
<th>2016 TOTAL BUDGET</th>
<th>2016 REVISED BUDGET</th>
<th>VARIANCE</th>
<th>REMARKS</th>
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<tr>
<td>7121</td>
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<td>REG. RD. 58 (FISCHER-HALLMAN ROAD), BLEAMS RD. (RR56) TO OTTAWA ST.</td>
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<td>2.08</td>
<td>580</td>
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<td>REG. RD. 58 (FISCHER-HALLMAN ROAD), HWY. 7/8 TO COLUMBIA ST.</td>
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<td>6.96/2.13</td>
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<td>REG. RD. 69 (MANITOU DRIVE), BLEAMS RD. (RR56) TO WEBSTER RD.</td>
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<td>0.48</td>
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<td>REG. RD. 70 (IRA NEEDLES BOULEVARD), HIGHVIEW DR. TO ERB ST. (RR9)</td>
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#### TOTAL ROAD WIDENINGS

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#### ROAD SYSTEM EXPANSION

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<tr>
<td>6433</td>
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<td>REG. RD. 24 (AINSLEE STREET) EXTENSION</td>
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<td>REG. RD. 36 (FRANKLIN BOULEVARD) MULTI-USE TRAIL (MUT) CONNECTION OVER HIGHWAY 401</td>
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<td>REG. RD. 53 (FAIRWAY ROAD EXTENSION), W. OF ZELLER DR. TO FOUNTAIN ST. (RR17)</td>
<td>CAM/KIT</td>
<td>1.90/0.36</td>
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<td>REG. RD. 56 (RIVER ROAD EXTENSION), KING ST. (RR9) TO MANITOU DR. (RR69)</td>
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<td>2.11/0</td>
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<td>S. BOUNDARY ROAD, WATER ST. (RR24) TO FRANKLIN BLVD. (RR36)</td>
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<td>2.37/0</td>
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## REVISIONS TO THE 2016 TRANSPORTATION CAPITAL SYSTEM EXPANSION BUDGET

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<p>| TOTAL ROAD SYSTEM EXPANSION | 11.18 | 3,170 | 4,415 | 7,585 | 5,895 | -1,690 |</p>
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