

Committee of the Whole Meeting Agenda

**Tuesday, July 4, 2017 – 2:00 p.m.
Council Chambers, Guelph City Hall, 1 Carden Street**

Please turn off or place on non-audible all electronic devices during the meeting.

Please note that an electronic version of this agenda is available on guelph.ca/agendas.

Call to Order – Mayor

Disclosure of Pecuniary Interest and General Nature Thereof

Presentations

- a) Recognition of the City of Guelph Adult School Crossing Guard Program by the Employment Coordination Committee of Guelph and Wellington presented to Christine Vettor
- b) 2017 Awards of Excellence in Water Efficiency (Public Education and Awareness Category) presented to Jennifer Gilks, Cathy Chaput, Megan Haessler and Jocelyn Kelly for the H2Awesome Youth Education Program
- c) 2017 Awards of Excellence in Water Efficiency (Public Sector Utilities Category) presented to Wayne Galliher, Jennifer Gilks, Julie Anne Lamberts, Karen McKeown, Laura Mousseau, Emily Stahl, Alicia Wind and Heather Yates for the 2016 Water Efficiency Strategy Update
- d) Recognition of Alex Chapman, Manager, Climate Change Office, for receiving the Renewable Energy Professional accreditation from the Association of Energy Engineers
- e) Intergovernmental Relations Status Update
Barb Swartzentruber, Executive Director, Policy, Intergovernmental Relations and Open Government
Cathy Kennedy, Manager, Policy and Intergovernmental Relations

Consent Agenda – Corporate Services

Chair – Councillor MacKinnon

The following resolutions have been prepared to facilitate Council's consideration of various matters and are suggested for consideration. If Council wishes to address a specific report in isolation of the Consent Agenda, please identify the item. It will be extracted and dealt with separately as part of the Items for Discussion.

COW-CS-2017.13 Tax Sale Vesting – Roll 23 08 010 003 18701

Recommendation:

1. That Roll 23 08 010 003 18701 be vested in the name of the City of Guelph.
2. That all taxes and charges totalling \$8,095.08 regarding Roll 23 08 010 003 18701 be written off.
3. That staff investigate all options for the vested property (Roll 23 08 010 003 18701) including declaring the property surplus and selling the property to recover the uncollected amounts.

Chair and Staff Announcements – Corporate Services

Consent Agenda – Infrastructure, Development and Enterprise Services

Chair – Councillor Gibson

The following resolutions have been prepared to facilitate Council's consideration of various matters and are suggested for consideration. If Council wishes to address a specific report in isolation of the Consent Agenda, please identify the item. It will be extracted and dealt with separately as part of the Items for Discussion.

COW-IDE-2017.29 Registration of Two-unit Houses

Recommendation:

That By-law Number (2017)-XXXXX, to provide for registration of Two-unit Houses and repeal By-law Number (1997)-15392, as amended by By-law Number (2004)-17380, and By-law Number (2004)-17402, as shown as Attachment 1 of the report titled 'Registration of Two-unit Houses' and dated July 24, 2017, be adopted.

COW-IDE-2017.31 Affordable Housing Financial Incentives Program Framework

Recommendation:

1. That report IDE 17-74 Affordable Housing Financial Incentives Program Framework (AHFIP), including the AHFIP framework, dated July 4, 2017 be approved.

2. That section 6.3.3 Financial Incentives, as amended, of the Affordable Housing Strategy, included as Attachment 1 in report IDE 17-74 Affordable Housing Financial Incentives Program Framework, dated July 4, 2017 be approved.

Items for Discussion – Infrastructure, Development and Enterprise

The following items have been extracted from the Infrastructure, Development and Enterprise Consent Agenda and will be considered separately. These items have been extracted either at the request of a member of Council or because they include a presentation and/or delegations.

COW-IDE-2017.30 Stormwater Service Fee – Credit Program Feasibility Report

Presentation:

Arun Hindupur, Supervisor, Infrastructure Engineering

Recommendation:

That the stormwater service fees financial incentive program as outlined in Alternative 4 of the Stormwater Service Fee – Credit Program Feasibility Report, dated July 4, 2017, be implemented to take effect in January, 2018.

COW-IDE-2017.32 LED Street Lighting

Presentation:

Mario Petricevic, General Manager, Facilities Management
Alex Chapman, Manager, Climate Change Office

Recommendation:

1. That the LED Street Light Project (the “Project”) proposal regarding the retrofitting of the City’s street lighting asset with Light Emitting Diode (LED) technology and Adaptive Controls be approved.
2. That the Project costs estimated at \$8 million be funded via internal borrowing from the Wastewater Capital Reserve Fund (#153).
3. That staff be directed to negotiate an agreement with Guelph Hydro Electric Systems Inc. to define their role in this project based on the recommendations contained in the report, with the terms and conditions satisfactory to the General Manager of Facilities Management, the Treasurer and the City Solicitor.
4. That staff be directed to report back to Council when project savings are identified, and recommend how those savings might be allocated between debt repayment and the operating budget.

COW-IDE-2017.33 Guelph Active Transportation Network Design Guidelines and Feasibility Study

Presentation:

Jay Cranstone, Project Manager and Senior Landscape Architect, WSP

Recommendation:

1. That the Guelph Active Transportation Network Design Guidelines and Feasibility Study dated June 2017, prepared by WSP and Paradigm Transportation Solutions Limited, be approved;
2. That funding for year-round maintenance of the Active Transportation Network per the recommendations of the Guelph Active Transportation Network Design Guidelines and Feasibility Study be included in the proposed 2018 Operating Budget;
3. That funds to implement the Guelph Active Transportation Network Design Guidelines and Feasibility Study over the next ten years, estimated to be \$12,268,000, be included in the proposed 2018-2027 Capital Budget;
4. That the operating budget to provide year-round maintenance of the proposed active transportation network be increased as new trails are constructed to a total additional amount of approximately \$271,000 per year once fully implemented.

COW-IDE-2017.34 Draft Urban Design Manual: Urban Design Vision and Design Action Plan

Presentation:

David deGroot, Senior Urban Designer

Recommendation:

That the draft Urban Design Vision and Urban Design Action Plan components of the Urban Design Manual be received.

COW-IDE-2017.35 Clair-Maltby Secondary Plan Phase One Report and Recommended Vision and Guiding Principles

Presentation:

Stacey Laughlin, Senior Policy Planner

Recommendation:

That the Clair-Maltby Secondary Plan vision and guiding principles be approved as outlined in report IDE 17-76.

Planning a Bicentennial Project in Guelph 2027

Councillor Bell will speak to and introduce the following motion:

Recommendation:

That staff develop a plan to establish a bicentennial showcase project that includes a public competition for Council consideration in 2019.

Background:

Guelph will celebrate its 200th birthday in 2027. There is an opportunity to start planning now and over the next 10 years for a Bicentennial Project to mark the event. The Bicentennial project is intended as a stand-alone infrastructure project that reflects the past and future for Guelph, and engages the community. A public competition for an appropriate project would ensure involvement from the community early in the planning. Funding for this project will also need to be considered through future capital budget plans.

Woonerf Pilot Project for New Street

Councillor Bell will speak to and introduce the following motion:

Recommendation:

That staff evaluate and report back regarding the potential of woonerfs as a planning tool for future road constructions in the City.

Background:

“Woonerf” is a Dutch term for “living street.” First developed in the Netherlands, it’s a space where pedestrians take priority and vehicles act as guests. A woonerf allows a space to be used in multiple ways — an area for kids to play, a walkway and a laneway for delivery trucks to name a few.

Chair and Staff Announcements – Infrastructure, Development and Enterprise Services

Mayor as Chair

Chair and Staff Announcements

Adjournment

Intergovernmental Relations Status Update

July 4, 2017
Committee of the Whole

Intergovernmental Relations: At a Glance

COUNCIL REPORTS - 11



Informs public
Community engagement

**STAKEHOLDER
MEETINGS - 40**



Partnerships for a
stronger voice

**GOVERNMENT
FUNDING RECEIVED
\$18 MILLION**

**Recreation &
Cultural Centres**

Policy Innovation

**Transportation
Infrastructure**

**Enhancements to
City Service delivery**

Affordable Housing

Public Transit

**Water, Waste Water,
Solid Waste**

Guelph

**PROVINCIAL
CONSULTATIONS -
24**

Federal/Provincial
policy/legislative
reforms

**GOVERNMENT
MEETINGS -
30**

**FUNDING
APPLICATIONS -
13**

Intergovernmental Relations Strategic Framework



Progressive
Thought
Leadership

Continue to develop and promote Guelph's leadership in delivery of innovative public sector policies, services, solutions.



Policy &
Advocacy

Develop the processes, relationships and capacity to manage & respond to emerging issues, funding opportunities, and legislative and policy changes.



Strategic
Partnerships

Build strategic relationships & increase leadership role in key networks and associations to achieve priorities and influence directions

Progressive Thought Leadership

Fostering Guelph's overall reputation of innovative, progressive leadership, internally and externally, through:

- **Corporate Support**

- Assume a leadership role and government relations advice to the Mayor, Council and across the organization
- Respond to policy proposals originating from the federal and provincial governments
- Manage emerging issues affecting the community or corporation

- **External Engagement**

- Provide strategic support and policy advice to municipal stakeholder groups – LUMCO, MOSO, IG Network Group, FCM and AMO
- Develop policy tools to facilitate best practices for the corporation that benefit the community

Progressive Thought Leadership

Examples of Forward Thinking Leadership

Consultation Protocol

- Corporate document to monitor, facilitate and communicate the City's position on provincial and federal policy issues

Shared Economy

- 'How to' document to guide municipalities in considering factors associated with the Shared Economy
- Pilot study related to a ride-share economy
- Invitations to speaking engagements

Corridor

- Continued advocacy for two-way, all day GO service
- Collaborating with the Province on the implementation of High Speed Rail Service
- Engagement in Super-Cluster conversations

Policy & Advocacy

Successful Advocacy Campaigns



➤ **Shared Economy**

- Received \$15,000 in provincial funding to undertake the development of the 'How To' Framework

➤ **High-Speed Rail**

- Meetings with senior officials, including David Collenette, led to provincial commitment to a station stop in Guelph

➤ **Water Taking Permits**

- Innovative grassroots approach for the community to engage in the influence of provincial policy

➤ **GO Regional Express Rail (Two-Way, All-Day GO)**

- Four additional station stops (two in a.m. , two in p.m.)
- Enable Guelph to better compete for global talent and innovative companies

Policy & Advocacy

Successful Advocacy Campaigns (Continued)



➤ **Affordable Housing**

- Financial Incentives Program

➤ **Guelph Innovation District**

- Unlocking provincial lands – positive progress

➤ **Guelph Junction Railway Funding Application**

- Supported GJR in their successful application for \$25,000 in Rail Safety Improvement Program funding

➤ **Toronto-Waterloo Corridor (Innovation)**

- Raising the profile of Guelph within the Corridor

Policy & Advocacy

Successes Continued

Phase 1 Infrastructure Funding

- Approximately \$17,903,526 in funding was awarded from the federal and provincial governments:



Funding Program	Number of City Projects Funded	Federal Contribution	Provincial Contribution
Public Transit Infrastructure Fund (PTIF)	5	\$10,211,691	0
Clean Water and Wastewater Fund (CWWF)	3	\$5,047,890	\$2,523,945
Canada 150 Infrastructure Program	1	\$120,000	n/a

Policy & Advocacy

Phase 2 Infrastructure Funding

- In preparation for federal program funding announcements in 2018, IG is working across the organization identifying key infrastructure projects that may qualify for funding.
- The projects under consideration:
 - are included in the 10 year capital budget forecast
 - follow the principles of the corporate asset management plan
 - align with the federal and provincial priorities
 - Are categorized under “programs of work”. Examples include:
 - Active Transportation & Transit
 - Contaminated Sites
 - Culture and Recreation
 - Water, Wastewater & Stormwater Infrastructure



Policy & Advocacy



Association of Municipalities of Ontario – Ministry Delegations

Minister's Delegation Requests	
AMO Conference 2016	AMO Conference 2017 (Proposed)
Ministry of Government and Consumer Services <ul style="list-style-type: none"> Shared Economy – LUMCO 	Ministry of Government and Consumer Services <ul style="list-style-type: none"> Guelph's Innovation Agenda Shared Economy - LUMCO
Ministry of Transportation <ul style="list-style-type: none"> "The Corridor" 	Ministry of Transportation <ul style="list-style-type: none"> High-Speed Rail GTA West Corridor – City of Kitchener
Ministry of Infrastructure <ul style="list-style-type: none"> Infrastructure Funding Guelph Innovation District 	Ministry of Infrastructure <ul style="list-style-type: none"> Infrastructure Advocacy Guelph Innovation District
Ministry of Energy <ul style="list-style-type: none"> Community Energy Initiative 	Ministry of the Attorney General <ul style="list-style-type: none"> Provincial Offences Court Operations
	Ministry of Municipal Affairs/Housing <ul style="list-style-type: none"> Joint County/City Housing – 200 Beverley St.

Strategic Partnerships: Government and Stakeholder Relations

Consultations

Comments submitted to the Province (Consultation Alerts)

- Since June 2016, **24** comments submitted to various Ministries
 - Topics typically relate to environmental, transportation, energy, and planning matters

Meetings

Meetings held with other levels of Government

- Over **30** meetings held with various Federal Ministries, local MP and MPP, Provincial Ministries, Federal and provincial agencies, Opposition Party Leaders, Cabinet Ministers and senior political staff

Meetings with stakeholder groups or partners

- Approximately **40** meetings held with regional governments, community groups, First Nations communities, educational institutions, Chamber of Commerce and GJR.
 - = Strengthened the relationship between the City and County
 - = Provided UoG input related to its Community Strategic Plan

Moving Forward

Priorities



- **AMO preparation**
 - Advocacy materials, prepare for delegations, generate follow-up action with Ministries
- **Shared Economy Pilot Study**
 - Amendments to the Taxi Licensing By-law to understand the impact of ride-sharing
- **200 Beverley Street Remediation (IMICo)**
 - Influence federal/provincial policy to include remediation in program eligibility
- **Federal/Provincial Infrastructure Funding Programs**
 - Strategic advocacy
- **Duty to Consult (Municipalities obligations)**
 - Indigenous communities consultation protocol
- **Continued issues management & policy implementation support**

Thank you

Questions?



Staff Report



To **Committee of the Whole**

Service Area Corporate Services

Date Tuesday, July 4, 2017

Subject Tax Sale Vesting – Roll 23 08 010 003 18701

Report Number CS-2017-62

Recommendation

1. That Roll 23 08 010 003 18701 be vested in the name of the City of Guelph.
2. That all taxes and charges totalling \$8,095.08 regarding Roll 23 08 010 003 18701 be written off.
3. That staff investigate all options for the vested property (Roll 23 08 010 003 18701) including declaring the property surplus and selling the property to recover the uncollected amounts.

Executive Summary

Purpose of Report

To obtain Council's approval to vest in the name of the City of Guelph a property that was advertised for tax sale and did not attract any bids, thus resulting in an unsuccessful tax sale.

Key Findings

On September 10, 2015 the City conducted a tax sale at which time there was no successful purchaser. The Municipal Act requires a notice of vesting to be registered within two years of an unsuccessful tax sale. Failure to do so would result in the cancellation of the tax arrears certificate, requiring the City to begin the tax sale process from the beginning.

Financial Implications

The total amount of taxes and charges to be written off is \$8,095.08. The net impact to the City is \$7,694.32 with the remainder being charged back to the Public School Board.

The City maintains an allowance for uncollectible taxes that this can be applied against and as a result, there will be no operating budget variance resulting from this transaction.

Report

The Municipal Act provides authority for municipalities to register and advertise properties which are three years or more in tax arrears for tax sale. In March of 2010, roll 23 08 010 003 18701, herein referred to as 'the property', was registered under the Municipal Act due to unpaid tax arrears.

Subsequently, on September 10, 2015, the property was advertised for tax sale by way of public tender. No tenders were received resulting in an unsuccessful tax sale.

When a tax sale is unsuccessful, there are three options available to the municipality:

1. Do nothing - The property will continue to accrue taxes and penalties. This will further increase the amount owing to the City with no expectation of collecting upon the amounts owed. This option is not recommended.
2. Re-advertise the property for sale - This can be done within two years of an unsuccessful tax sale. The property will continue to accrue taxes and penalties as well as advertising costs, further increasing the minimum tender price. This option is not recommended.
3. Vest the property to the City - This must be done within two years of an unsuccessful tax sale. This changes the ownership of the property to the municipality and all taxes and charges will be written off. Only registered easements and restricted covenants, interest or title acquired by adverse possession by abutting landowners, estates or interests of the Crown survive the vesting process. This option is recommended.

The Municipal Act requires a notice of vesting to be registered within two years of an unsuccessful tax sale. Failure to do so would result in the cancellation of the Tax Arrears Certificate, requiring the City to restart the tax sale process from the beginning. The City does not believe a second tax sale process would change the current result and would end again in an unsuccessful tax sale. This would not be considered a good use of City staff resources and the additional costs would likely not be recoverable. The deadline to vest the property is September 8, 2017 as September 10, 2017 is a Sunday.

Vesting the property allows the City to retain control of the property without incurring future taxes, penalties and interest or advertising costs with no expectation of collection. Retaining control on the property will also allow for staff to consider all options for the property, including declaring the property surplus and selling the property to recover the uncollected amounts.

Financial Implications

The total amount of taxes and charges to be written off is \$8,095.08. This amount is split as follows:

City of Guelph Taxes	\$ 818.58
Public School Board Taxes	\$ 400.76
Penalty and Interest	\$3,644.90
Collection Costs	\$3,230.84

The City maintains an allowance for uncollectible taxes that this can be applied against and as a result, there will be no operating budget variance resulting from this transaction.

Consultations

Once a strategy is decided for the property, appropriate communications will follow. This may consist of contacting neighboring property owners to gauge their interest in the property.

Corporate Administrative Plan

Overarching Goals

Financial Stability

Service Area Operational Work Plans

Our Resources - A solid foundation for a growing city

Attachments

ATT-1 Advertisement of property for tax sale

Departmental Approval

James Krauter
Deputy Treasurer / Manager, Taxation and Revenue

Report Author

Gregory Bedard
Supervisor, Property Tax



Approved By

Tara Baker, CPA, CA
GM Finance & City Treasurer
519-822-1260 Ext. 2084
tara.baker@guelph.ca

Recommended By

Colleen Clack
Interim Deputy CAO, Corporate Services
519-822-1260 Ext. 2588
colleen.clack@guelph.ca

FORM 6
Municipal Act, 2001

SALE OF LAND BY PUBLIC TENDER

THE CORPORATION OF THE CITY OF GUELPH

Take Notice that tenders are invited for the purchase of the lands described below and will be received until 3:00 p.m. local time on September 10, 2015, at the Guelph City Hall, 1 Carden St., Guelph Ontario.

The tenders will then be opened in public on the same day as soon as possible after 3:00 p.m. at the City Hall, 1 Carden St., Guelph.

Description of Lands:

Roll No. 23 08 010 003 18701 0000; Ontario St. N/S, Guelph; PIN 71340-0292(LT); Part Lot 64, Plan 113, designated Part 4, Plan 61R9435; Guelph; S/T easement in favour of the Corporation of the City of Guelph over Part 4, Plan 61R9435 as in WC38138; File No. 10-01

Minimum Tender Amount: \$8,095.96

Roll No. 23 08 010 001 14500 0000; 129 Surrey St. E, Guelph; PIN 71285-0085(LT); Part Lot 2, Plan 269, being Part 1, Plan 61R9286; Guelph; File No. 12-25

Minimum Tender Amount: \$17,504.57

Tenders must be submitted in the prescribed form and must be accompanied by a deposit in the form of a money order or of a bank draft or cheque certified by a bank or trust corporation payable to the municipality and representing at least 20 per cent of the tender amount.

Except as follows, the municipality makes no representation regarding the title to or any other matters relating to the lands to be sold. Responsibility for ascertaining these matters rests with the potential purchasers.

This sale is governed by the Municipal Act, 2001 and the Municipal Tax Sales Rules made under that Act. The successful purchaser will be required to pay the amount tendered plus accumulated taxes, HST if applicable and the relevant land transfer tax.

The municipality has no obligation to provide vacant possession to the successful purchaser.

For further information regarding this sale and a copy of the prescribed form of tender, visit:

www.OntarioTaxSales.ca

or

www.Tri-Target.com

or if no internet access available, contact:

James Krauter, CMTP, AIMA
Manager of Taxation and Revenue
The Corporation of the City of Guelph
City Hall, 1 Carden St.
Guelph ON N1H 3A1
(519) 822-1260 Ext. 2334



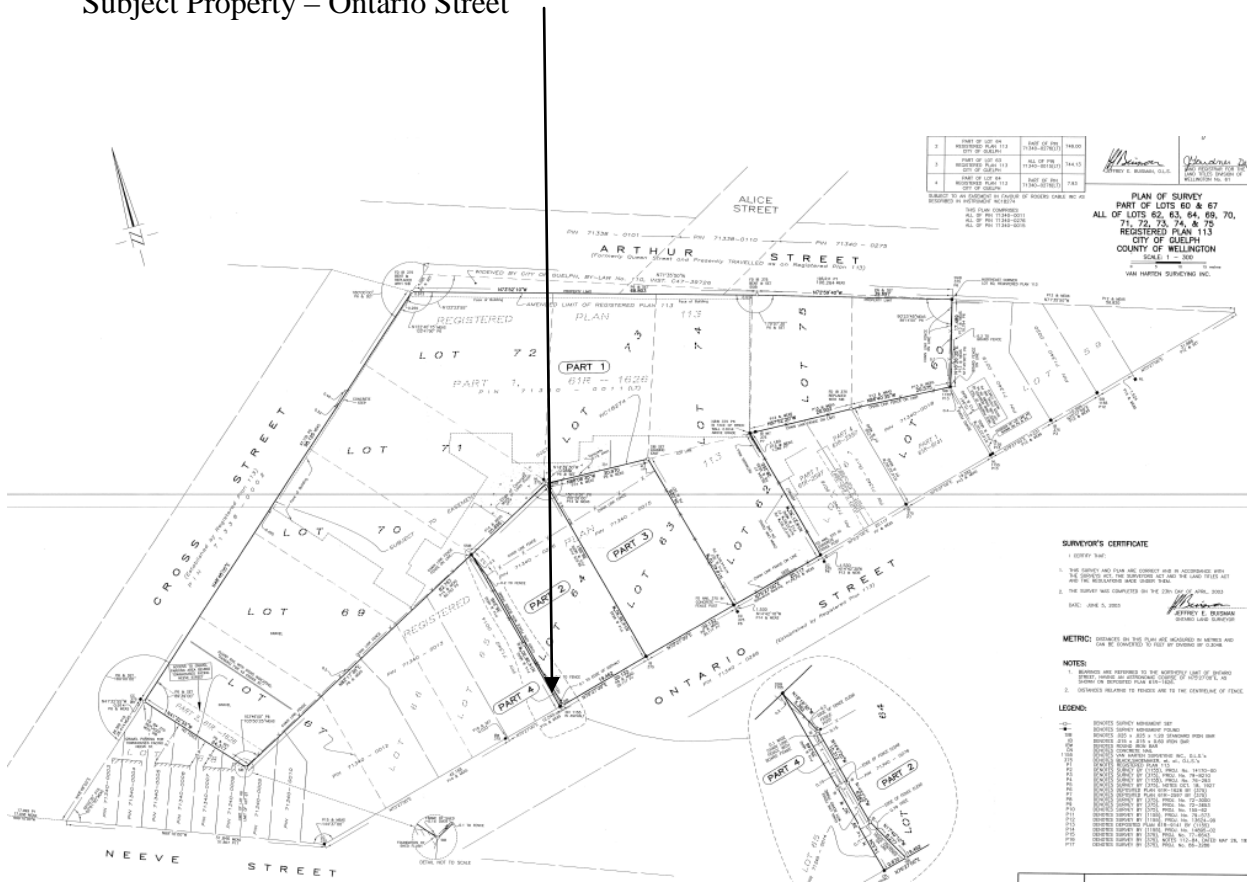
Property Information

Municipality	City of Guelph
File Number	10-01
Roll Number	23 08 010 003 18701 0000
Minimum Tender Amount	\$8,095.96
Municipal Location	Ontario St. N/S, Guelph
Property Identification Number	71340-0292(LT)
Brief legal description	Part Lot 64, Plan 113, designated Part 4, Plan 61R9435; Guelph; S/T easement in favour of the Corporation of the City of Guelph over Part 4, Plan 61R9435 as in WC38138
Annual Taxes	\$12.45 (2015)
Assessed value	\$1,000 (2012 CVA)
Approximate property size (<i>Area, Frontage, Depth</i>)	2.20F 115.64D
Is the property on a lake or a bay or a river?	No
Is the property accessible by a public or private road or a right-of-way? <i>(Please indicate which)</i>	Yes
Is there a house on the property?	No
Is there some other structure on the property?	No
Zoning (<i>If noted, provide code and simplified description</i>)	
<u>With the existing zoning</u> , is it possible to obtain a building permit?	No
Is it possible to have the property re-zoned?	
For further information regarding Zoning, contact:	Zoning at zoning@guelph.ca
Additional information (<i>For example, is it wetlands/landlocked/ environmentally contaminated/used as a gas station, close to a beach/golf course etc.?</i>)	
Please attach at least one photograph of the property if at all possible!	
Please attach a map of the property (the map should enable someone from out of town to find the property)	

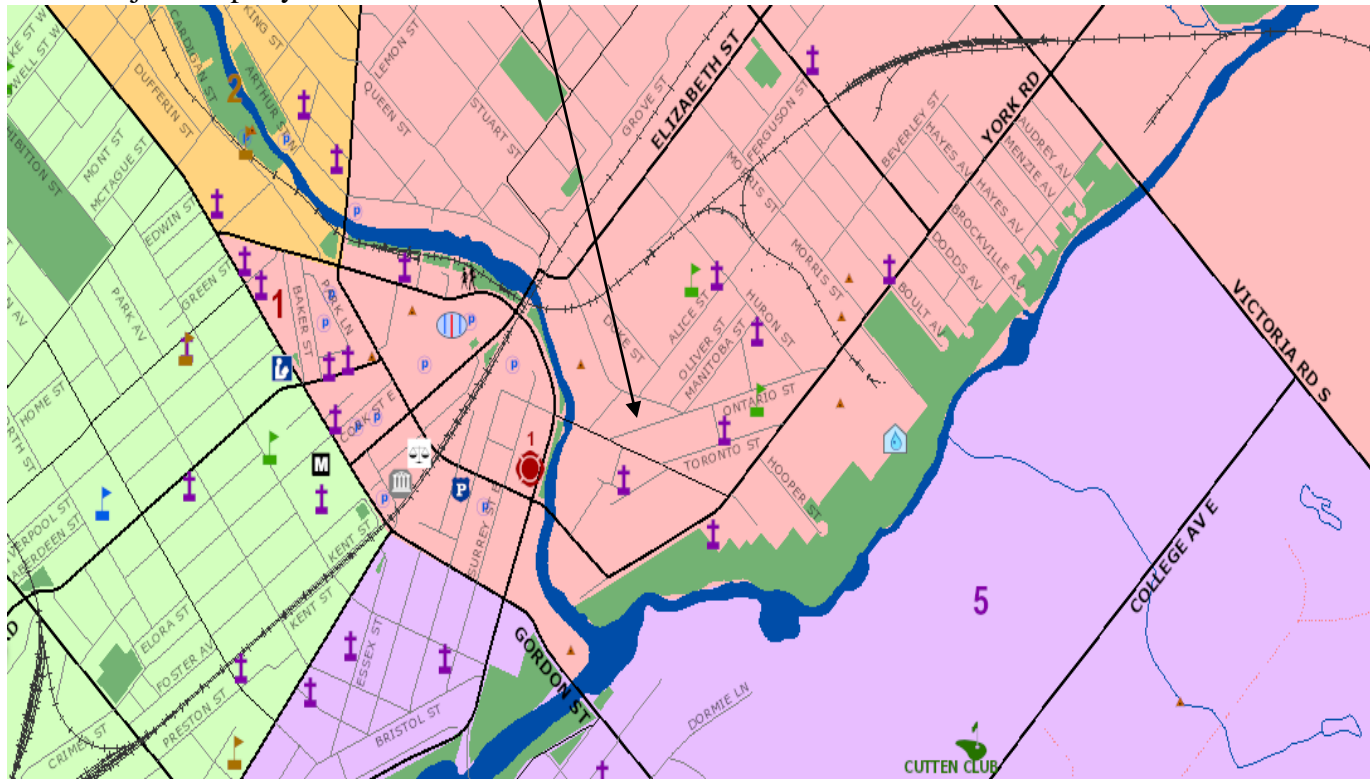
This information
was completed by: Herman Klingenberg
Your Name

August 8 2015
Date

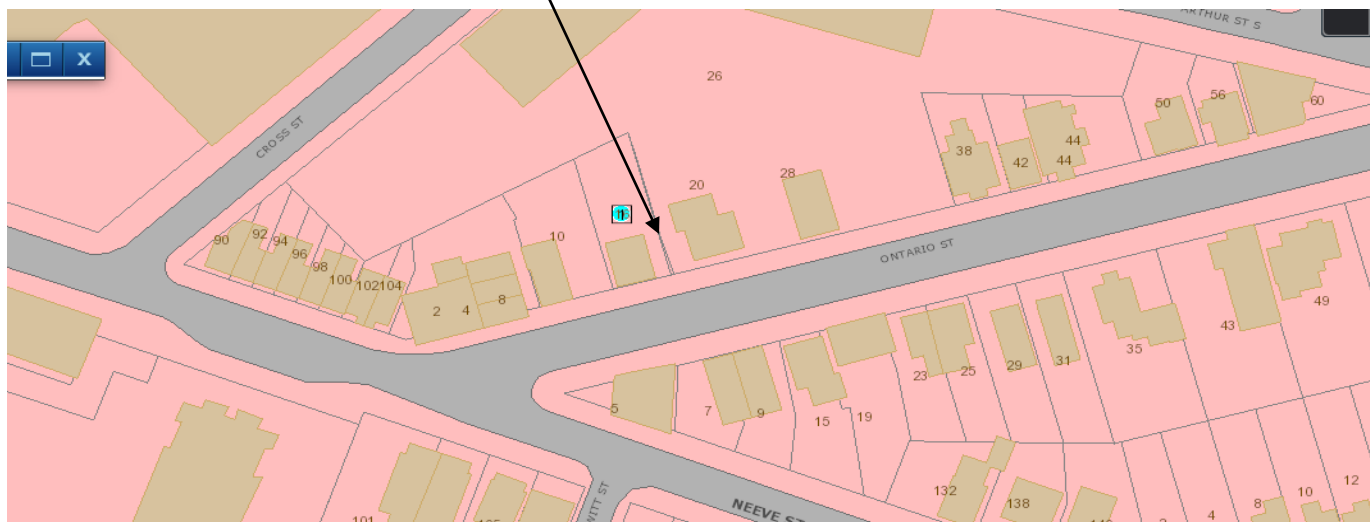
Subject Property – Ontario Street



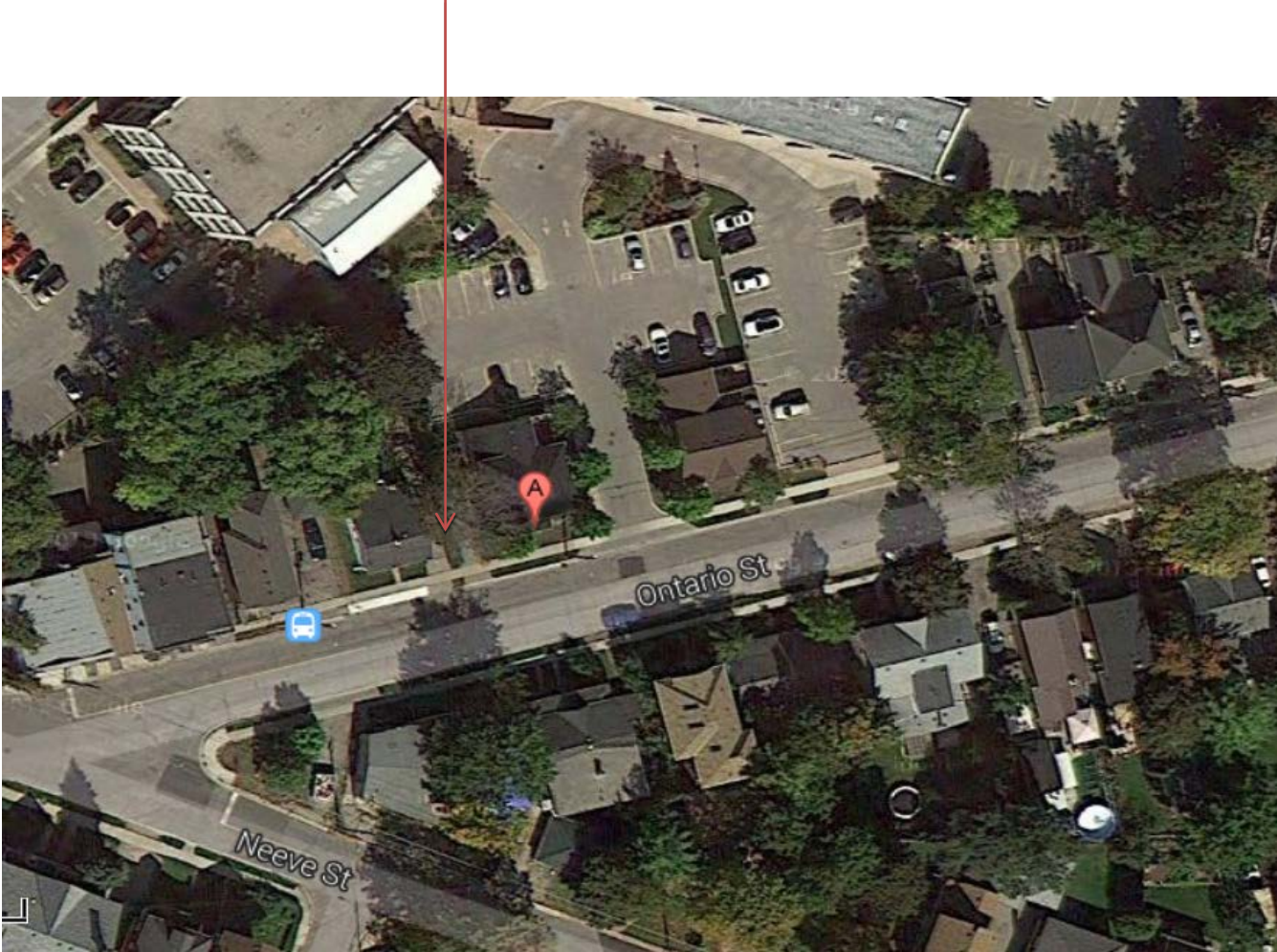
Subject Property – Ontario Street



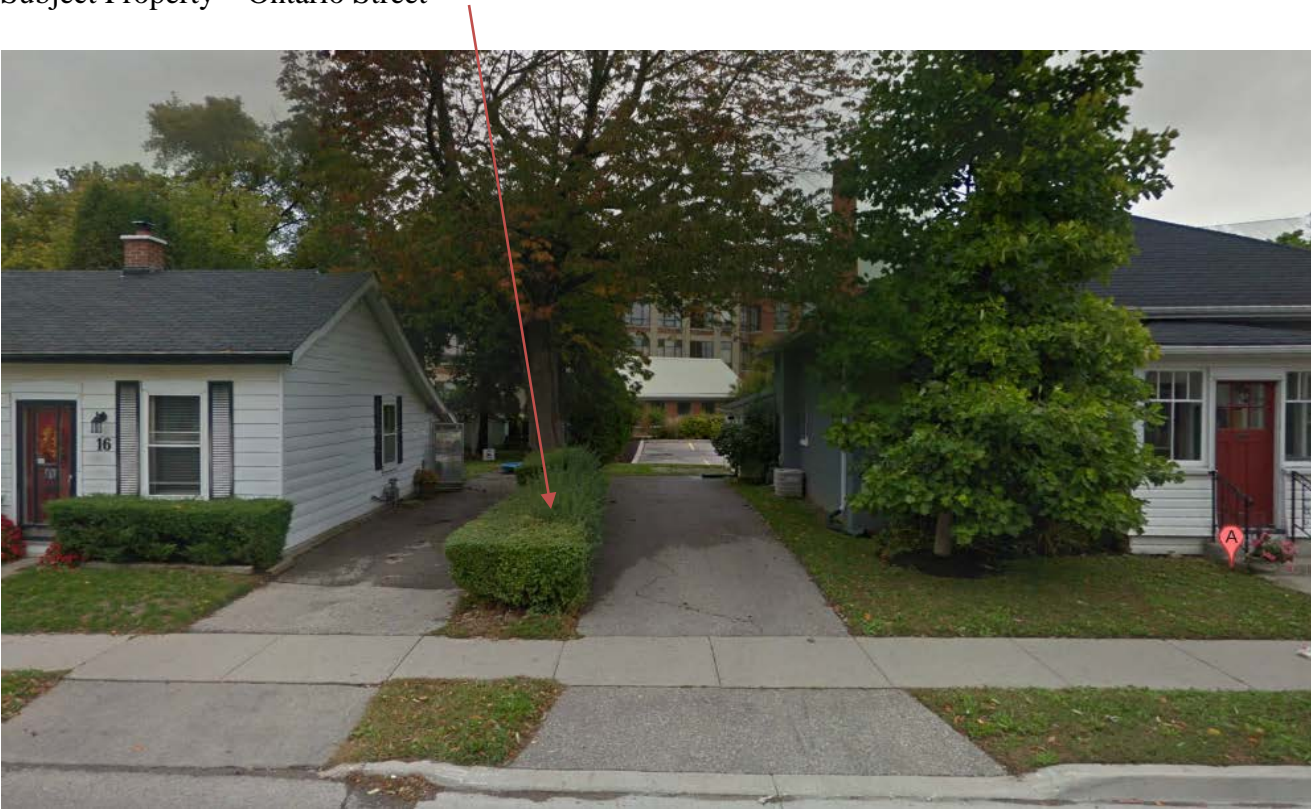
Subject Property- Ontario Street



Subject Property – Ontario Street



Subject Property – Ontario Street



Staff Report



To **Committee of the Whole**

Service Area Infrastructure, Development and Enterprise Services

Date Tuesday, July 4, 2017

Subject **Registration of Two-unit Houses**

Report Number IDE 17-81

Recommendation

1. That By-law Number (2017)-XXXXX, to provide for registration of Two-unit Houses and repeal By-law Number (1997)-15392, as amended by By-law Number (2004)-17380, and By-law Number (2004)-17402, as shown as Attachment 1 of the report titled 'Registration of Two-unit Houses' and dated July 24, 2017, be adopted.

Executive Summary

Purpose of Report

To recommend adoption of By-law Number (2017)-XXXXX to provide for registration of Two-unit Houses and to repeal the current registration by-law.

Key Findings

By-law Number (1997)-15392 was passed on March 17th, 1997 which requires the registration of Two-unit Houses. Through working with this by-law, staff have determined the need to introduce revisions that better reflect the current practices in interpreting and applying the by-law. Although staff had originally set out to amend By-law Number (1997)-15392, it was determined that the previous enabling legislation of that by-law has since changed. Additionally it was determined that there would be value in adopting a new registration by-law that further aligns with the Zoning By-law and provides for flexibility should the Zoning By-law be amended in the future.

Similar to By-law Number (1997)-15392, which requires the registration of Two-unit Houses, the proposed by-law would:

- Require a one-time initial registration to ensure the Two-unit House has been created/upgraded to standards that promote applicable land use planning principles and the safety of the occupants;
- Be a resource for the public to identify Two-unit Houses that have met specific safety standards and can be legally occupied; and

- Provide critical information to emergency services when trying to locate or determine if a second dwelling unit exists within a house.

In addition, the proposed by-law will:

- Automatically register previously registered Two-unit Houses;
- Require up-to-date ownership information;
- Include the current requirements and registration methods available to applicants;
- Provide clarity to the public by further aligning terminology to be consistent with the Zoning By-law; and
- Provide further flexibility should the Zoning By-law be amended in the future to allow accessory apartments in additional housing forms.

Subsections 8(1), 8(2), 8(3), and 8(4) of the Municipal Act, 2001, enables a municipality to govern its affairs as it considers appropriate and to enhance its ability to respond to municipal issues by passing a by-law. Subsections 10(1) and 10(2) of the same, enables a single-tier municipality to provide a service or thing that the municipality considers necessary or desirable for the public. This includes the passing of by-laws respecting, among other things, the health, safety and well-being of persons and protection of persons and property (including consumer protection).

Financial Implications

N/A

Report

The Two-unit House program was created in 1994 in response to provincial legislation (Bill 120) that allowed second dwelling units in existing dwellings (sometimes referred to as an in-law suite, basement apartment, or accessory apartment). At that time, Building Services staff created a policy reflecting legislative requirements which set out two streams of standards to upgrade second dwelling units. Units meeting the requirements and confirmed to exist prior to the change of use provisions enacted in the Building Code were upgraded using the safety standards set out in the Fire Code. Newer units were required to meet standards of the Building Code.

Once upgrading began, it was difficult to track (let alone communicate to the public) those units which were legally created and upgraded to meet safety requirements. By-law Number (1997)-15392 was passed on March 17th, 1997 which provided for a registry of these Two-unit Houses. It was later amended in 2004 by By-law Number (2004)-17380 which provided for registration fees, and By-law Number (2004)-17402 with respect of the appointment of persons for enforcement. Since this time, no subsequent amendments have been passed.

By-law Number (1997)-15392, as amended, formed the basis of a registration program that promotes the creation of Two-unit Houses that meet applicable land

use planning principles and safety requirements. To date, over 2,500 Two-unit Houses have been registered.

Through working with By-law Number (1997)-15392, as amended, staff has determined the need to introduce revisions that reflect the current practices in interpreting and applying the by-law. Although staff had originally set out to amend By-law Number (1997)-15392, it was determined that the previous enabling legislation of that By-law has since changed. Additionally it was determined that there would be value in adopting a new registration by-law that further aligns with the Zoning By-law and provides for flexibility should the Zoning By-law be amended in the future.

Similar to By-law Number (1997)-15392, which requires the registration of Two-unit Houses, the proposed by-law would:

- Require a one-time initial registration to ensure the Two-unit House has been created/upgraded to standards that promote applicable land use planning principles and the safety of the occupants;
- Be a resource for the public to identify Two-unit Houses that have met specific safety standards and can be legally occupied; and
- Provide critical information to emergency services when trying to locate or determine if a second dwelling unit exists within a house.

In addition, the proposed by-law will:

- Automatically register previously registered Two-unit Houses;
- Require up-to-date contact information of the owner and require notification of ownership changes;
- Include the current requirements and registration methods available to applicants;
- Provide clarity to the public by further aligning terminology to be consistent with the Zoning By-law; and
- Provide further flexibility should the Zoning By-law be amended in the future to allow accessory apartments in additional housing forms (i.e. townhouses).

Subsections 8(1), 8(2), 8(3), and 8(4) of the Municipal Act, 2001, enables a municipality to govern its affairs as it considers appropriate and to enhance its ability to respond to municipal issues by passing a by-law. Subsections 10(1) and 10(2) of the same, enables a single-tier municipality to provide a service or thing that the municipality considers necessary or desirable for the public. This includes the passing of by-laws respecting, among other things, the health, safety and well-being of persons and protection of persons and property (including consumer protection).

As outlined above, the proposed by-law is necessary and desirable, in that it ensures that Registered Two-unit Houses are created or upgraded to standards that promote the safety and well-being of the citizens of Guelph. It also provides for a Registry that enables prospective tenants, purchasers, real estate professionals and the like, to easily identify Two-unit Houses that have met the required safety standards and can be legally occupied. The Registry can also be used to provide

critical information to emergency services trying to determine if a person(s) may be in a second dwelling unit of a house.

Financial Implications

N/A

Consultations

Fire Prevention – Emergency Services
Financial Planning and Budgets - Finance
By-law Compliance, Security and Licensing - Operations
Legal Services - Legal, Realty and Risk Services

Corporate Administrative Plan

Overarching Goals

Service Excellence

Service Area Operational Work Plans

Our Services - Municipal services that make lives better

Attachments

ATT-1 By-law Number (2017) - XXXXX

Departmental Approval

Bruce Banting, Associate City Solicitor - Legal, Realty and Risk Services

Report Author

Bill Bond
Zoning Inspector III/Senior By-law Administrator

Approved By:

Patrick Sheehy
Program Manager – Zoning



Approved By

Todd Salter
General Manager
Planning, Urban Design, and
Building Services
519-837-5615, ext. 2395
todd.salter@guelph.ca

Approved By:

Rob Reynen
Chief Building Official



Recommended By

Scott Stewart, C.E.T.
Deputy CAO
Infrastructure, Development and Enterprise
519-822-1260, ext. 3445
scott.stewart@guelph.ca

THE CORPORATION OF THE CITY OF GUELPH

By-law Number (2017)-

A by-law to provide for the registration of Two-unit Houses and to repeal by-law number (1997)-15392, as amended by by-law number (2004)-17380, and by-law number (2004)-17402.

WHEREAS under subsections 8(1), 8(2), 8(3), 8(4), 10(1) and 10(2) of the *Municipal Act, 2001* the City may pass by-laws providing for the registration of Two-unit Houses;

AND WHEREAS the City has previously passed By-law Number (1997)-15392, as amended by By-law Number (2004)-17380, providing for the registration of Two-unit houses, and By-law Number (2004)-17402 in respect of the appointment of persons to enforce the provisions of By-law Number (1997)-15392;

AND WHEREAS the City wishes to replace its by-law providing for the registration of Two-unit houses with a new by-law providing for the registration of Two-unit Houses;

AND WHEREAS under section 425 of the *Municipal Act, 2001* the City may pass by-laws providing that a person who contravenes a by-law of the City passed under the Act, or a director or officer of a corporation who knowingly concurs in the contravention of a by-law, is guilty of an offence;

AND WHEREAS under section 429 of the *Municipal Act, 2001* the City may establish a system of fines for offences under a by-law;

THE COUNCIL OF THE CORPORATION OF THE CITY OF GUELPH ENACTS AS FOLLOWS:

Interpretation

1. In this By-law:

"Building" means a building as defined in the *Building Code Act, 1992*, S.O. 1992, c. 23, as amended or replaced from time to time;

"*Building Code*" means the Building Code, O. Reg. 332/12, as amended or replaced from time to time;

"City" means The Corporation of the City of Guelph;

"Contact Information" means information about an Owner that will enable the Registrar to contact the Owner, and includes as many as possible of the following: address(es) for personal service, mailing address(es), telephone number(s), fax number(s), and email address(es);

"Dwelling Unit" means a dwelling unit as defined in the Zoning By-law;

"*Electrical Safety Code*" means the Electrical Safety Code, O. Reg. 164/99, as amended or replaced from time to time;

"*Fire Code*" means the Fire Code, O. Reg. 213/07, as amended or replaced from time to time;

"*Municipal Act, 2001*" means the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended or replaced from time to time;

"Owner", in respect of a Two-unit House, means the registered owner of the lands and premises upon which the Two-unit House is located;

"Property Standards By-law" means the City's Property Standards By-law Number (2000)-16454, as amended or replaced from time to time;

"Register" means the public record of Two-unit houses registered under this By-law;

"Registrar" means the Chief Building Official of the City or his or her designate;

"Two-unit House" means a Building containing only two Dwelling Units on the same lands and premises, but does not include a building with a commercial use on commercially zoned lands and premises as set out by the Zoning By-law; and

"Zoning By-law" means the City's Zoning By-law Number (1995)-14864, as amended or replaced from time to time.

2. This By-law is to be construed with all changes in number and gender as may be required by the context.
3. If a court of competent jurisdiction declares any provision or part of a provision of this By-law to be invalid, illegal, unenforceable or of no force and effect, it is the intention of Council in enacting this By-law that the remainder of this By-law will continue in force and be applied and enforced in accordance with its terms to the fullest extent possible according to law.
4. If the Owner of a Two-unit House comprises two or more persons, then a representative, comprising fewer than all of those persons, is sufficient to carry out any obligation of the Owner under this By-law, as long as such representative has the permission of all the other persons comprising the Owner.
5. The Registrar shall be responsible for the administration of this By-law, and may prescribe all forms and procedures necessary to implement this By-law, and may amend such forms and procedures from time to time as he or she determines necessary.
6. Where the Registrar is authorized to make any decision or determination under this By-law, he or she may make such decision or determination in his or her sole and absolute discretion.

Requirement for Registration

7. No person shall own, operate or permit the occupancy of a Two-unit House unless it is registered under this By-law.

Initial, Automatic Registration

8. Upon passage of this By-law, every Two-unit House registered under By-law Number (1997)-15392, as amended by By-law Number (2004)-17380, is automatically registered as a Two-unit House under this By-law.

Applying for Registration – General

9. If a Two-unit House is not registered under this By-law, then the Owner shall apply to the Registrar to have it registered under this By-law.
10. An Owner, who applies to have a Two-unit House registered under this By-law, shall pay all applicable fees or charges for all documentation required for registration.
11. In applying to have a Two-unit House registered under this By-law, the Owner shall provide the following to the Registrar:
 - (a) Contact Information;
 - (b) Such drawings and other information and material as the Registrar may require; and
 - (c) The applicable fees or charges.
12. The Owner shall bear the onus of proving to the Registrar that the Owner's Two-unit House meets all applicable requirements for registration under this By-law. For greater certainty, a Two-unit House may still qualify for registration under this By-law despite being part of a legal non-conforming use.

Applying for Registration – Older Two-unit House

13. An Owner, applying for registration of a Two-unit House on the basis that the Two-unit House was created prior to July 1, 1993, shall provide to the Registrar documentation that establishes, to the satisfaction of the Registrar, that:
 - (a) Applicable building permits were obtained;
 - (b) The Two-unit House existed prior to July 1, 1993;
 - (c) The Two-unit House has remained in existence since July 1, 1993; and
 - (d) The Two-unit House complies with all provisions of the *Electrical Safety Code, Fire Code, Property Standards By-law* and *Zoning By-law* which the Registrar determines are appropriate.
14. An Owner, applying for registration of a Two-unit House on the basis that the Two-unit House was created prior to July 1, 1993, who fails to provide to the Registrar documentation that establishes, to the satisfaction of the Registrar, that the Two-unit House qualifies for such registration, shall satisfy the requirements of this By-law relating to a Two-unit House that was created on or after July 1, 1993.

Applying for Registration – Newer Two-unit House

15. An Owner, applying for registration of a Two-unit House that was created on or after July 1, 1993, or which does not qualify for registration on the basis that the Two-unit House was created prior to July 1, 1993, shall provide to the Registrar documentation that establishes, to the satisfaction of the Registrar, that the Two-unit House complies with all provisions of the *Building Code, Electrical Safety Code, and Zoning By-law* which the Registrar determines are appropriate.

Consideration of an Application for Registration

16. In considering an application for registration under this By-law, the Registrar may require the Owner to obtain, pay for and provide inspection reports that are satisfactory to the Registrar.
17. If an application for registration under this By-law is incomplete, the Registrar may require the applicant to make the application complete. If an applicant fails to make an incomplete application complete the Registrar may deny the application. If the Registrar denies the application, the Registrar

shall so notify the applicant. Despite such denial, the Registrar shall retain the fees or charges received.

18. If an application for registration received by the Registrar under this By-law is complete, and satisfies all applicable requirements for registration under this By-law, the Registrar shall register the Two-unit House in the Register and shall so notify the applicant.

Compliance after Registration

19. The Owner of a registered Two-unit House shall ensure compliance of the Two-unit House with the *Building Code, Electrical Safety Code, Fire Code, Property Standards By-law, Zoning By-law* and all applicable provisions of this By-law.

Reconsideration of a Registration

20. If a Two-unit House is registered, but information or material suggests that the Two-unit House may no longer comply with the requirements of this By-law, then the Registrar may so notify the Owner.
21. If an Owner is notified by the Registrar that information or material suggests that the Owner's Two-unit House may no longer meet the requirements of this By-law for registration, then the Owner shall satisfy the Registrar that the Two-unit House meets the requirements of this By-law for registration. In order to be satisfied that the House meets the requirements of this By-law for registration, the Registrar may require:
 - (a) Current Contact Information;
 - (b) Such drawings and other information and material as the Registrar may require;
 - (c) Inspection reports that are satisfactory to the Registrar; and
 - (d) Payment of any applicable fees or charges.
22. If an Owner fails to provide sufficient evidence to satisfy the Registrar under the foregoing provision, the Registrar may require the Owner to do so within one month. If the Owner fails to provide sufficient evidence within one month, the Registrar may revoke the registration of the Two-unit House, and, if the Registrar revokes the registration, the Registrar shall so notify the Owner. Despite such revocation, the Registrar shall retain the fees or charges received.

Contact Information

23. Every Owner of a registered Two-unit House shall maintain the Owner's current, correct Contact Information with the Registrar.

Change of Owner

24. If the ownership of a registered Two-unit House changes, then the outgoing Owner and incoming Owner shall so notify the Registrar within one month after such change.

Enforcement

25. Every person who contravenes any provision of this By-law is guilty of an offence.
26. Every director or officer of a corporation that contravenes any provision of this By-law is guilty of an offence.
27. A person, other than a corporation, convicted of an offence under this By-law, is liable, on a first conviction, to a fine of not more than \$10,000 and, on any subsequent conviction, to a fine of not more than \$25,000.

Staff Report



To **Committee of the Whole**

Service Area Infrastructure, Development and Enterprise Services

Date Tuesday, July 4, 2017

Subject **Affordable Housing Financial Incentives Program Framework**

Report Number IDE 17-74

Recommendation

1. That report IDE 17-74 Affordable Housing Financial Incentives Program Framework (AHFIP), including the AHFIP framework, dated July 4, 2017 be approved.
2. That section 6.3.3 Financial Incentives, as amended, of the Affordable Housing Strategy, included as Attachment 1 in report IDE 17-74 Affordable Housing Financial Incentives Program Framework, dated July 4, 2017 be approved.

Executive Summary

Purpose of Report

To provide Council with the proposed framework for an Affordable Housing Financial Incentives Program to encourage the creation of new affordable housing developments within the city. This report also brings forward and revises section 6.3.3 Financial Incentives of the Affordable Housing Strategy for Council approval.

Key Findings

On November 28, 2016 Council confirmed that it will establish an Affordable Housing Financial Incentives Program (AHFIP) and directed staff to report back on an AHFIP framework. The proposed AHFIP framework includes eligibility criteria and funding priorities that will guide the development and implementation of a financial incentives program for affordable housing. An AHFIP framework is needed to inform future budget decisions and to assess related administrative needs and resource impacts.

One of the key principles for developing the Council approved AHFIP policy is that the AHFIP have an impactful influence on the creation of permanent affordable housing and address key identified housing issues: permanent affordable housing includes non-market housing options (i.e. supportive housing, social housing and subsidized rental) and market housing.

The financial incentives will assist the City in implementing the Affordable Housing Strategy. The AHS recognized that financial incentives were required to support the development of both affordable primary rental housing units and purpose built secondary rental housing units, with priority given to primary rental units.

An annual new budget contribution of \$230,000 for the years 2018-2022, combined with an on-going \$100,000 annual base budget contribution and an existing reserve balance of \$893,714 would provide incentives for a minimum of six (6) units annually at an upset limit of \$70,000 per unit. The six (6) units represent half of the primary rental units required per year. A balance of \$420,000 would remain to fund the program for a sixth year while the program is being monitored and reviewed.

The creation of affordable rental and ownership apartments and townhouses are eligible for funding under the framework. Priority is given to primary rental housing and projects in receipt of other government funding (e.g. Investment in Affordable Housing For Ontario (IAH)).

The financial actions contained in section 6.3.3 of the Affordable Housing Strategy have been modified to reflect updated information. Council approval of section 6.3.3 will complete the Affordable Housing Strategy.

Program details and an implementation plan for an Affordable Housing Financial Incentives program are proposed to be developed following Council approval of funding for the Affordable Housing Financial Incentives Program through the 2018 budget process.

Financial Implications

Current 2017 operating base budget funding for affordable housing programs includes a \$100,000 transfer to the affordable housing reserve. In addition \$70,000 is to be transferred for Council approved property tax rebates/ exemptions for certain properties that provide affordable housing for an annual total of \$170,000.

Funding the AHFIP framework as proposed would involve an additional annual operating funding allocation of \$230,000 for the years 2018-2022. Additionally it would also commit the existing Affordable Housing Reserve balance of \$893,714. This funded AHFIP framework would provide funding for a minimum of six (6) units per year at an upset limit of \$70,000 per unit. Pending Council decision on this report, staff will include this budget request as an expansion in the 2018 operating budget.

At the end of five (5) years, the program will have supported the development of at least 30 permanent affordable housing units for a targeted twenty years at a cost of \$2.1 million. A balance of approximately \$420,000 would remain to fund an additional year to allow the program to continue while it is being monitored and reviewed.

The current balance of the reserve at \$893,714 would support the creation of approximately 13 units.

Report

BACKGROUND

On November 28, 2016 Council confirmed it will establish an Affordable Housing Financial Incentives Program (AHFIP) in addition to the funding provided by the City to the County as the Service Manager for social housing. Staff were directed to report back to the Committee of the Whole on the proposed recommendations for an AHFIP framework in response to report [#CAO-I-1607](#).

The proposed AHFIP framework outlined in this report includes eligibility criteria and funding priorities that will guide the development and implementation of a financial incentives program for affordable housing.

The framework for an AHFIP assists with the implementation of the City's Affordable Housing Strategy (AHS) and the County's Ten-Year Housing and Homelessness Plan by addressing permanent housing. In May 2016 Council approved that the scope of the AHFIP (formerly the AHR) be focused on the creation of permanent housing, which includes market housing, addressed by the AHS, and non-market housing options (i.e. supportive housing, social housing and subsidized rental), addressed by the County's Ten-Year Housing and Homelessness Plan.

On May 8, 2017 Council approved modifications to the City's AHS, as approved by Council on October 11, 2016, to reflect a revised affordable housing target that includes the secondary rental market. The AHS financial actions were excluded from Council's approval to enable work on the AHFIP to proceed first. The AHS actions, including the need for financial incentives, are meant to assist the City in meeting its affordable housing target for new housing and in responding to identified affordable housing issues. The AHS recognized that financial incentives were also required to support the development of both primary rental housing units and purpose built secondary rental housing units, with priority given to primary rental units. The AHS includes an annual city-wide 30% affordable housing target with a breakdown of 25% affordable housing units and 5% rental (broken down into 1% primary rental units and 4% secondary rental units). This amounts to 293 affordable ownership units, 12 affordable primary rental units and 47 affordable secondary rental units per year.

To assist in quantifying suitable funding amounts, the City retained a consultant in 2016 to provide pro formas to calculate the “tipping point” at which a City financial incentive will impact the affordability of new housing. This pro forma work demonstrated that the amount of financial assistance required to assist with the creation of affordable rental housing ranges from \$60,000 to \$80,000 per unit.

DISCUSSION OF THE AHFIP

Additional contributions to the reserve of \$230,000 a year from 2018-2022 are recommended to address the City’s affordable housing targets and identified issues and support the City’s Affordable Housing Strategy actions

Staff recommend incenting a minimum of six (6) units annually at an upset limit of \$70,000 per unit over the next five years. An additional annual budget contribution of \$230,000 for the years 2018-2022 combined with the on-going \$100,000 annual base budget contribution and an existing reserve balance of \$893,714 would support the creation of a minimum of 30 permanent affordable housing rental units. Using the middle of the consultant’s pro forma “tipping point” range of \$60,000 to \$80,000 per unit is sufficient for both apartments and stacked townhouses to be built. At the end of five (5) years, the program would have a balance of approximately \$420,000 which allows for the program to continue while it is being monitored and reviewed. The current balance of the reserve at \$893,714 would support the creation of approximately 13 units, approximately two years of incentives.

The six (6) units represent half of the primary rental units required per year according to the AHS affordable housing target. The AHS is premised on all of the actions combined, including the financial actions, supporting meeting the City’s affordable housing target and identified issues. Funding for the framework is anticipated to have the potential to create more than six (6) affordable permanent housing units since some projects may require a lower level of per unit funding and/or participation in other government funding programs may off-set costs.

Incidentally, the County of Wellington contributes \$500,000 annually to a Housing Development Reserve Fund to fund affordable housing incentives and projects in the County, in accordance with the Ten-year Housing and Homelessness Plan.

Additional federal/provincial government funding may be available in the future for affordable rental units in the City and we need to be ready

On May 26, 2017 the County of Wellington issued a Request for Proposal soliciting responses to develop an affordable rental housing project in the amount of \$1.35 million. The \$1.35 million represents the amount of IAH funding remaining as part of the County's 2017-2018 funding allocation.

In addition, funding may be available from a five-year \$125 million provincial rebate program for development charges announced for communities most in need of purpose built rental housing in April 2017. Staff are continuing to monitor announcements by other orders of government regarding affordable housing funding.

The Affordable Housing Financial Incentives Program Framework

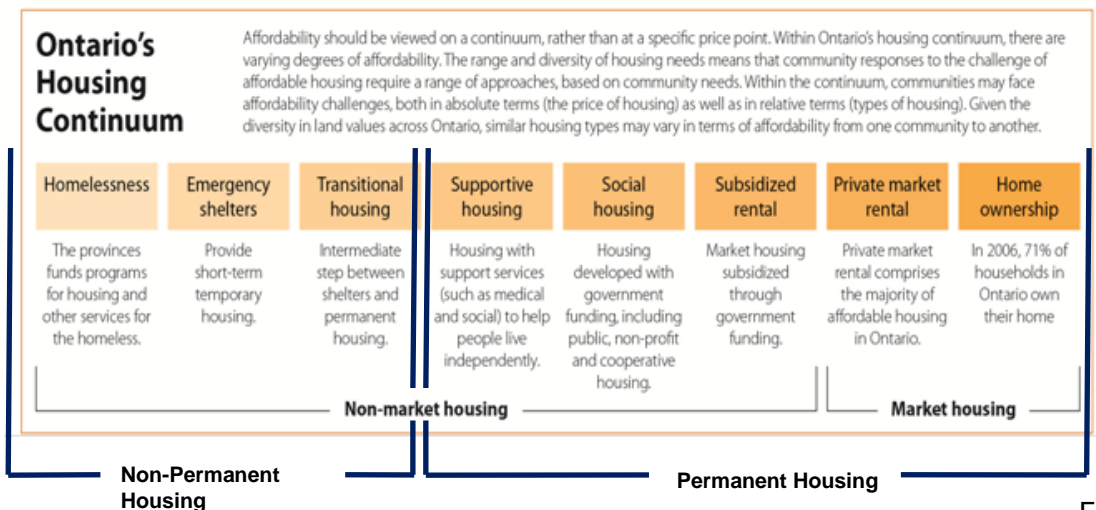
The Affordable Housing Financial Incentives Program (AHFIP) is recommended to be established to provide financial incentives to encourage the development of permanent affordable housing (See Figure 1). The financial incentives will assist the City in implementing the City’s Affordable Housing Strategy. The program framework and budget are based on a five (5) year period followed by a review to align with an appropriate timeframe for review of the target and breakdown, and to allow time for other Affordable Housing Strategy actions to be implemented.

The development of a framework for an AHFIP was guided by a number of key principles which were set out in the Council approved project charter.

Principles:

- The AHFIP will be focused on the creation of new, permanent housing (See Figure 1).
- The AHFIP will be designed to have an impactful influence on the creation of affordable housing within the city.
- Meaningful incentives are required to encourage and influence the development of new affordable housing opportunities in the city.
- The AHFIP must maintain a healthy financial balance and make funds available to entities (e.g. developers, providers, others) which create affordable housing.

Figure 1: Permanent versus Non-Permanent Housing



Framework:

The framework presented in Table 1 was guided by the above principles and is based on research and analysis of the housing needs in the City as well as stakeholder consultations. The framework provides the foundation for the development and implementation of an Affordable Housing Financial Incentive Program.

Table 1: Affordable Housing Financial Incentive Program Framework

Condition	Recommendations
Applicant Eligibility	Incorporated not-for-profit and for profit businesses.
Stage of Development	Land must be appropriately zoned.
Structure Type and Tenure (See Housing Type Eligibility Chart below)	All structure types excluding single detached and semi-detached units. Primary and purpose built secondary rental units. Ownership units that are developed in connection with a program that protects the City's investment to create affordable housing by ensuring the units house low to moderate income households.
Form and Size	Projects that contain small units (i.e. bachelor and 1-bedroom units) are prioritized. Primary rental units are prioritized since their tenure is protected through Official Plan policy.
Amount of Incentive	Based on affordable benchmark rents, with consideration given to unit size. Maximum amount of \$70,000 per unit applied on a project basis in consideration of other funding sources (e.g. other government funding).
Amount and Form of Incentive	Grants for primary rental and purpose built secondary rental units. Loans for rental and home ownership programs (e.g. Options for Homes second mortgages).
Type of Eligible Costs (See Incentive Forms and Eligible Cost Chart below)	Capital cost. City fee reductions, exemptions and deferrals.

Length of Affordability	Rental units are to remain affordable for a twenty (20) year target period subject to individual project details and alignment with other government funding program(s) if applicable.
Other funding sources	Projects where a municipal contribution is required to access funding from another level of government are prioritized.

Housing Type Eligibility

Housing Type	Eligible		Comment
	Yes	No	
Rental			
Primary Rental Apartment	X		All incentive forms
Primary Rental Townhouse	X		All incentive forms
Secondary Rental ¹ Purpose Built	X		Excluding single detached and semi-detached
Secondary Rental Accessory Apartment and/or Coach House		X	
Ownership			
Single detached (Freehold, Other Secondary Rental)		X	
Semi-detached (Freehold, Other Secondary Rental)		X	
Townhouse (Freehold, Condominium, Other Secondary Rental)	X		Loans only
Apartment (Condominium, Other Secondary Rental)	X		Loans only

¹ Self-contained units not included in the primary rental market. It can include rented condominium apartments, accessory apartments, rented single detached dwellings, and one or two apartments located in a commercial or other type of structure”.

The secondary rental market is divided into the following types:

- Rented accessory apartments;
- Purpose built secondary rental (e.g. Solstice I and II on Gordon Street and Reid’s rental project on Kay Cres.); and

“Other secondary rental” (individual rental investor units, rented condominium units, rented single detached dwellings, rented townhouse units that are individually owned, etc.)

Incentive Forms and Eligible Costs

Form of Incentive	Eligible		Comment
	Yes	No	
Grants to offset capital costs	X		For rental only. E.g. cash, tax increment-based grant
Grants to offset City fees ²	X		For rental only
Grants to offset operating costs		X	
Loans	X		E.g. Habitat for Humanity, defer payment of City fees ³
Waive City securities ⁴	X		Development specific at discretion of applicable General Manager
Waive City fees (forgone revenue)		X	
Reduction in taxes payable		X	
Guaranteed Borrowing		X	

A five year timeframe supports program stability and alignment with the AHS.

A five year program commitment ensures program stability and alignment with the AHS, including time for other AHS actions to be implemented. A long term commitment allows potential proponents to rezone a site and ready the project knowing funding will be available in future years. The rationale for requiring lands to be appropriately zoned is to ensure the program is kept simple and a funding allocation is not held up by other approval processes.

Focusing on primary and purpose built secondary rental recognizes the importance of these housing forms along with the success of accessory apartments in the City

The AHS specifically identified the importance and financial challenges of developing affordable primary and purpose built secondary rental housing units. Affordable primary rental units have not been developed in the City of Guelph over the last ten years without government financial incentives. In addition the rental tenure of primary rental units is secure unlike the potential fluidity of the secondary rental market.

Accessory apartments are not recommended to be included in the framework because the City of Guelph has had great success with the development of

² Includes fees such as Development Charges, building permit fees, planning fees, cash-in-lieu of parkland dedication, cash in lieu of parking, payments for City works within the Right-of-Way (eg. Water and Sewer connections, boulevard restoration, curb cuts, etc.)

³ Affordable Housing Reserve to be used to offset lost interest from allowing late payment of City fees

⁴ Landscape Securities, Securities under the Tree By-law, Condominium Securities

accessory apartments with its progressive and permissive approach. Over the last ten years (2007-2016), the City has averaged approximately 120 new accessory apartments per year of which approximately 53% (64 units) would be considered affordable and available for rent based on City survey results completed during November – December of 2014. Survey results also showed that only 8% of respondents identified construction cost as a major challenge.

In addition it would be administratively challenging to establish individual agreements and on-going monitoring programs for accessory apartments with a number of program recipients.

Approval of section 6.3.3 Financial Incentives of the Affordable Housing Strategy will complete the City's Affordable Housing Strategy

The AHS financial actions were excluded from Council's earlier approval to enable work on the AHFIP to proceed first. Council support of an Affordable Housing Financial Incentives Program framework aligns with modifications proposed to section 6.3.3 of the [consolidated AHS](#) which reflect updated information (See Attachment 1). The modifications made to section 6.3.3 reflect the revised affordable housing target approved by Council on May 8, 2017 and confirmation that financial incentives can be provided to private market developers through a municipal capital facilities by-law and agreement so a Community Improvement Plan is not needed.

Program details and an implementation plan for an Affordable Housing Financial Incentives Program will only be developed following Council approval of funds through the 2018 Budget

Staff recommend developing program details and an implementation plan for an Affordable Housing Financial Incentives Program following Council approval of program funding as part of the 2018 budget process. Sufficient information is provided in the AHFIP framework to inform the amount of funding required to implement the proposed framework.

Financial Implications

Current 2017 operating base budget funding for affordable housing programs includes a \$100,000 transfer to the affordable housing reserve. In addition \$70,000 is to be transferred for Council approved property tax rebates/exemptions for certain properties that provide affordable housing for a total annual contribution to affordable housing of \$170,000.

The AHFIP framework proposes an additional annual operating funding allocation of \$230,000 for the years 2018-2022. Additionally it would also commit the existing Affordable Housing Reserve balance of \$893,714. This funding would provide for a minimum of six (6) units per year at an upset limit of \$70,000 per unit.

The \$70,000 per unit funding limit is based on the middle of the consultant's pro forma range of \$60,000 to \$80,000 per unit. The six (6) units reflect 50% of the City's 1% primary rental housing target approved by Council on May 8, 2017. Using the middle of the pro forma cost range provides sufficient funding for both apartments and stacked townhouses to be built.

At the end of a fully funded five (5) year program, it will have supported the development of at least 30 permanent affordable housing units for a targeted twenty years at a cost of \$2.1 million. A balance of approximately \$420,000 remains to fund an additional year to allow the program to continue while it is being monitored and reviewed.

The current balance of the reserve at \$893,714.19 would support the creation of approximately 13 units.

Administrative program costs to be addressed through the program development report.

Consultations

The AHFIP Framework has been developed in collaboration with Intergovernmental Relations, Policy and Open Government and Finance.

Key stakeholders involved to date in this work will be notified of Council's decision on the AHFIP framework and updated information will be posted on the City's website.

Corporate Administrative Plan

Overarching Goals

Service Excellence
Financial Stability

Service Area Operational Work Plans

Our Services - Municipal services that make lives better
Our People- Building a great community together
Our Resources - A solid foundation for a growing city

Attachments


ATT-1 Affordable Housing Strategy Revisions to Section 6.3.3 Financial Incentives

Departmental Approval

Tara Baker, General Manager Finance, City Treasurer

Report Author

Joan Jylanne
Senior Policy Planner

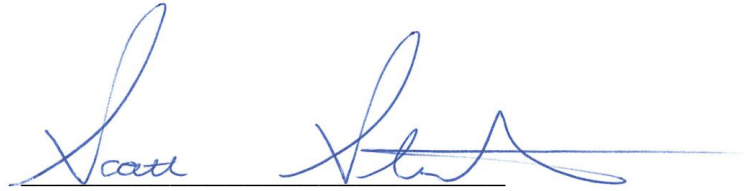


Approved By

Todd Salter
General Manager
Planning, Urban Design and
Building Services
519.822.1260, ext. 2395
todd.salter@guelph.ca

Approved By

Melissa Aldunate
Manager, Policy Planning & Urban Design



Recommended By

Scott Stewart, C.E.T.
Deputy CAO
Infrastructure, Development and Enterprise
519-822-1260, ext. 3445
scott.stewart@guelph.ca

Attachment 1 – Affordable Housing Strategy Revisions to Section 6.3.3 Financial Incentives

Council adopted the majority of the Affordable Housing Strategy (AHS) on October 11, 2016, but excluded the financial actions contained within section 6.3.3 from their approval and referred the role of financial actions to reflect the secondary rental market in the target. With Council approval of the revised targets on May 8, 2017, and the approval of the Affordable Housing Financial Incentive Program Framework, Council is in a position to approve section 6.3.3 of the AHS with the amendments to reflect changes since October 2016.

Each amendment is identified in an **item number in bold**. *The location of the amended text within the Strategy, including page and section numbers, is included in italics.* Finally, the amended paragraphs are excerpted with edits in [blue](#). Deletions to the text are shown as [strikeouts](#) and insertions shown as [underlines](#).

Item 1

Section 6.3.3 is amended as follows beginning on page 20 of the Affordable Housing Strategy dated May 8, 2017:

Actions

1. That the City provide a variety of financial assistance for the development of affordable housing.
- ~~2. That the City develop a Community Improvement Plan (CIP) for affordable housing to allow financial incentives to be provided to the private sector across the City.~~
3. That the City provide financial incentives to support the development of both primary rental housing units and purpose built secondary rental housing units with priority given to primary rental units.
4. That financial incentives focus on affordable housing projects containing smaller unit sizes (i.e. bachelor and one bedroom units).
5. That priority be given to affordable housing proposals that include funding from other levels of government.
6. That an annual financial contribution of \$60,000 to \$80,000 per unit be referred to the development of a comprehensive policy for an Affordable Housing [Financial](#) Incentive Program for permanent housing funded through the Affordable Housing Reserve fund.

The City needs to cast a wide net to incent the creation of small primary rental units since each potential development application will likely involve

unique circumstances. It is important that financial incentives be flexible and recognize the focus of the Affordable Housing Strategy, i.e. private market rental and ownership housing.

An affordable housing CIP would allow the City to direct capital investments, or provide financial incentives (grants), for the construction of affordable housing to private market developers who are instrumental in producing private rental and ownership market housing. As of July 1, 2016 the City can also incent private market developers through a municipal capital facilities by-law and agreement. The regulation that restricted the use of municipal capital facilities by-laws and agreements to service managers was repealed. [Accordingly a CIP is not necessarily required in order to provide incentives for affordable housing to private developers. City staff will assess the preferred approach to incenting private market developers as part of the implementation process.](#)

Financial incentives can take the form of tax supported grants to offset municipal fees, studies, construction costs, etc. Tax increment-based grants (TIBGs) are a type of grant used widely in CIPs [that may be adaptable to grants enabled by municipal capital facilities by-laws.](#) Essentially a grant is provided to developers to offset the costs of an eligible project. The value of the grant is based on the increase in municipal taxes generated by the project for a set period of time. In addition a grant equal to the amount of development charges, could be provided [through a CIP](#) without the need to modify the City's Development Charges By-law.

The City's financial incentives should focus on achieving the City's affordable housing targets and address identified housing issues. The City's main challenge has been meeting the 1% affordable primary rental housing target without financial incentives which equates to approximately 60 rental units in a five year period. The additional research undertaken on the costs of development revealed that \$60,000 to \$80,000 represents the financial hurdle or "tipping point" for development to be financially viable with a reasonable rate of return in the current Guelph market for creating affordable rental housing that meets the City's benchmark price. While financial incentives are the most impactful, the Affordable Housing Strategy includes other actions that support meeting the City's affordable rental target and identified housing issues. In addition, potential tools and resources provided by [senior levels other orders](#) of government are still under development and could positively affect the City's ability to meet the rental housing target. Since the strategy as a whole is directed at increasing supply and addressing meeting the targets, staff are of the opinion that financial incentives are not required for 100% of the units.

Staff note that setting aside sufficient funds to incent 50% of the City's affordable primary rental target would equate to approximately \$360,000 to \$480,000 annually representing six units at \$60,000 to \$80,000 per unit. The annual financial allotment would allow the City to participate in cost shared

government programs and provide direct incentives. Over time staff will assess the impact of the other actions from the Affordable Housing Strategy on meeting affordable housing targets and identified housing issues; the market's ability to supply units and assess the effectiveness and future need for incentives.

Sufficient funds are needed to ensure that smaller units are funded, despite their increased costs per square footage, to meet the needs of small households which are increasing in number. Providing assistance to primary rental market units should be given priority. However, through agreements as a condition of funding, condominium units could also be secured as secondary rental housing units for a set period of time. Primary rental market units are preferred since their potential conversion from rental to ownership units is provided with protection through the City's conversion policies whereas the rental of condominium units would be controlled by an agreement for a set period of time, e.g. ten – twenty years at which time they could convert to an ownership unit regardless of the state of the City's rental market.

Additional funding sources that may be secured by programs from [senior levels other orders](#) of government would extend the impact of the City's funding reserves allowing more units to be developed. However, the Affordable Housing Reserve fund should not be premised on the availability of external funding sources because their availability is unknown and outside of the City's control.

The funding of ownership units might still be appropriate in some circumstances and should be considered on a case by case basis.

~~Financial incentives for the not-for-profit sector or in partnership with the County as Service Manager could begin in 2017 with a comprehensive policy for an Affordable Housing Incentive Program for permanent housing funded through the Affordable Housing Reserve fund in place and with Council approval of funding for the reserve. Incentives for the private sector would only be available upon the development and Council approval of a Community Improvement Plan.~~

Item 2

Appendix 3 is amended by editing the table as follows:

#	Affordable Housing Strategic Action	Timeframe	Resource Needs	Other Planned Project
Financial Incentives – The following financial actions have been excluded from Council’s approval of the Affordable Housing Strategy.				
9.	That the City provide a variety of financial assistance for the development of affordable housing.	2017, Ongoing	Staff: Office of the Chief Administrative Officer, Finance, Public Services and Policy Planning Other: Financial budget	
10.	That the City develop a Community Improvement Plan (CIP) for affordable housing to allow financial incentives to be provided to the private sector across the City.	Q4-2018* subject to Council decisions regarding the Affordable Housing Incentive Program and sustainable funding	Staff: Policy Planning and Urban Design, and Finance	
11.	That the City provide financial incentives to support the development of both primary rental housing units and purpose built secondary rental housing units with priority given to primary rental units.	2017 Annually thereafter	Staff: Office of the Chief Administrative Officer, Finance, Public Services and Policy Planning and Urban Design Other: Financial budget	Affordable Housing Financial Incentive Program
12.	That financial incentives focus on affordable housing projects containing smaller unit sizes (i.e. bachelor and one bedroom	2017 Annually	Staff: Office of the Chief Administrator	Affordable Housing Financial Incentive

#	Affordable Housing Strategic Action	Timeframe	Resource Needs	Other Planned Project
	units).	thereafter	Office, Finance, Public Services and Policy Planning Other: Financial budget	Program
13.	That priority be given to affordable housing proposals that include funding from other levels of government.	2017 Annually thereafter	Staff: Office of the Chief Administrator Office, Finance, Public Services and Policy Planning staff Other: Financial budget	Affordable Housing Financial Incentive Program
14.	That an annual financial contribution of \$60,000 to \$80,000 per unit be referred to the development of a comprehensive policy for an Affordable Housing Financial Incentive Program for permanent housing funded through the Affordable Housing Reserve fund.	2017 Annually thereafter	Staff: Office of the Chief Administrative Officer, Finance, Public Services and Policy Planning Other: Financial budget	Affordable Housing Financial Incentive Program

Item 3

That the table of contents, page numbers, section numbers, cross references etc. be amended as appropriate in accordance with the items above.

Stormwater Service Fee – Credit Program Feasibility

Committee of the Whole
July 4, 2017

1

Agenda

- Updates
- Overview of Alternatives
- Evaluation of Alternatives
- Recommendation

2

Billing has begun



295 Southgate Drive
Guelph, Ontario
N1G 4Y1
Office Hours 8:00 AM to 4:30 PM Monday to Friday

Tel: (519) 822-3210 Fax: (519) 822-0660
Power Outage/Outage Repair: (519) 822-3214
Website: WWW.GUELPHHYDRO.COM

Your Bill

Amount of last bill	\$50.00
Payments	\$50.00
Adjustments	1.00
Balance forward (if already paid please disregard)	1.00
Your Electricity Charges	
TOU OnPeak Winter 395.83KWh @ 18.0¢/kWh	\$71.25
TOU MidPeak Winter 321.49KWh @ 13.3¢/kWh	\$42.51
TOU OffPeak Winter 1614.07KWh @ 8.7¢/kWh	\$140.42
Delivery	\$71.46
Regulatory Charges	\$15.04
Debt Retirement Charge***	1.00
Your Total Electricity Charges	\$342.99
Other Charges	
MyEnergyView Rebates@	\$10.00
Total Other Charges	\$10.00
HST (Registration number 89120 0613 RT0001)	\$42.99
Water Charges: City Water Dept. 837-5627	
Water Basic	\$7.00
Water Consumption 12.00 M3 @ 161.00 ¢/M3	\$20.94
Waste Water Basic	\$0.60
Wastewater Treatment 12.00 M3 @ 180.00 ¢/M3	\$21.60
Total Water Charges	\$50.84
Stormwater Charges: City Engineering Dept. 837-5604	
1.0 unit x 30 days @ \$4.00/monthly	\$4.00
Total Stormwater Charges	\$4.00
Total current charges	\$438.71
1% Provincial Rebate**	\$37.35
Invoice Total	\$400.46
Total amount due	\$400.46

Account Number:
Service Address:
Billing Date: MAR 13, 2017

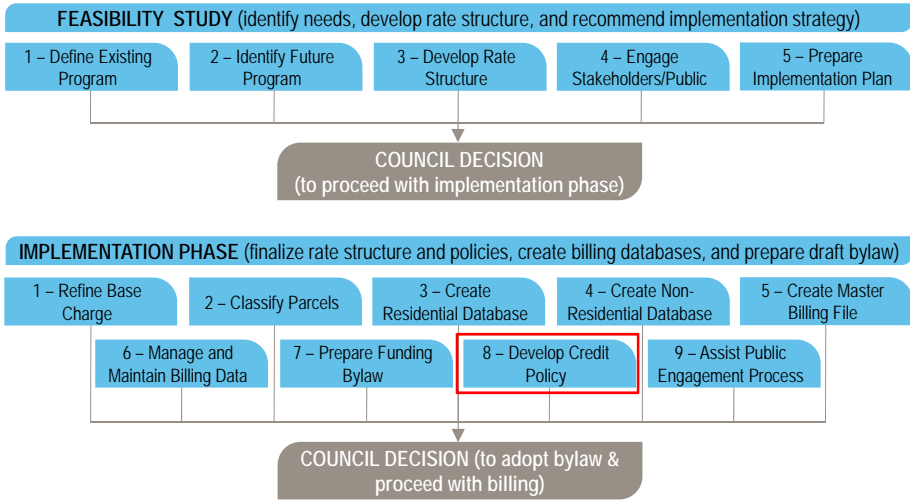
Conservation Message
Washing your laundry in the cold water setting can reduce energy use by up to 90%.
Interested in learning more about your water use? Or being notified about a leak or flood damage before it becomes a bigger problem? Purchase a FloLeak Water Sensor Kit and get a \$50 instant rebate! Visit alertlabs.com/Guelph for details.

For your convenience, we are extending our call centre hours during the summer time. Our call centre will be open Monday to Friday 8a.m. - 8p.m.

For news and power outage information follow us on Twitter @GuelphHydro
Please review our Conditions of Service for more information on the annual reconciliation for Equal Payment Plan (EPP).
LATE PAYMENT CHARGES
Late payment charges - compounded monthly on past due balances (19.56% per annum) 1.5%

Customer Message
Moving? Let us know at least two business days before your move. Call us at 519.822.3010, or fill out our online form from your desktop or mobile device at www.guelphhydro.com.
** The Ontario government is providing a rebate on your electricity costs equal to the provincial portion of HST

Process Schematic



Recap

Stormwater service fee billing units (Equivalent Residential Unit or ERU)

ONE (1) ERU = 188m² = \$4 per month (2017 approved rate)

Residential properties:

ERU billing units = number of dwelling units

Examples:

- o single-family detached home = 1 ERU = \$48/year
- o apartment building with 20 units = 20 ERU = \$960/year

Non-residential properties:

ERU billing units = impervious area ÷ 188 m² (one ERU)

5

Rationale for Financial Incentive Program

- Intended to encourage onsite stormwater management through the use of source controls such as Low Impact Development (LID) and other green infrastructure facilities such as:

- Infiltration galleries
- Greenways
- Green roofs
- Rain gardens
- Silva cells



- Overriding principle - reward customers who reduce stormwater runoff quantity or improve the runoff quality that is discharged from their property

6

2017 Approved Budget

Proposed, and projected rates and residential bill impacts				
	2017 recommended	2018 projected	2019 projected	2020 projected
Monthly residential stormwater charge (based on one ERU)	\$4.00	\$4.60	\$5.20	\$5.80
Annual residential bill	\$48.00	\$55.20	\$62.40	\$69.60

- Previous revenue projected at \$4,819,000 based on \$4.60 ERU/month
- Updated revenue projected at \$5,400,000 based on \$4.60 ERU/month
 - Increased residential growth and updated non-residential impervious area estimates
- Positive Variance of approximately \$580,000

7

Financial & Budget Implications

Incentive Allocation	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Rebate Amount	\$0	\$455,000	\$0	\$80,000
Credit Amount	\$0	\$0	\$380,000	\$250,000
Rebate / Credit Administration Cost	\$0	\$25,000	\$100,000	\$50,000
Additional Capital/Operations Financing	\$480,000	\$0	\$0	\$100,000
Total	\$480,000.00	\$480,000.00	\$480,000.00	\$480,000.00

8

Alternatives Evaluation

- In order to determine the feasibility of a financial incentive program, four options were considered:
 - Alt. 1: Do not provide any additional financial incentives
 - Alt. 2: Enhance existing programs that provide rebates
 - Alt. 3: Implement a new stand-alone credit program
 - Alt. 4: Hybrid of Alt. 2 (residential) and Alt. 3 (non-res)

9

Evaluation Criteria

Alternative Evaluation Criteria
ENVIRONMENTAL/TECHNICAL
Encourages Low Impact Development (LID) Uptake
Ensures Proper Design
Ensures Proper Construction, Operation and Maintenance (O&M)
Improves Flood/Erosion Control
Improves Receiving Water Quality
Improves Source Water Protection/Water Balance
SOCIAL
Increases Environmental Awareness/Stewardship
Provides Education Opportunities
Leads to Ethical Decision Making
FINANCIAL
Promotes Existing Programs
Reduces Stormwater Program Costs
Maintains or improves infrastructure funding
Administrative Costs
Requires New Administrative Procedures
Increases Inspection/By-law Enforcement Needs

10

Alternative 1: Do not provide any additional financial incentives

- No credits or rebates
- Pros:
 - No by-law amendments or extra admin. effort required
 - Future rate increases focused on closing the funding gap
 - Increased funding towards capital and operating reserves
- Cons:
 - No environmental or social benefits

11

Alternative 2: Enhanced Rebates

- Expand City's Water Efficiency and Conservation Program to include rebates for a wider range of stormwater facilities
- Pros:
 - System already in place
 - No change to billing system
 - Offers education opportunities and promotes environmental awareness
- Cons:
 - No assurance of proper installation or O&M
 - Monetary value is somewhat arbitrary

<http://guelph.ca/living/environment/rebates/>

The screenshot shows a webpage titled "Guelph water/energy rebates" with a list of programs. The "Rainwater Harvesting System Rebate Program" is highlighted with a red box. The programs listed are:

- Flowie Water Sensor Kit Pilot Rebate Program (Program ends October 1, 2017 or until 500 units sold)
- Royal Flush Rebate Program (Program changes January 1, 2017)
- Greywater Rebate Program (\$1,000 incentive)
- Rainwater Harvesting System Rebate Program (\$2,000 incentive)**
- Blue Built Home Water Efficiency Standards and Rebate Program (\$2,420 in incentives)
- Industrial, Commercial and Institutional Capacity Buyback Program
- Electricity Rebates from Guelph Hydro
- Natural Gas Rebates from Union Gas

Alternative 3: New Credit Program

A new stand-alone credit program is intended to encourage onsite stormwater management through the use of source controls such as LID and other green infrastructure facilities, as these could potentially reduce the costs of the City's stormwater services program.

- Pros:
 - Ensures proper design, installation, and O&M
 - Improves fairness/equity of charge allocation (monetary value linked to program cost savings)
- Cons:
 - By-law amendment and extra admin. effort required (incl. new polices & procedures, resources, etc.)
 - Change to billing system (incl. extra customer service)

13

Alternative 4: Hybrid Option

- Combined alternative:
 - Alternative 2 (enhanced residential rebate program) and
 - Alternative 3 (new non-residential credit program)



14

Alternative 4: Hybrid Option cont'd

- Pros:
 - Ensures proper design, installation, and O&M
 - Improves fairness/equity of charge allocation (monetary value linked to program cost savings)
 - Existing efficiencies with Water Efficiency Program
 - Can also provide additional reserve funding
- Cons:
 - By-law amendment and extra admin. effort required (incl. new polices & procedures, resources, etc.)
 - Potential modification to billing system (incl. extra customer service)

15

Community Engagement – What we heard

- Credit program for large residential and non-residential properties with incentive basis for smaller residential properties
- Administrative costs would be high for residential credits
- Development industry is moving toward decreased impacts on stormwater, some of which are required for new development
- Application and renewal has to be simple and easy to follow for residential and non-residential properties
- Policing non-residential participants using a 5-year renewal concept, and certification by professional experts

16

Evaluation of Alternatives

Table 1: Assessment Matrix for Stormwater Service Fee Credit Options

Category / Metric	Alternative 1	Alternative 2	Alternative 3	Alternative 4
ENVIRONMENTAL/TECHNICAL				
Encourages LID Uptake	○	●	●	●
Ensures Proper Design	○	●	●	●
Ensures Proper Construction and O&M	○	○	●	●
Improves Flood/Erosion Control	○	○	●	●
Improves Receiving Water Quality	○	○	●	●
Improves Source Water Protection/Water Balance	○	○	●	●
SOCIAL				
Increases Environmental Awareness/Stewardship	○	●	●	●
Provides Education Opportunities	○	○	●	●
Leads to Ethical Decision Making	○	○	●	●
FINANCIAL				
Promotes Existing Programs	○	●	○	●
Reduces Stormwater Program Costs	○	○	●	●
Avoids Overly High Administrative Costs	●	○	○	○
Requires New Administrative Procedures	●	○	○	○
Increases Inspection/By-law Enforcement Needs	●	○	○	○
Legend				
Advantageous/Positive Impact	●			
Minor Positive Impact	○			
Disadvantageous/No Impact	○			

17

Recommendation

Alternative 4: Hybrid Option

- Encourage LID stormwater management practices and reward good behaviour by providing financial incentives (rebates for residential or credits for ICI) to those who implement stormwater management measures.
- Provide on-going environmental and educational awareness by integrating messaging of Stormwater Management with the Water Efficiency Program.
- Reinforce the link between cost of the City's stormwater service and the fairness/equity of the charge allocation (i.e. credits allocated in relation to the relative reduction of stormwater impacts)
- Provide administrative efficiency by combining resources and coordinating efforts with Water Services.
- Potentially defer operating and capital expenditures.
- Maintain forecasted sustainable funding strategy and reduce funding gap by increases to capital financing.

18

Thank you



guelph.ca/stormwater

Staff Report



To **Committee of the Whole**

Service Area Infrastructure, Development and Enterprise Services

Date Tuesday, July 4, 2017

Subject **Stormwater Service Fee – Credit Program Feasibility Report**

Report Number IDE 17-87

Recommendation

1. That the stormwater service fees financial incentive program as outlined in Alternative 4 of the Stormwater Service Fee – Credit Program Feasibility Report, dated July 4, 2017, be implemented to take effect in January, 2018.

Executive Summary

Purpose of Report

This report presents the feasibility study findings and recommendations for implementation of a stormwater credit program.

Key Findings

The primary objective of a financial incentive program is to financially reward customers who reduce stormwater runoff quantity or improve the runoff quality that is discharged from their property. On-site management of stormwater can reduce the long-term costs of the City’s stormwater services program.

The feasibility study evaluated four stormwater credit program alternatives:

Alternative 1: No financial incentives (Do nothing)

Alternative 2: Enhancement of exiting water rebate and education programs for residential and non-residential properties

Alternative 3: A new credit program for residential and non-residential properties

Alternative 4: A hybrid program that includes rebates for residential properties and credits for non-residential properties (Alternatives 2 and 3 combined)

Each alternative was evaluated with a consistent methodology to identify potential challenges and opportunities. The evaluation, in addition to stakeholder and public input, identified Alternative 4 as the preferred option since it provides

environmental, social and financial benefits to both the stormwater system and users.

Financial Implications

The number of ERUs billed in 2017 is higher than initially estimated during the Stormwater Funding Feasibility Study. The revised ERU count is expected to provide an additional \$580,000 in projected revenue for 2018 based on a forecasted ERU rate of \$4.60. It is recommended that \$100,000 of the additional revenue be allocated in the 2018 Stormwater operating budget for uncollected revenue or contingency. If the remaining additional revenue (\$480,000) is dedicated towards a financial incentive program as recommended, then the implementation of the stormwater financial incentive program (Alternative 4) will have no impact on the Sustainable Funding Strategy as approved by Council during the 2017 budget process.

Report

On July 5th, 2016, Committee of the Whole (IDE) received a report entitled "Stormwater Funding Study - Implementation Strategy" and directed staff to implement a stormwater service fee to address the City's stormwater infrastructure backlog. The initial step was to transition the stormwater service from a tax funded service to a dedicated service fee for 2017, which was successfully completed on January 1st, 2017.

In approving the implementation strategy, Council also directed staff to study the feasibility of a stormwater credit program since the concept of a potential credit policy/program had been discussed with Council, stakeholders, and the public during the study process. As such, staff initiated the Credit Program Feasibility Study in late 2016 to explore potential options for a program.

The purpose of this report is to present a recommendation for implementation of a stormwater service financial incentive program. The recommendation was developed by thoroughly evaluating various program alternatives and considering stakeholder and public feedback.

Evaluation Criteria for Financial Incentive Program Alternatives

The primary objective of a financial incentive program is to financially reward customers who reduce stormwater runoff quantity or improve the runoff quality that is discharged from their property since on-site management of stormwater reduces the long-term costs of the City's stormwater services program.

With this principle in mind, a range of financial incentive options were evaluated, including:

Alternative 1: No financial incentives

Alternative 2: Enhancement of existing rebate and educational programs

Alternative 3: A new credit program

Alternative 4: A hybrid program that includes rebates for residential properties and credits for non-residential properties

To determine a preferred approach, a consistent methodology was used to identify potential challenges and opportunities for each alternative. The evaluation criteria are provided in Attachment 1.

Establishing Financial Certainty for Developing Incentive Program Alternatives

A key consideration for any potential incentive program is to ensure that the capital financing, operations financing and the infrastructure backlog continue to be addressed, regardless of incentives given. This means that if substantial incentives are given to customers who qualify, the stormwater fee or charge paid by the remaining customers would need to increase to ensure the overall program revenue is maintained. The uptake of any financial incentive program can only be estimated at this time, which therefore creates uncertainty in what the 2018 service fee rate would need to be.

Without cost certainty, and with incentive program future uptake unknown, it would be difficult to realistically establish a 2018 service fee rate that could fund an incentive program while maintaining the rates approved by Council in the Sustainable Funding Strategy (2016). The strategy increases the rate by \$0.60 per year for the next five years to address stormwater management infrastructure and system needs. Since the core purpose is to sustainably fund the City's stormwater management system, it is important to set parameters that ensure cost certainty for the health of capital and operating budgets/reserves for stormwater services.

Previous funding forecasts were compared against the current revenue projections for the stormwater service to determine potential funding that may be available for the incentive program. The 2018 forecasted stormwater rate per equivalent residential unit (ERU) is \$4.60 per month is based on the Council-approved Sustainable Funding Strategy. Due to growth in the City (more ERUs) as well as an increase in non-residential ERUs, a revenue of approximately \$5,400,000 is now projected for 2018 using the ERU rate of \$4.60 per month. This revised projection is higher than previously forecasted by approximately \$580,000.

Through experience in the first year of the Stormwater Service implementation, a recommendation to allocate funding for uncollected revenue or contingency has been identified. Therefore, if \$100,000 of the additional revenue projected for 2018 is allocated in the 2018 Stormwater operating budget for uncollected revenue or contingency, then \$480,000 would remain available for an incentive program while maintaining the rates approved by Council in the Sustainable Funding Strategy. Consequently, each alternative was developed and evaluated assuming an upset limit of \$480,000 and is referred to as "program funding."

For Alternative 1, the program funding would be allocated to stormwater reserves, which will address the infrastructure gap faster. For Alternative 2, the program funding would support residential rebates and associated administrative costs. For Alternative 3, the funding supports credits for non-residential properties as well as associated administrative costs. For Alternative 4, the funding supports rebates (residential), credits (non-residential), capital/operating funding, and associated administrative costs.

Table 1 – Financial Breakdown of Incentive Program Alternatives

Incentive Allocation	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Rebate Amount	\$0	\$455,000	\$0	\$80,000
Credit Amount	\$0	\$0	\$380,000	\$250,000
Rebate / Credit Administration Cost	\$0	\$25,000	\$100,000	\$50,000
Additional Capital/Operations Financing	\$480,000	\$0	\$0	\$100,000
Total	\$480,000.00	\$480,000.00	\$480,000.00	\$480,000.00

Description and Evaluation of Incentive Program Alternatives

The following section provides a description of the financial incentive program alternatives that were considered. A more detailed analysis is provided Attachment 2.

Alternative 1: Do not provide any additional financial incentives

Alternative 1 proposes to maintain the current funding model and provide no additional incentives to property owners/account holders for addressing stormwater management on their own properties. By maintaining the status quo, some environmental and financial benefits could be achieved by undertaking stormwater projects earlier than previously identified as a result of increased capital and operations funding. However, none of the social metrics are achieved with respect to awareness, education or ethical decision making. This alternative fairs well from a financial and administrative perspective as there is no by-law amendment required and no new administrative procedures are necessary.

Alternative 1 is not consistent with best practices for stormwater management and does not address environmental or social considerations of stormwater management and therefore, is not considered a viable option.

Alternative 2: Enhance existing rebate and educational programs

Alternative 2 connects stormwater mitigation incentives to other existing City programs via rebates. Funds would be used to enhance existing rebate programs by increasing the number or amount of rebates available, or by developing new educational programming for residential and non-residential properties. Guelph’s

Water Efficiency Program currently offers a variety of rebates, incentives and technical advice to assist residential, industrial, commercial and institutional water customers who use the municipal water supply efficiently. These programs are outlined on the City's website at guelph.ca/ourstoconserve, and a complete list of current rebates can be found at guelph.ca/rebates.

For example, one program that is directly related to stormwater management is the Rainwater Harvesting System Rebate, which provides up to \$400 for a seasonal outdoor system and \$2,000 for an all-season, indoor/outdoor system. The Water Efficiency Program also sells approximately 600 rain barrels per year (at cost).

This Alternative proposes an expansion to the existing water efficiency programming to include rebates for a wider range of stormwater management programs for residential and non-residential properties, which may include but is not limited to:

- Rain gardens;
- Permeable pavement;
- Oil/grit separators;
- Green roofs;
- Silva Cells (tree planters);
- Turf conversion (i.e., replacing irrigated turfgrass lawns with drought-tolerant vegetation, artificial turf, or hardscape rocks/pavers, etc.);
- Infiltration galleries; and
- Stormwater management ponds.

As outlined in the City's Water Efficiency Strategy (2016), water efficient landscape incentives were identified for including in the Water Efficiency Program. The proposed development of this program was recommended for 2021, with full program commencing in 2022. Alternative 2 could expedite this program by contributing funding and/or resources.

It should be noted that rebates are currently issued as a one-time only monetary incentive and this would continue under Alternative 2.

Advantages for Alternative 2 from a social perspective are that it offers education opportunities and promotes environmental awareness. From a financial perspective the rebate program is already in place for Water Services and there would be no change to the current billing system to include stormwater rebates. There may be additional costs as the expanded program may have additional uptake resulting in additional administration costs.

Notwithstanding the advantages identified, this alternative will not meet technical or environmental considerations as there are no assurances of proper installation or ongoing operations and maintenance activities. This is due to the fact that once a rebate is issued, there is no obligation for on-going operation and maintenance since there is no rebate renewal opportunity.

Alternative 3: Implement a new credit program

Alternative 3 consists of a credit program that would financially reward property owners/account holders for both residential and non-residential sectors for certain stormwater management related actions. The intent of a new stand-alone credit program is to encourage onsite stormwater management through the use of source controls such as LID and other green infrastructure facilities, to reduce the long-term costs of the City's stormwater services program and improve the quantity and quality of stormwater. Credits would be given to property owners who provide water quantity control (peak flow reduction or volume capture), quality control (total suspended solids removal) as well as operational (ie. pavement sweeping), planning (pollution prevention plans) and education opportunities. A credit would be a reduction on the monthly stormwater fee and would continue indefinitely as long as it can be shown that stormwater mitigation is occurring on the property. This would be achieved through a credit renewal process.

This alternative would be designed to reward (i.e. credit) customers in relation to the reduction of stormwater runoff and pollutant loading to the City's stormwater management and drainage system. For example, a credit amount of 10% on a property represents a 10% reduction of stormwater runoff impacts to the City's system. Individual credits would be capped at 50% per property.

From an environmental and technical perspective, Alternative 3 ensures proper design, installation, operations and maintenance to achieve desired stormwater management outcomes. There are also social and financial benefits as credits would be allocated fairly and equitably based on future program cost savings.

Credits can continue indefinitely provided a property owner demonstrates that a particular stormwater management technique is meeting a desired outcome (through credit renewals.) This is in contrast to rebates (as described in Alternative 2) which are one time only financial incentives.

The primary disadvantage with Alternative 3 is the higher cost to develop, implement and maintain a credit program for all residential and non-residential properties in the City.

Alternative 4: Enhanced Water Efficiency Program with Stormwater Credits (Hybrid Rebate/Credit Program)

This option combines Alternative 2 as a residential only rebate program with Alternative 3 as the non-residential only credit program. Furthermore, it provides additional funding towards addressing capital and operating reserves as well as the infrastructure backlog. Capitalizing on the success of the City's Water Efficiency Strategy, Alternative 4 combines the environmental and educational appeal of a rebate program and lessens the administrative burden of a standalone credit program.

Through this Alternative, the City can further develop awareness from both a water efficiency and stormwater management perspective. An example of this is the Water Smart Business Program which works with the industrial, commercial and institutional sector in an effort to reclaim water supply capacity by improving water using processes. The City currently offers incentives for the completion of water audits and large system retrofits in the industrial, commercial and institutional sectors of our city.

Alternative 4 also offers the environmental benefits of a credit system to non-residential customers only. Non-residential properties typically contribute a much larger amount of stormwater runoff and pollutant loading per property compared to residential customers and therefore, on-site stormwater management on non-residential properties would be expected to have a greater impact on reducing stormwater quality and quantity in the system.

Alternative 4, has the potential to:

- Encourage on-site stormwater management practices and reward good behaviour by providing financial incentives (rebates for residential or credits for non-residential properties) to those who implement stormwater management measures.
- Provide on-going environmental and educational awareness by integrating messaging of Stormwater Management with the Water Efficiency Program.
- Reinforce the link between cost of the City's stormwater service and the fairness/equity of the charge allocation (i.e. credits allocated in relation to the relative reduction of stormwater impacts)
- Defer some operating and capital expenditures by the City.
- Maintain forecasted Sustainable Funding Strategy and reduce funding gap by increases to capital financing.

This combined alternative provides all the environmental, technical and social advantages of the rebate and credit programs. This alternative would require the current Stormwater Fees and Charges by-law to be amended to reference a credit program and would require additional administrative costs, procedures and inspections/by-law enforcement related to credit eligible facilities and controls on non-residential properties.

Results of Program Alternative Assessment

Table 3 presents a matrix for assessing and evaluating alternatives with respect to various metrics shown in Attachment 1. The impact of each alternative on the metrics was used as the basis for determining and distinguishing the advantages and disadvantages between alternatives. The detailed analysis can be found in Attachment 2.

Table 2 - Assessment Matrix for Stormwater Service Fee Credit Options

Category / Metric	Alternative 1	Alternative 2	Alternative 3	Alternative 4
ENVIRONMENTAL/TECHNICAL				
Encourages LID Uptake				
Ensures Proper Design				
Ensures Proper Construction and O&M				
Improves Flood/Erosion Control				
Improves Receiving Water Quality				
Improves Source Water Protection/Water Balance				
SOCIAL				
Increases Environmental Awareness/Stewardship				
Provides Education Opportunities				
Leads to Ethical Decision Making				
FINANCIAL				
Promotes Existing Programs				
Reduces Stormwater Program Costs				
Avoids Overly High Administrative Costs				
Requires New Administrative Procedures				
Increases Inspection/By-law Enforcement Needs				

Legend

Advantageous/Positive Impact	
Neutral/Minor Positive Impact	
Disadvantageous/No Impact	

With all incentive program options, it is critical that on-going monitoring of rebates and/or credits occurs to ensure capital and operating costs are achieved to address program requirements and ensure a Sustainable Funding Strategy.

Recommended Program Alternative

The assessment and results for combined with public and stakeholder feedback suggests that Alternative 4 offers the greatest overall benefit. Therefore, Alternative 4 is recommended for implementation and to be in effect by January 2018.

Financial Implications

The number of ERUs billed in 2017 is higher than initially estimated during the Stormwater Funding Feasibility Study. An additional \$580,000 is projected for revenue in 2018 based on a forecasted ERU rate of \$4.60. It is recommended that \$100,000 of the additional revenue be allocated in the 2018 Stormwater operating budget for uncollected revenue or contingency. If the remaining additional revenue (\$480,000) is directed to the incentive program, then the implementation of the recommended stormwater credit program (Alternative 4) will have no impact on the Sustainable Funding Strategy as outlined as part of the 2017 budget.

It is critical that on-going monitoring of financial incentive program costs (rebates, credits, and administrative) occurs to ensure Sustainable Funding Strategy is achieved. Staff will track the uptake of this financial incentive alternative and will report back to council as part of 2019 budget process.

Consultations

The City consulted various stakeholders and the public throughout the credit program feasibility study.

Community engagement opportunities included:

Stakeholder Meeting #1	Provided summary of Funding Feasibility Study and introduction to credits	November 10, 2016
Public Open House	Provided Summary of Funding Feasibility Study and introduction to credits	November 17, 2016
Stakeholder Meeting #2	Presented credit program framework and preliminary staff recommendations	March 21, 2017
Water Conservation and Efficiency Public Advisory Committee	Provided summary of Funding Feasibility Study and overview of options being considered	May 16, 2017
Stakeholder Meeting #3	Presented stakeholders with final recommendations	May 17, 2017

Key themes arising during consultation and which helped support Alternative 4 included:

- Credit program for large residential and non-residential properties with incentive basis for smaller residential properties
- Administrative costs would be high for residential credits

- Development industry is moving toward decreased impacts on stormwater, some of which are required for new development
- Application and renewal has to be simple and easy to follow for residential and non-residential properties
- Inspection program for non-residential participants using a 5-year renewal concept, and certification by professional experts

Corporate Administrative Plan

Overarching Goals

Innovation
 Financial Stability
 Service Excellence

Service Area Operational Work Plans

Our Services - Municipal services that make lives better
 Our People- Building a great community together
 Our Resources - A solid foundation for a growing city

Attachments

ATT-1 Evaluation Criteria - Table
 ATT-2 Evaluation Criteria - Analysis

Departmental Approval

Emily Stahl, Manager of Technical Services
 Heather Yates, Supervisor (acting), Water Efficiency
 Bruce Banting, Associate City Solicitor
 Laura Mousseau, Communications Officer
 Kelly Guthrie, Community Engagement Coordinator
 Ron Maeresera and Patricia Zukowski, Finance

Report Author

Arun Hindupur, P.Eng.
 Infrastructure Planning Engineer



Approved By

Kealy Dedman, P.Eng.
 General Manager/City Engineer
 Engineering and Capital
 Infrastructure Services
 519-822-1260, ext. 2248
 kealy.dedman@guelph.ca



Recommended By

Scott Stewart, C.E.T.
 Deputy CAO
 Infrastructure, Development and Enterprise
 519-822-1260, ext. 3445
 scott.stewart@guelph.ca

Attachment 1

Alternative Evaluation Criteria	Description
ENVIRONMENTAL/TECHNICAL	
Encourages Low Impact Development (LID) Uptake	Promotes progressive and innovative lot level stormwater management.
Ensures Proper Design	Requires the facility to meet design standards and achieve all eligibility requirements.
Ensures Proper Construction, Operation and Maintenance (O&M)	Requires construction certification and permit compliance while encouraging proper record keeping to support ongoing O&M; allows City access for inspection.
Improves Flood/Erosion Control	Mitigates flood/erosion hazards through proper design, construction, and O&M.
Improves Receiving Water Quality	Improves water quality treatment through proper design, construction, and O&M.
Improves Source Water Protection/Water Balance	Achieves appropriate balance of surface water and groundwater through proper design, construction, and O&M.
SOCIAL	
Increases Environmental Awareness/Stewardship	Cultivates awareness and appreciation of Guelph's resources and history of innovative environmental leadership.
Provides Education Opportunities	Provides education to the public while demonstrating proper O&M and good housekeeping practices.
Leads to Ethical Decision Making	Ensures fairness and equity in the allocation of funds received.
FINANCIAL	
Promotes Existing Programs	Integrates and cross-sells other City initiatives, optimizing staff efficiency and resources.
Reduces Stormwater Program Costs	Defers capital projects or reduces the frequency of O&M activities.
Maintains or improves infrastructure funding	Addresses capital and operating reserves as well as backlog
Administrative Costs	Does not require additional staff/resources and can accommodate implementation within current job functions.
Requires New Administrative Procedures	Does not require development and implementation of additional City policies and procedures.
Increases Inspection/By-law Enforcement Needs	Does not require additional staff/resources to inspect facilities and enforce the by-law.

Attachment 2

City of Guelph

Stormwater Service Fee Credit Policy Development

Prepared by:

AECOM

50 Sportsworld Crossing Road, Suite 290

Kitchener, ON, Canada N2P 0A4

www.aecom.com

519.650.5313

tel

519.650.3424

fax

June, 2017

Project Number: 60306078

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Table of Contents

	page
1. Introduction	1
1.1 Background	1
2. Alternatives	1
2.1 Alternative 1: Do Nothing	1
2.2 Alternative 2: Enhanced Rebate Program	2
2.3 Alternative 3: New Credit Program	2
2.4 Alternative 4: Enhanced Water Efficiency Program with Stormwater Credits (Hybrid Rebate/Credit Program)	3
3. Stakeholder Participation	4
4. Evaluation of Alternatives	4
4.1 Evaluation Criteria and Rating Methodology	4
Alternative 1 Evaluation – No Additional Financial Incentives	5
4.2 5	
4.2.1 ENVIRONMENTAL/TECHNICAL	5
4.2.2 SOCIAL	5
4.2.3 FINANCIAL	6
4.3 Alternative 2 Evaluation – Enhanced Rebate Program	6
4.3.1 ENVIRONMENTAL/TECHNICAL	6
4.3.1.1 Encourages LID Uptake	6
4.3.1.2 Ensures Proper Design / Installation	7
4.3.1.3 Ensures Proper Construction, Operation and Maintenance (O&M)	7
4.3.1.4 Improves Flood/Erosion Control	7
4.3.1.5 Improves Receiving Water Quality	7
4.3.1.6 Improves Source Water Protection/Water Balance	7
4.3.2 SOCIAL	7
4.3.2.1 Increases Environmental Awareness/Stewardship	7
4.3.2.2 Provides Education Opportunities	7
4.3.2.3 Leads to Ethical Decision Making	7
4.3.3 FINANCIAL	8
4.3.3.1 Promotes Existing Programs	8
4.3.3.2 Reduces Stormwater Program Costs	8
4.3.3.3 Avoids Overly High Administrative Costs	8
4.3.3.4 Requires New Administrative Procedures	8
4.3.3.5 Increases Inspection/By-law Enforcement Needs	8
4.4 Alternative 3 Evaluation – New Credit Program	8
4.4.1 ENVIRONMENTAL/TECHNICAL	9
4.4.1.1 Encourages LID Uptake	9
4.4.1.2 Ensures Proper Design	9
4.4.1.3 Ensures Proper Construction, Operation and Maintenance (O&M)	9
4.4.1.4 Improves Flood/Erosion Control	10

4.4.1.5	Improves Receiving Water Quality	10
4.4.1.6	Improves Source Water Protection/Water Balance.....	10
4.4.2	SOCIAL	10
4.4.2.1	Increases Environmental Awareness/Stewardship	10
4.4.2.2	Provides Education Opportunities	10
4.4.2.3	Leads to Ethical Decision Making	10
4.4.3	FINANCIAL	10
4.4.3.1	Promotes Existing Programs	11
4.4.3.2	Reduces Stormwater Program Costs.....	11
4.4.3.3	Avoids Overly High Administrative Costs	11
4.4.3.4	Requires New Administrative Procedures.....	11
4.4.3.5	Increases Inspection/By-law Enforcement Needs.....	11
4.5	Alternative 4 Evaluation – Hybrid Rebate / Credit Program.....	11
4.5.1	ENVIRONMENTAL/TECHNICAL	11
4.5.2	SOCIAL	11
4.5.3	FINANCIAL	11
4.6	Evaluation Results	12

List of Tables

Table 4-1 - Criteria for the Evaluation of Rehabilitation Alternatives

Table 4-2: Assessment Matrix for Stormwater Service Fee Credit Options

1. Introduction

As part of the stormwater service fee implementation strategy endorsed by Council in July 2016, staff were directed to explore the feasibility of a credit policy. This memo summarizes the options evaluated.

1.1 Background

The City's Stormwater Service Fee began billing in January 2017. In this memo, the term customer is used to describe any private or public property owner that receives a bill for stormwater services. A further distinction is made between residential and non-residential customers, the latter of which comprises properties in commercial, industrial, and institutional zoned lands. For the purposes of this memo, non-residential customers may also include high-density residences such as apartments, condominiums, and townhouses as well as a collective group of low-density residences (e.g., homeowners association) that owns/maintains large communal stormwater facilities.

Since 2013, as part of the Feasibility Study that led to the new service fee, the concept of credit policy has been communicated to Council, stakeholders, and the public. A stormwater credit program provides financial incentives by offering a reduction to the base charge for customers who implement measures, practices, or activities on their property that capture and treat runoff prior to discharge into the City's stormwater management system. Credits are intended to encourage onsite stormwater management through the use of source controls such as Low Impact Development (LID) and other green infrastructure facilities, as these could potentially reduce the costs of the City's stormwater services program. That is, green infrastructure that is adequately designed, constructed, operated, and maintained will ease pressures on existing gray infrastructure (i.e., pipes, ditches, culverts, ponds), possibly deferring planned capital projects or reducing the extent and frequency of operations and maintenance (O&M) activities.

2. Alternatives

The overriding principle of a credit program is to reward customers who reduce stormwater runoff quantity or improve the runoff quality that is discharged from their property. With this principle in mind, a range of financial incentive options for stormwater service fee customers was considered including:

- Alternative 1: Do not provide any additional financial incentives
- Alternative 2: Enhance existing programs that provide rebates
- Alternative 3: Implement a new stand-alone credit program
- Alternative 4: A hybrid option which considers rebates for residential properties (Alternative 2) and credits for non-residential properties (Alternative 3)

2.1 Alternative 1: Do Nothing

This option does not offer any additional rewards to customers for addressing stormwater management on their own properties.

2.2 Alternative 2: Enhanced Rebate Program

The City's Water Efficiency and Conservation Program currently offers a variety of rebates for Guelph residents and property owners who use water efficiently. These rebates are listed on the City's website at <http://guelph.ca/living/environment/rebates/>. One program that is directly related to stormwater management is the Rainwater Harvesting System Rebate, which provides up to \$400 for a seasonal outdoor system and \$2,000 for an all-season, indoor/outdoor system. Further, the Water Efficiency Program sells approximately 600 rain barrels per year (at cost), and staff have made 350 home visits per year as part of the Healthy Landscapes program.

Alternative 2 involves expanding these existing programs to include rebates for a wider range of stormwater management facilities, including:

- Rain gardens;
- Permeable pavement;
- Oil/grit separators;
- Green roofs;
- Silva Cells (tree planters);
- Turf conversion (i.e., replacing irrigated turfgrass lawns with drought-tolerant vegetation, artificial turf, or hardscape rocks/pavers, etc.);
- Infiltration galleries; and
- Stormwater management ponds

Rebates would be available to all residential and non-residential customers, and could be further categorized based on storage capacity, pollutant removal efficiency, etc.

2.3 Alternative 3: New Credit Program

Alternative 3 involves implementing a new credit program as part of the Stormwater Service Fee to reduce the stormwater charge to any residential or non-residential customer that owns and operates eligible stormwater management facilities on their property. The enhanced program would provide credits for LIDs such as:

- Rain Barrels;
- Rainwater harvesting systems;
- Rain gardens;
- Permeable pavement;
- Oil/grit separators;
- Green roofs;
- Silva Cells (tree planters);
- Turf conversion (i.e., replacing irrigated turfgrass lawns with drought-tolerant vegetation, artificial turf, or hardscape rocks/pavers, etc.);
- Infiltration galleries; and
- Stormwater management ponds.

2.4 Alternative 4: Enhanced Water Efficiency Program with Stormwater Credits (Hybrid Rebate/Credit Program)

This option combines Alternative 2 as a residential rebate program with Alternative 3 as the non-residential credit program. Furthermore, it provides additional funding towards addressing capital and operating reserves as well as the infrastructure backlog. Capitalizing on the City's award-winning success of the Water Efficiency Strategy, the Alternative combines the environmental and educational appeal of a rebate program and lessens the administrative burden of a standalone credit program.

Through this Alternative, the City can build upon existing successes and look to further develop awareness from both a water efficiency and stormwater management perspective. An example of this is the Water Smart Business Program which works with the industrial, commercial and institutional sector in an effort to reclaim water supply capacity by improving water using processes. The City currently offers incentives for the completion of water audits and large system retrofits in the industrial, commercial and institutional sectors of our city. Similarly from the stormwater management perspective, Alternative 4 offers the environmentally beneficial aspects of a credit system to non-residential customers, whose properties contribute a much larger amount of stormwater runoff and pollutant loading on a per property basis compared to residential customers. The larger the impervious area that can be captured and treated by LID facilities, the greater the impact on stormwater management.

Table 4-1 presents a matrix for assessing and evaluating alternatives with respect to various metrics, which are grouped into three broad categories: Environmental/Technical, Social, and Financial. The overall relative impact of these metrics was used as the basis for determining and distinguishing the advantages/disadvantages between alternatives, and is described in more detail below.

3. Stakeholder Participation

The City consulted various stakeholders and the public throughout the credit program feasibility study.

Community engagement opportunities included:

Stakeholder Meeting #1	Provided summary of Funding Feasibility Study and introduction to credits	November 10, 2016
Public Open House	Provided Summary of Funding Feasibility Study and introduction to credits	November 17, 2016
Stakeholder Meeting #2	Presented credit program framework and preliminary staff recommendations	March 21, 2017
Water Conservation and Efficiency Public Advisory Committee	Provided summary of Funding Feasibility Study and overview of options being considered	May 16, 2017
Stakeholder Meeting #3	Presented stakeholders with final recommendations	May 17, 2017

Key themes arising during consultation and which helped support Alternative 4 included:

- Credit program for large residential and non-residential properties with incentive basis for smaller residential properties
- Administrative costs would be high for residential credits
- Development industry is moving toward decreased impacts on stormwater, some of which are required for new development
- Application and renewal has to be simple and easy to follow for residential and non-residential properties
- Policing non-residential participants using a 5-year renewal concept, and certification by professional experts

4. Evaluation of Alternatives

4.1 Evaluation Criteria and Rating Methodology

Each alternative needs to be evaluated with a consistent methodology, the goal of which is to identify the best choice while considering the potential challenges, advantages and opportunities for each. **Table 4-1** describes the evaluation criteria. A qualitative rating scale, shown in Figure 1-1, is used to assess each alternative against the evaluation criteria.

Table 4-1 - Criteria for the Evaluation of Rehabilitation Alternatives

Criteria	Description
ENVIRONMENTAL/TECHNICAL	
Encourages LID Uptake	Rewards the implementation of LID design and usage
Ensures Proper Design	Provides opportunity for review of design practices and implementation
Ensures Proper Construction and O&M	Provides incentive and opportunity for O&M implementation and review
Improves Flood/Erosion Control	Rewards the implementation of STM and LID design and usage
Improves Receiving Water Quality	Rewards the implementation of STM and LID design and usage
Social	
Increases Environmental Awareness/Stewardship	Provides incentives and opportunities for learning about environmentally aware SWM practices
Provides Education Opportunities	Provides incentives and opportunities to learn more stormwater management
Leads to Ethical Decision Making	Promotes ethical thinking with respect to stormwater
Financial	
Promotes Existing Programs	Directs people to existing rebates and incentives web pages
Reduces Stormwater Program Costs	Promotes reduction of stormwater peak rates and volumes that need to be accommodated within the existing infrastructure
Requires Amending By-law	Requires amending existing by-law(s)
Avoids Overly High Administrative Costs	Requires less permanent full time administration
Requires New Administrative Procedures	Requires a new administration procedure
Increases Inspection/By-law Enforcement Needs	Requires increase in inspections or by-law enforcement

4.2 Alternative 1 Evaluation – No Additional Financial Incentives

4.2.1 ENVIRONMENTAL/TECHNICAL

This option would not offer the environmental, technical, or social advantages as the other alternatives. However, by ramping up capital spending (rather than using funds for a rebate or credit program) there would be an environmental benefit as stormwater projects previously identified through the stormwater master plan could be undertaken in a faster timeframe.

4.2.2 SOCIAL

The main disadvantage is that this alternative also does not promote existing water conservation programs nor on-site stormwater management, which in turn would not reduce the City’s stormwater program costs.

4.2.3 FINANCIAL

Without any additional financial incentives, no revenue would be used to incentivize customers to provide on-site stormwater management facilities or controls including Low Impact Development (LID). The primary advantage of Alternative 1 is that it would not require the by-law to be amended and there would be no additional administrative costs, procedures or inspections/by-law enforcements required.

4.3 Alternative 2 Evaluation – Enhanced Rebate Program

The primary advantages of Alternative 2 include:

- The rebate system is already in place and only minor additional staff resources and adjustments to existing procedures/policies would be needed. The result would be an enhanced rebate program that provides more fulsome benefit to the public.
- Although the rate would need to be adjusted to account for both administrative costs and the total rebate amount, no change to the current stormwater service fee billing system would be necessary.
- By expanding the rebate program, increased LID uptake is anticipated which would benefit the City in two important ways: 1) offering more education opportunities and increased environmental awareness/engagement; and 2) bolstering water conservation and stormwater management efforts, which would allow the City to potentially defer capital projects based on uptake.

The primary disadvantage of Alternative 2 is that a rebate does not ensure that LID facilities have been properly installed nor that they will be properly operated and maintained in the future. Such assurance can only come with significant inspection/enforcement efforts by City staff, along with a corresponding increase in administrative costs to the City and onerous application requirements for the customer. Proper design, construction, and O&M are critical issues to achieve the expected design performance related to flood/erosion control, water quality treatment, or source water protection/water balance.

Another disadvantage concerns the allocation of monetary rewards offered to customers. Given the precedents set by other communities that have an established credit program, the assignment of rebates in Alternative 2 is somewhat arbitrary compared to Alternative 3.

The additional administrative costs for an enhanced rebate program have been estimated at \$100,000 per year. It is also estimated that the total amount of rebates given out will be \$225,000 per year.

4.3.1 ENVIRONMENTAL/TECHNICAL

The primary advantage of Alternative 2 is that it increases the level of uptake of properly designed on-site stormwater management facilities and controls. The primary disadvantage is that it does not ensure that these facilities and controls are properly installed or operated.

4.3.1.1 Encourages LID Uptake

This alternative is intended to increase the uptake of LID installations on properties by enhancing the City's rebate program as noted above. Currently, the City only provides rain barrels at cost, and offers a rebate for rainwater harvesting systems. Further program development such as turf conversion could be considered.

4.3.1.2 Ensures Proper Design / Installation

Proper design can be ensured through the checking and administration in the same manner as is currently undertaken by the City's Water Efficiency and Conservation Program.

4.3.1.3 Ensures Proper Construction, Operation and Maintenance (O&M)

The rebate programs largely operate on an honor system through applicant self-certification, rather than rely on the City to inspect the installation or operation of facilities and enforce compliance of permit obligations. Therefore, Alternative 2 cannot ensure that LID facilities have been properly installed or will be properly operated and maintained in the future.

4.3.1.4 Improves Flood/Erosion Control

The implementation of LIDs will provide flood/erosion control benefits consistent with their design function, however only when these facilities are properly operated and maintained on an ongoing basis. An honor system cannot guarantee such a commitment.

4.3.1.5 Improves Receiving Water Quality

The implementation of LIDs will only provide improvements to the receiving water quality with the assurance that facilities are properly operated and maintained.

4.3.1.6 Improves Source Water Protection/Water Balance

The implementation of LIDs will only provide improvements to source water protection and water balance with the assurance that facilities are properly operated and maintained.

4.3.2 SOCIAL

4.3.2.1 Increases Environmental Awareness/Stewardship

The primary advantage of Alternative 2 is that it cultivates awareness and appreciation of Guelph's unique natural/water resources, as well as its history of environmental leadership and innovation. The primary disadvantage is that the monetary value of rebates is somewhat arbitrary. The rebate program fosters natural resource awareness and public participation which in turn continues Guelph's legacy of environmental stewardship.

4.3.2.2 Provides Education Opportunities

By expanding the rebate program anticipated benefits include offering more education opportunities and increased environmental awareness/engagement; and bolstering water conservation and stormwater management efforts.

4.3.2.3 Leads to Ethical Decision Making

The expanded rebate program will encourage decision making to take into account ecologically and socially ethical decision making, however it will largely operate on an honor system through applicant self-certification, rather than rely on the City to inspect/enforce.

4.3.3 FINANCIAL

4.3.3.1 Promotes Existing Programs

The primary advantage of Alternative 2 is that it accentuates existing practices and procedures that have been adopted by the City for water conservation practices, extending these to stormwater management. Expanding the existing rebate program directly promotes the existing programs and this is financially beneficial to the City as it leads to interdepartmental coordination of resources and improved efficiency.

4.3.3.2 Reduces Stormwater Program Costs

By expanding the rebate program, increased LID uptake is anticipated and the resulting water conservation and stormwater management efforts allow the City to potentially defer capital projects. However it provides no assurances for O&M therefore no long-ern SWM benefit.

4.3.3.3 Avoids Overly High Administrative Costs

The primary disadvantage of this alternative is that additional administrative effort will be needed to enhance the rebate program. The existing rebate program largely operates on an honor system through applicant self-certification, rather than rely on City forces to inspect and enforce private facilities. The stormwater service fee would provide some support to the existing administration of this program but the additional administration cost will be low.

4.3.3.4 Requires New Administrative Procedures

Some additional support to the administration of the existing rebate program would be required but would largely work within the existing administrative framework.

4.3.3.5 Increases Inspection/By-law Enforcement Needs

The existing rebate program largely operates on an honor system through applicant self-certification. The stormwater service fee would provide some additional support to the process if inspections are required as part of new programming.

4.4 Alternative 3 Evaluation – New Credit Program

Preliminary details and example applications of a proposed credit program were included in presentations to the stakeholder advisory group (March 2017) and to senior staff (April 2017).

The primary advantages of Alternative 3 include:

- The credit application/renewal process ensures that customers have properly designed, installed, operate, and maintain eligible facilities or practices on their property. For example, credits can be revoked for non-compliance with design standards or non-compliance, improper operation, or inadequate maintenance.
- Similar to Alternative 2, increased LID uptake is anticipated which would benefit the City in two important ways: 1) offering more education opportunities and increased environmental awareness/engagement; and 2) bolstering water conservation and stormwater management efforts, which would allow the City to potentially defer capital projects based on uptake. There is an opportunity to defer more capital projects than Alternative 2 as regulatory agencies could be more apt to allow reduced gray infrastructure (i.e., pipes

and ponds) size requirements knowing that the City has a mechanism in place to ensure that green infrastructure facilities (i.e., LID) are adequately designed, constructed, operated, and maintained.

- A credit system reinforces the link between cost of the City's stormwater service and the fairness/equity of the charge allocation. That is, since the service fee is designed to charge customers in relation to the contribution of stormwater runoff and pollutant loading then, likewise, credits should be allocated in relation to the relative reduction of stormwater. The credit programs in Kitchener and Mississauga were developed with this philosophy in mind, with the intent of correlating reduced program costs to credit amounts. Developing a credit program in a consistent, rational manner can help to reduce litigation exposure, by giving customers the ability to reduce their charge, which is one of the key differentiators between a user fee and a tax.

The primary disadvantage of Alternative 3 is the cost to develop and implement a credit program. This would require an amendment to the Stormwater Fees and Charges By-law, and development of new administrative policies and procedures. Further, this would involve additional staff time and resources to review initial/renewal credit applications, conduct site inspections and other by-law enforcement activities, and make changes to the current stormwater service fee billing process.

A full credit program (as envisioned in the previous presentations noted above) and available to all residential and non-residential customers, is estimated to cost \$300,000 per year. It is also estimated that the total amount of credits awarded will be \$450,000 per year.

4.4.1 ENVIRONMENTAL/TECHNICAL

The main advantage of Alternative 3 is that it increases the level of uptake of properly designed on-site stormwater management facilities and controls and further ensures that these are properly installed, operated and maintained on an ongoing basis.

4.4.1.1 Encourages LID Uptake

This alternative is expected to increase the uptake of LID installations on properties by crediting eligible stormwater service fee customers.

4.4.1.2 Ensures Proper Design

Proper design can be ensured in the applicant's submission that requires certification (and possibly by a professional third-party) that the facility or control meets City design standards and achieves all eligibility requirements. The applicant would also grant access to City staff for conducting inspections if necessary.

4.4.1.3 Ensures Proper Construction, Operation and Maintenance (O&M)

The credit program will provide the City an opportunity to inspect/enforce LID facilities to confirm they have been properly installed, operated and maintained. For customers to continue receiving their credit they will be required to show proof of regular maintenance per their maintenance logs or ECA permit conditions where applicable, such as sediment surveys and removals from ponds.

4.4.1.4 Improves Flood/Erosion Control

For facilities that are designed to mitigate flooding and erosion hazards, this alternative requires assurance of proper design, construction, and O&M, consistent with the stormwater management report or design brief approved during the site planning process. Therefore it provides more certainty with respect to flood/erosion control.

4.4.1.5 Improves Receiving Water Quality

For facilities that are designed to provide water quality treatment, this alternative requires assurance of proper design, construction, and O&M, consistent with the stormwater management report or design brief approved during the site planning process. Therefore it provides more certainty with respect to receiving water quality.

4.4.1.6 Improves Source Water Protection/Water Balance

For facilities that are designed to achieve an appropriate balance of surface water and groundwater, this alternative requires assurance of proper design, construction, and O&M, consistent with the stormwater management report or design brief approved during the site planning process. Therefore it provides more certainty with respect to source water protection /water balance.

4.4.2 SOCIAL

The main advantage of Alternative 3 is that it cultivates awareness and appreciation of Guelph's unique natural/water resources, as well as its history of environmental leadership and innovation. A further advantage is that the monetary value of credits is closely tied to the future anticipated cost savings to the City's stormwater program as a result of on-site stormwater management facilities and controls.

4.4.2.1 Increases Environmental Awareness/Stewardship

The credit program fosters natural resource awareness and public participation which in turn continues Guelph's legacy of environmental stewardship.

4.4.2.2 Provides Education Opportunities

The credit program will provide education opportunities and increased environmental awareness/engagement; and bolstering water conservation and stormwater management efforts.

4.4.2.3 Leads to Ethical Decision Making

The credit program will adopt fairness and equity principles in the allocation of funds received (i.e., in proportion to the overall distribution of billing units by customer type) and in the assignment of incentive monetary values (i.e., in proportion to future cost savings to the City's Stormwater Services program).

4.4.3 FINANCIAL

The main advantage of Alternative 3 is that it is specifically targeted to rewarding facilities and controls that reduce both the runoff volume and pollutant loading delivered to the City's stormwater management system, which ultimately reduces the cost of stormwater services. The many disadvantage is the additional administrative effort that will be needed to assure that facilities have been properly designed, constructed, operated and maintained.

4.4.3.1 Promotes Existing Programs

By integrating and cross-selling the new credit program with other City initiatives, such as the existing rebate program, the increased attention can help to optimize staff efficiency and resources.

4.4.3.2 Reduces Stormwater Program Costs

A credit program, depending on uptake, is anticipated to reduce stormwater runoff and therefore allow the City to potentially reduce capital and maintenance costs.

4.4.3.3 Avoids Overly High Administrative Costs

The credit program would rely on City staff to review, inspect and enforce the program which would require additional staff resources.

4.4.3.4 Requires New Administrative Procedures

The credit program would require the development and implementation of additional policies and procedures for City staff to address processes such as credit application reviews, site inspections, bylaw enforcement activities, utility billing coordination, and rate setting/forecasting.

4.4.3.5 Increases Inspection/By-law Enforcement Needs

The credit program would rely on City forces to inspect/enforce credit eligible facilities and controls.

4.5 Alternative 4 Evaluation – Hybrid Rebate / Credit Program

4.5.1 ENVIRONMENTAL/TECHNICAL

This combined alternative provides all the environmental social advantages of the rebate program; It also promotes existing programs and reduces stormwater program costs

4.5.2 SOCIAL

This combined alternative provides all the environmental, technical and social advantages of the rebate and credit programs.

4.5.3 FINANCIAL

However, this alternative would require the by-law to be amended and would require additional administrative costs, procedures and inspections/by-law enforcement related to credit eligible facilities and controls on non-residential properties.

4.6 Evaluation Results

Table 4-2 presents the evaluation results with Alternative 4 being the preferred alternative.

Table 4-2: Assessment Matrix for Stormwater Service Fee Credit Options

Category / Metric	Alternative 1	Alternative 2	Alternative 3	Alternative 4
ENVIRONMENTAL/TECHNICAL				
Encourages LID Uptake				
Ensures Proper Design				
Ensures Proper Construction and O&M				
Improves Flood/Erosion Control				
Improves Receiving Water Quality				
Improves Source Water Protection/Water Balance				
SOCIAL				
Increases Environmental Awareness/Stewardship				
Provides Education Opportunities				
Leads to Ethical Decision Making				
FINANCIAL				
Promotes Existing Programs				
Reduces Stormwater Program Costs				
Avoids Overly High Administrative Costs				
Requires New Administrative Procedures				
Increases Inspection/By-law Enforcement Needs				

Legend

Advantageous/Positive Impact	
Neutral/Minor Positive Impact	
Disadvantageous/No Impact	

Alternative 1 is not consistent with best practices for stormwater management and does not address environmental or social considerations of stormwater management and is therefore not considered a viable option.

The assessment and results for combined with public and stakeholder feedback suggests that Alternative 4 offers the most benefit to the environmental, social, and financial evaluation criteria. Therefore, implementation of Alternative 4 is recommended.

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Contact

First Name Surname

Job Role

T +xx (xxx) xxx-xxxx

E [email address]

First Name Surname

Job Role

T +xx (xxx) xxx-xxxx

E [email address]

LED street lighting: Better for our budget and our planet

1

Coming up

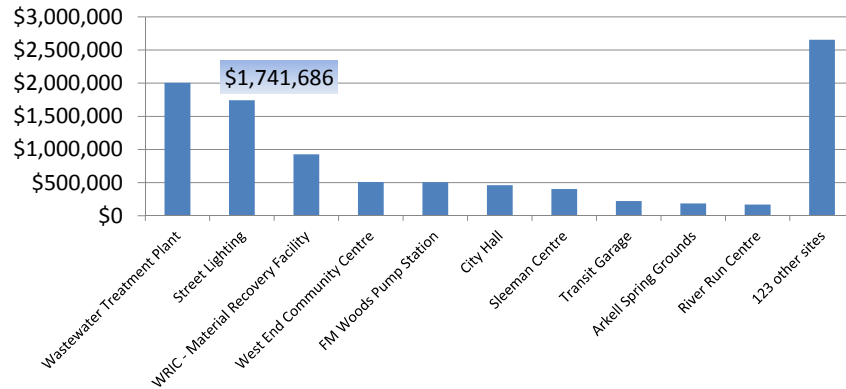
- Street lighting costs are significant...
- ...and rising
- LEDs offer significant savings
- Adaptive controls can save even more
- Addressing public concerns
- Options considered
- Recommendation

2

Street lighting costs are significant

2nd largest line item in our \$9.79M energy budget

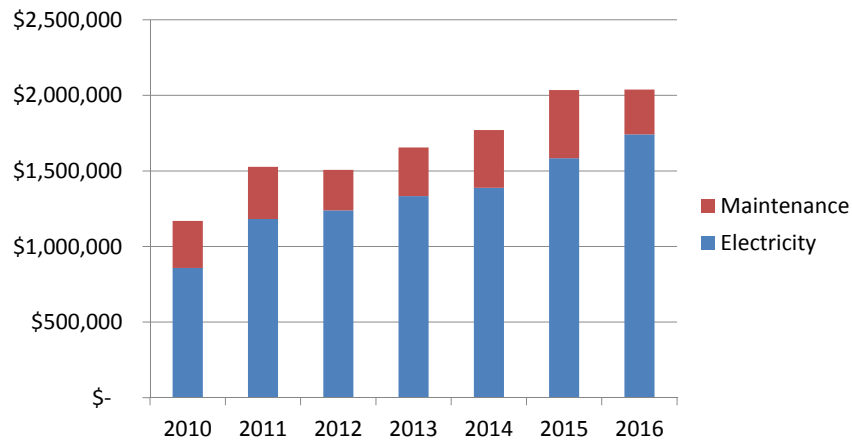
2016 utility expenditure



3

Street lighting costs are rising fast

Main driver: Rising electricity rates, not growth



4

LEDs offer significant savings

Electricity savings have been validated by other municipalities

LED conversion completed (>92% of lamps converted)	
Municipality	Electricity cost/lamp
Barrie*	\$ 67.39
Kingston	\$ 47.65
City of Mississauga	\$ 92.80
Weighted average	\$ 81.68

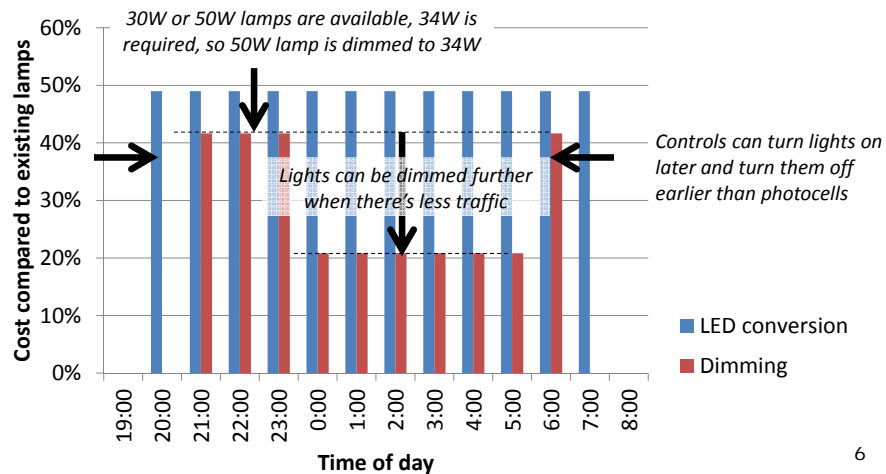
* Project is the most similar to the Guelph project based on size and completion date

LED conversion not started (<5% of lamps converted)	
Municipality	Electricity cost/lamp
Municipality of Clarington	\$ 131.14
City of Ottawa	\$ 111.39
Town of Richmond Hill	\$ 159.45
Town of Ajax	\$ 113.33
Town of Oakville	\$ 154.32
Guelph	\$ 120.80
Weighted average	\$ 119.68

5

Adaptive controls offer more savings

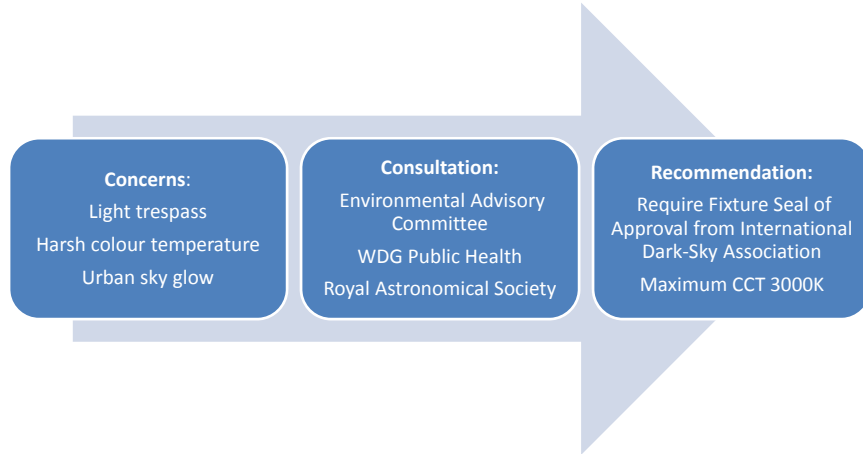
Use dimming to meet established standards



6

Public concerns heard and addressed

Feedback from field trial has guided our recommendations



7

Five options were evaluated

Business case reviewed by third-party consultant

Option	Description	Simple payback	Total 15-year cost in 2017 dollars	Net avoided cost over 15 years
1	Status quo	N/A	\$39.1M	0
LED Conversion Only				
2	City owns	4.3	\$22.3M	\$16.3M
3	Guelph Hydro owns	N/A	\$22.3M	\$16.8M
LED conversion and adaptive controls				
4a*	City owns	5.2	\$21.1M	\$17.6M
4b	City owns, no savings from controls	6.0	\$24.4M	\$14.2M
5	Guelph Hydro owns	N/A	\$27.3M	\$11.8M

← Our recommendation

* Vendors, municipalities, and LDCs are working with Measurement Canada to establish a method for adjusting billings to account for adaptive controls.

8

We recommend to proceed...

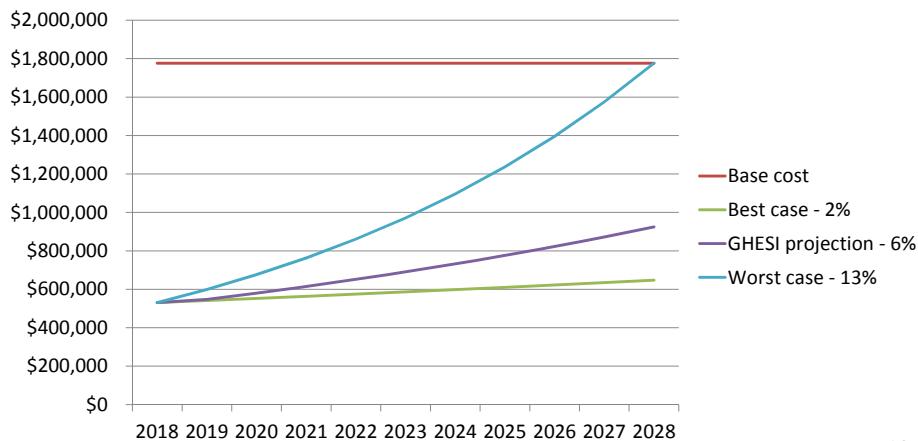
...with LEDs and Adaptive Controls

- The financially preferable option is:
 - Retain the asset (do not sell to Guelph Hydro)
 - Perform the LED upgrade with Adaptive Controls
 - Outsource maintenance to the same vendor
 - Participate in discussions with Measurement Canada to ensure savings from dimming are realized
- This option also offers additional “smart city” opportunities, should Council decide to invest in them in the future:
 - Smart parking
 - Transit and emergency vehicle intersection priority
 - Environmental sensors (e.g. air pollutants)

9

Rates do not impact savings greatly

10-year cumulative energy savings are still \$8M in worst case



10

Staff Report

To Committee of the Whole

Service Area Infrastructure, Development & Enterprise Services

Date Tuesday, July 4, 2017

Subject LED Street Lighting

Report Number IDE 17-59

Recommendation

1. That the LED Street Light Project (the "Project") proposal regarding the retrofitting of the City's street lighting asset with Light Emitting Diode (LED) technology and Adaptive Controls be approved.
2. That the Project costs estimated at \$8 million be funded via internal borrowing from the Wastewater Capital Reserve Fund (#153).
3. That staff be directed to negotiate an agreement with Guelph Hydro Electric Systems Inc. to define their role in this project based on the recommendations contained in the report, with the terms and conditions satisfactory to the General Manager of Facilities Management, the Treasurer and the City Solicitor.
4. That staff be directed to report back to Council when project savings are identified, and recommend how those savings might be allocated between debt repayment and the operating budget.

Executive Summary

Purpose of Report

To obtain Council approval to convert the Corporate street lighting asset to LED technology with Adaptive Controls.

Key Findings

1. The corporation owns all 13,119 street lights on public rights-of-way in the City of Guelph.
2. Street lighting electricity is the second largest utility line item and accounts for approximately 16% or \$1.7 million of the entire corporate energy budget.
3. Street lighting electricity and maintenance costs rose 10% per year on average from 2010 to 2016.
4. This conversion is estimated to produce a net avoided cost of \$14.2 million over a 15-year period.

5. Electricity savings are estimated to reduce carbon dioxide emissions by 464 tonnes/year, equivalent to taking 98 cars off the road.
6. Adaptive controls would yield a city wide mesh network which could be used for a variety of purposes leading to further cost reductions, revenue generation, or new services.
7. Utility incentives are available which have not been taken into consideration as part of the business case.
8. Other municipalities including Mississauga, Toronto, Hamilton, Kingston, Barrie, Kitchener, Waterloo, Cambridge, and Richmond Hill have already implemented or in the process of implementing this conversion.

Financial Implications

The street lighting asset can be replaced with a capital investment of approximately \$8 million which is recommended to be funded via an internal borrow from the wastewater capital reserve fund. This is a cost-effective funding option that maximizes the City's available cash flow without issuing external debt. The expected operating savings that will be generated through this project will be used to repay this borrowing plus the interest that would have otherwise been earned through the City's investment portfolio.

Once the operating savings are formally identified after the commissioning of the project, Staff will report back to Council with a proposed repayment plan that balances operating budget savings with the debt repayment.

The project is expected to yield avoided electricity and maintenance costs equivalent to this initial investment within six years.

Report

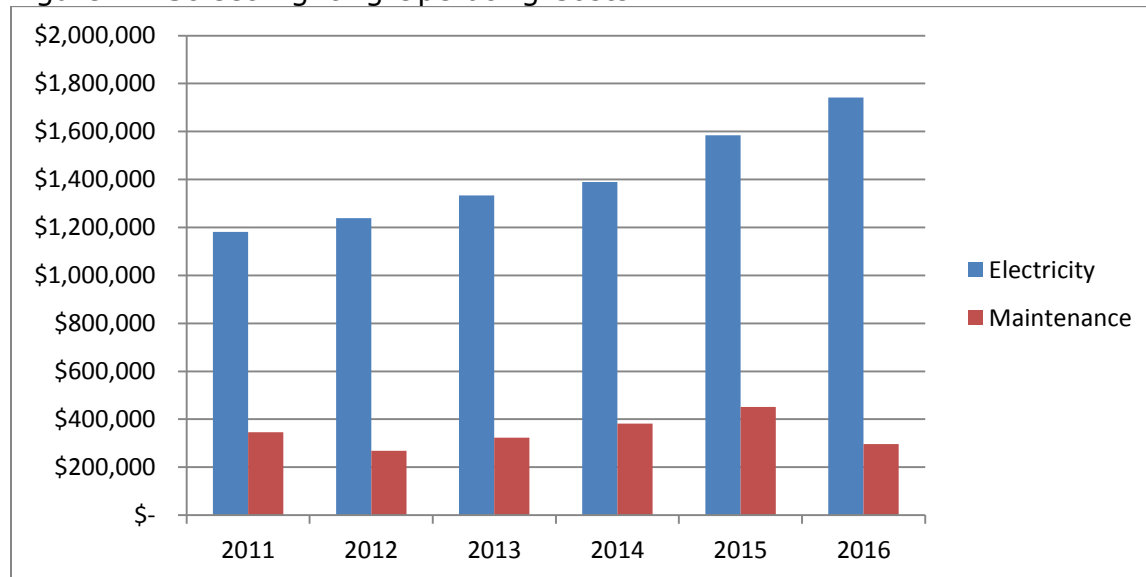
- The Corporation owns all 13,119 street lights on public rights-of-way in the city;
- Guelph Hydro Electric Systems Inc. (GHESI) performs maintenance, including group re-lamping (i.e. replacing each bulb every three to five years);
- 98% of the "luminaires" (the complete lamp unit including the light emitting device, the housing, the light-sensing on/off controller, and any voltage regulating device such as a ballast) use High-Pressure Sodium (HPS) technology while the remainder use Metal Halide (MH); mercury vapour technology was phased out Corporation-wide before 2000;
- 62% of luminaires are of cobra head configuration, 33% are post top, and 5% are a variety of decorative and other specialized fixture types;
- Each fixture is controlled by a photocell, which turns on the luminaire when ambient lighting drops below a certain threshold at dusk, and turns it off again at dawn;
- Burnouts and day-burners are reported by citizens via the Guelph Hydro website.

Energy is the second largest expense category in the Corporate operating budget after payroll costs. Street lighting electricity is the second largest utility line item, and accounts for 16.2% of the entire 2017 corporate energy budget. 2016

operating costs included \$2,015,337 for street lighting, of which \$1,527,716 was for electricity and \$487,621 is maintenance. A further \$300,000 was allocated in the capital budget for major works such as the Stone Road right-of-way changes.

Street lighting electricity and maintenance costs have risen by 10% per year on average for the last seven years. While a portion of this cost increase is driven by city growth and the need to provide lighting in new developments, far more of the increase is driven by rising unit rates for electricity (see Attachment 1 - Street Lighting Cost Trend).

Figure 1 - Street Lighting Operating Costs:



In accordance with Corporate policy and Council direction (per the meeting held April 25th, 2016 – see Attachment 2 - Summary of Alignment with Council Direction), a complete business case was prepared and several options were evaluated, including rigorous net present value calculations. This business case used the standard template developed by the Project Management Office and supporting analysis tools developed by the Finance department. This analysis concluded that the project has a strongly positive net present value, and a simple payback of 6.3 years.

A third-party consultant, Deloitte, was retained to review the business case. In addition, a sensitivity analysis was performed on how the repayment of the initial investment is affected by different inflation rates. This concluded that the project will remain economically attractive for the range of inflation rates that are considered likely.

Conversion to LED technology offers the potential for significant cost savings over our existing street lighting technology:

- LED luminaires consume considerably less electricity, reducing utility costs;

- With a much longer life (warranty of 10 years, expected service life of 20 years) and a failure rate of 0.5-2% per year, LED luminaires reduce maintenance costs;
- The process of reviewing city-wide lighting design can reveal locations that are under- or over-illuminated. Bringing illumination levels in line with the Illuminating Engineering Society's RP-8-14 standard can yield additional savings, and reduce exposure to liability by providing an amount of illumination established by a broadly-accepted technical standard.

Cities including Los Angeles, Halifax, and Mississauga have undergone LED conversion, and have realised energy cost savings ranging from 40-80% and maintenance savings of 50-80%. This suggests a potential annual operating budget savings for the Corporation of between \$0.8 million and \$1.6 million, less internal debt repayment with interest.

LEDs offer a variety of other benefits, including:

- Reduced carbon dioxide emissions associated with electricity generation, due to reduction in electricity consumption (estimated at 464 tonnes CO₂/year, the equivalent of taking 98 cars off the road);
- Improved public safety through better nighttime visibility and elimination of dark areas between lamp standards;
- Instant start/restart, compared to slow-restart HPS lighting; full illumination is restored immediately following a blackout, improving public safety and enabling capabilities not feasible in our current lighting system (see Attachment 3 - LED Street Lighting Capabilities);
- Reduction of light pollution, which has detrimental effects such as depression, insomnia, cardiovascular disease, and cancer (*Missing the Dark: Health Effects of Light Pollution*, Ron Chepesiuk, Environmental Health Perspectives, January 2009);
- Improved security through higher visual acuity and a higher Colour Rendering Index (e.g. a red car appears red under LED lighting, allowing for more reliable identification of crime perpetrators than under HPS lighting which may make the red car appear a different colour);
- Less urban sky glow due to reduced direct and reflected up-light, with benefits for nocturnal animal and insect species and amateur astronomers;
- The opportunity to deploy a "Smart City Network", a platform for multiple innovative technologies (see Attachment 4 - Smart City Network Applications);
- Reduced nighttime electricity consumption on a city-wide scale, freeing up capacity on the electricity grid for deployment of electric vehicles (which are typically recharged at night).

The Environmental Advisory Committee was approached to provide feedback on the proposed project from an environmental perspective. This feedback is included in Attachment 5 – Environmental Advisory Committee Recommendations. This feedback has been incorporated into the planned project approach.

Peer Benchmarking - To validate our savings estimates, a survey of peer municipalities was performed. 11 of the 14 respondents are on the Council Approved Comparator List (per Information Services report to Governance Committee dated December 7, 2009). The survey included questions on electricity consumption, maintenance costs, and the type of maintenance provider (either the Local Distribution Company or a 3rd party contractor). This survey demonstrated that savings estimates for both electricity and maintenance are conservative.

Field Trial - The Corporation is currently working with GHESI on a limited field trial in the Edinburgh-Municipal area. This pilot project is intended to accomplish the following:

1. Assess luminaire maintainability;
2. Evaluate light output;
3. Evaluate post-top adapter bracket installation;
4. Evaluate remote monitoring and adjustment capability;
5. Obtain feedback from the public on aesthetics, colour, and lit area.

The specific streets involved (see Attachment 6 - Field Trial Locations for a map) are:

- Celia Crescent and Elson Drive
- Edinburgh Road South between Bellevue Street and Water Street
- High Park Drive
- Echo Drive
- Forest Street

All field trial fixtures have a CCT of 5000K, which is higher than the CCT in the current IDA standard (3000K) and therefore higher than what is expected in the full-scale project. Dimming capability has not been enabled, so lighting levels are likely higher (possibly considerably higher) than that required under RP-8-14. Anecdotal feedback from the trial has been mostly positive (see Attachment 7 - Field Trial Feedback).

Adaptive Controls (AC). This technology allows centralized control of the street lighting asset, compared to the current situation in which each luminaire is independently controlled by a dedicated, onboard photocell. AC offers cost savings as follows:

1. Delaying illumination at dusk;
2. Ceasing illumination earlier at dawn;
3. Dimming lighting late at night when traffic levels are very low;
4. Reducing output of each luminaire from its rated level to the exact level required;
5. Identifying burnouts and day-burners immediately.

All of the above can be done while maintaining RP-8-14 illumination standards.

Existing rules and standards for street light billing do not provide a way to realize financial savings from adaptive controls, and so these savings have not been included in our analysis. A group of vendors, municipalities, and local electricity utilities are working with Measurement Canada on a solution that is expected to be implemented late in 2017. If this is successful, the avoided cost over the 15-year analysis period

will rise from \$14.2 million to \$17.6 million and the simple payback will drop from 6.3 to 5.6 years.

Adaptive Controls would also yield a city-wide wireless mesh network canopy, which could be used for a variety of other purposes to reduce costs, generate revenues, or offer new services. Early indications are that the following opportunities are the most feasible in the near term, should Council decide to approve the necessary investments:

1. **Smart Parking** - Detection of available spaces, communicating this information to motorists via a mobile device app, processing payment, alerting the motorist when their time is expired, and dispatching bylaw officers to ticket noncompliant vehicles. Systems like this have been implemented in the City of San Francisco, the City of Santa Monica, and the City of Saint Paul.
2. **Traffic Signal Control** - By integrating the proposed street lighting wireless mesh network with the planned fibre optic network backbone running the length of the city along Gordon Street, it would become possible to control traffic signals remotely on a city-wide basis. Fine-tuning of signal cycles in response to traffic patterns would reduce intersection wait times, cutting fuel costs and greenhouse gas emissions while improving citizen satisfaction.
3. **Transit and Emergency Services Intersection Priority.** GPS-based products offer an improvement over the current Opticom line-of-sight traffic light pre-emption system, and make it feasible to prioritize both Emergency Services and Transit vehicles (and possibly snowplows and other Operations vehicles, although it is unknown whether other municipalities have successfully extended the scope to include such vehicles). This would increase responsiveness, ridership, and revenues while reducing wait times, fuel costs, and air pollution. This has been implemented in Brampton with the Züm bus rapid transit system.
4. **Remote Water Meter Reading** - It may be possible at some point in the future to use the same wireless mesh network technology as part of a future automatic meter reading system for water meters. Further technology investigation would still be required, as the radio network is only one aspect of a potential automatic water meter reading system.

The business case assumes that the street lighting network is completely separate from the GHESI AMI network, and is managed independently. The annual operating costs for managing the system are estimated at \$65,000 but have been included in the estimate of the initial capital cost. There would likely be economies from integrating the street lighting network with the GHESI AMI network, but these have been excluded from the financial analysis.

Maintenance - Following implementation of LED technology, the amount of maintenance required by the asset is expected to decline dramatically. HPS lighting requires re-lamping (bulb replacement) every three to five years while LEDs are expected to last as long as 20 years. In addition, the proven failure rate of LEDs is very low (in the range of 0.5%). This implies that the level of effort involved in maintaining the asset should drop considerably – possibly by as much as 90%. This places the work well within the reach of many private contractors. An informal survey of other municipalities has shown that private, 3rd party maintenance providers have costs as much as 50% lower than what the LDC can offer.

It is proposed that as part of the LED street lighting retrofit project, we would offer the opportunity for third parties to bid on maintenance services.

New Capital Projects - GHESI currently manages and coordinates street light design and installation associated with new capital projects, whether in a new development or a roadway project where infrastructure including street lights must be relocated (such as is currently taking place on Stone Road). It is assumed that GHESI will continue to perform this function. Wherever existing street lighting is changed, or new street lighting is added, GHESI will need to be advised to ensure billing for street lighting electricity consumption remains accurate.

Resilience, Adaptability, and Liveability - The combination of LED streetlights with Adaptive Controls has the potential to enhance the ability of the city to respond to a changing climate:

1. With significantly lower energy consumption for the asset, the Corporation and the community is less dependent on electricity supplied from outside of city limits.
2. The amount of lighting can be fine-tuned to exactly what is required under the applicable standard, reducing light pollution and its detrimental effects.
3. LED street lights return to full illumination instantly after a power failure, improving the city's resilience (compared to existing technology which takes considerable time to return to full brightness after power is restored).
4. The potential for adding environmental sensors for wind, rainfall and snowfall could allow the Corporation to detect extreme weather events and respond to them more rapidly.

Project Financing Options - During the initial scoping of this project, the Capital Asset Renewal Reserve (CARR) was the preferred financing option. However, the reserve does not contain sufficient funds for this project. There are a number of other possible options for financing the project:

1. **Recommended – Internal borrowing** - Given the rapid expected return on the initial investment, it may be possible to use existing funds for the project. Funds would be borrowed from these sources, and repaid with interest over time from the resulting avoided cost. This form of borrowing would involve the lowest carrying costs, and therefore it is the most attractive and recommended option. This is not a new funding model and

the City has successfully utilized this option in the recent past to delay external borrowing for a two year period.

2. **Capital Budget Request** - Although this option is the simplest, the project cost will be substantial and has not been envisioned in the current multi-year capital budget forecast. This option would provide the most significant operating budget savings but at the detriment of the capital budget. This option is therefore not recommended.
3. **Energy Services Corporation (ESCO) With Financing** - A number of enterprises offer combined financing, installation, and operation with a performance guarantee. This option can be structured in such a way that there is no impact on debt limits. The net cash flow over ten years for this option would be \$2.8M less than option 1 in current dollars. As a result, this is not a preferred option.
4. **External Borrowing** - This option would involve borrowing funds from Infrastructure Ontario (IO) or the public debenture market. The maintenance and electricity savings would be used to repay both capital and interest. The addition of interest costs and debt issuance costs would result in a lower net benefit for the Corporation than the capital budget option. It would also potentially require an exception to the Corporation's policy on debt limits. This would be a viable alternative to internal borrowing.
5. **Asset Sale to GHESI** - Under this scenario, GHESI would make a lump-sum payment to the Corporation and would then own and operate the asset (including luminaires, any lamp standards not currently owned by GHESI, all bracket arms, all conductors, and related equipment). The City would continue to pay for electricity and maintenance via a fixed monthly service fee. The cost of the LED upgrade would be recovered from the City over time, with the addition of GHESI's cost of capital as a for-profit corporation. This would be an extremely simple solution from the perspective of the City, as GHESI would perform all work associated with the LED upgrade (including design, tendering, project management, and close-out). This would address GHESI concerns regarding safety of work in the vicinity of their transmission equipment. However, upon review of the proposal delivered by GHESI, the additional capital carrying costs in this model are not attractive and this is therefore not a preferred option. It also runs counter to a growing trend (particularly in the United States) whereby municipalities retain the street lighting asset in cases where they already own it, or purchase the street lighting asset back from their respective utilities, likely due to concerns about the asset losing priority as utilities consolidate. This took place in the Halifax Regional Municipality, which re-acquired the street lighting asset from Nova Scotia Power.
6. **Asset Sale to 3rd Party** - This option would differ from the previous one in that the asset would be sold to some entity other than GHESI, who would then be paid to operate and maintain the asset. Few players have a cost of

capital as low as either the City or GHESI, so this option would likely result in a net increase in costs to the citizens of Guelph and it is therefore not recommended.

Utility Incentives - Under IESO CDM programming, incentives are available based on the number of kilowatt-hours that the project is expected to save per year. Current estimates are that this could cover approximately 10% of the project cost.

GHESI has indicated that there is no intention to depart from current incentives in the next iteration of CDM programming, which goes into effect this year. As such, there is no urgency to accelerate the program timetable in order to take advantage of incentives that are about to expire. However, the IESO is likely to phase out incentives in the medium term as LED costs continue to decline and the economic case for their implementation becomes viable on its own merits and without subsidy.

Measuring and Allocating the Savings - GHESI does not directly meter the energy that streetlights consume. Instead it uses "virtual metering" based on an inventory of how many luminaires of each wattage are in the asset base, combined with burning hours (from sunrise/sunset data) and the Hourly Ontario Electricity Price. This means that unlike other energy retrofit projects, the savings will be known at the time of project commissioning.

Estimates of the avoided cost have been prepared based on budget quotes from two potential vendors. Inflation assumptions are based on the 5-year trend in street lighting costs, and result in a combined electricity and maintenance budget of \$4.1M by 2032 and a combined cumulative cost of \$39.0M. The total avoided cost over this 15-year period is estimated to be \$14.2M. If dollar savings from adaptive controls are fully realized, this figure rises to \$17.6M; if utility incentives (estimated at \$1M) are received, the total financial benefit would be \$18.6M.

It is proposed that Corporate Energy present a follow-up report to Council after the project is commissioned and the actual savings have been quantified. It is further proposed that this report recommend how to allocate the actual savings between debt repayment and the operating budget.

Financial Implications

Financial implications have been outlined above and are analysed in detail in the supporting business case documents (see Attachment 10 - Business Case).

Corporate Administrative Plan

Service excellence: The project will deliver street lighting service more efficiently by reducing energy consumption as well as electricity and maintenance costs. It will also improve the quality of this service, by reducing the amount of light that is wasted by being directed somewhere other than road and sidewalk surfaces.

Financial stability: The project will reduce the Corporation's exposure to cost volatility for electricity and maintenance.

Innovation: The addition of adaptive controls will provide immediate financial benefit, while enabling additional innovative opportunities to reduce costs, improve service, and generate new revenue streams through "Smart City" technologies.

Communications

Information about the initial field trial was communicated to neighbours and the broader community through targeted letters, online information and media relations activities. A Communications Plan will be developed in support of this project, scaled to the scope of work. The following internal stakeholders have participated on the advisory team:

Facilities Management:	Mario Petricevic
Engineering:	Kealy Dedman
Finance:	Greg Clark
Information Technology:	David Boyle
Legal:	Donna Jaques/Jeff Aitkens
Community Engagement:	Rodrigo Goller/Kate Bishop
Corporate Communications:	Patricia Halajski
Traffic and Parking:	Allister McIlveen
Operations:	Terry Dooling/Doug Godfrey

The following Corporation departments were also consulted (note that this list may not be exhaustive):

1. Energy, Water, and Climate Change working group
2. Emergency Services
3. Guelph Police Services
4. Water Services
5. Downtown Renewal
6. Planning
7. Project Management Office
8. Solid Waste Management
9. Open Government
10. Guelph Environmental Advisory Committee

The following external parties were consulted:

1. Street Lighting Focus Group
2. Royal Astronomical Society – Kitchener/Waterloo branch
3. Wellington-Guelph-Dufferin Public Health
4. International Dark-Sky Association
5. City of Mississauga
6. City of Barrie
7. City of Hamilton
8. Town of Caledon
9. City of London

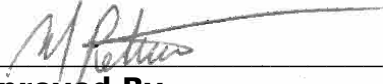
10. Region of Waterloo
11. City of Waterloo
12. City of Kitchener
13. Town of Whitby
14. Region of North Virginia
15. Town of Halton Hills
16. Toronto Hydro
17. Halton Hills Hydro
18. Association of Municipalities of Ontario/Local Authority Services
19. Clean Air Partnership
20. Realterm Energy
21. Silver Spring Networks
22. DimOnOff Inc.
23. Bluewater Energy
24. TradeForceTech
25. Philips Lighting Canada
26. Saalex/Leotek
27. Eaton Lighting Solutions
28. General Electric
29. LED Roadway Lighting
30. Tymat Solutions
31. Cree Inc.
32. Ameresco
33. Honeywell
34. EARTH Corporation
35. Efficiency Capital Corporation
36. Twilight/CITISMART Solutions
37. Clear Blue Technologies/Illumient
38. Air Crafters Inc.

Attachments

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|--------|--|
| ATT-1 | Street Lighting Cost Trend |
| ATT-2 | Summary of Alignment with Council Direction |
| ATT-3 | LED Street Lighting Capabilities |
| ATT-4 | Smart City Network Applications |
| ATT-5 | Environmental Advisory Committee Recommendations |
| ATT-6 | Field Trial Locations |
| ATT-7 | Field Trial Feedback |
| ATT-8 | Net-New Street Lighting |
| ATT-9 | Executive Summary - Deloitte LLP (Note: Complete report was omitted for brevity but is available on request) |
| ATT-10 | Business Case |

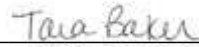
Report Author

Alex Chapman
Manager, Climate Change Office



Approved By

Mario Petricevic
General Manager
Facilities Management
519-822-1260, ext. 2668
mario.petricevic@guelph.ca



Approved By

Tara Baker, CPA, CA
GM Finance & City Treasurer
Corporate Services
519-822-1260, ext. 2084
tara.baker@guelph.ca



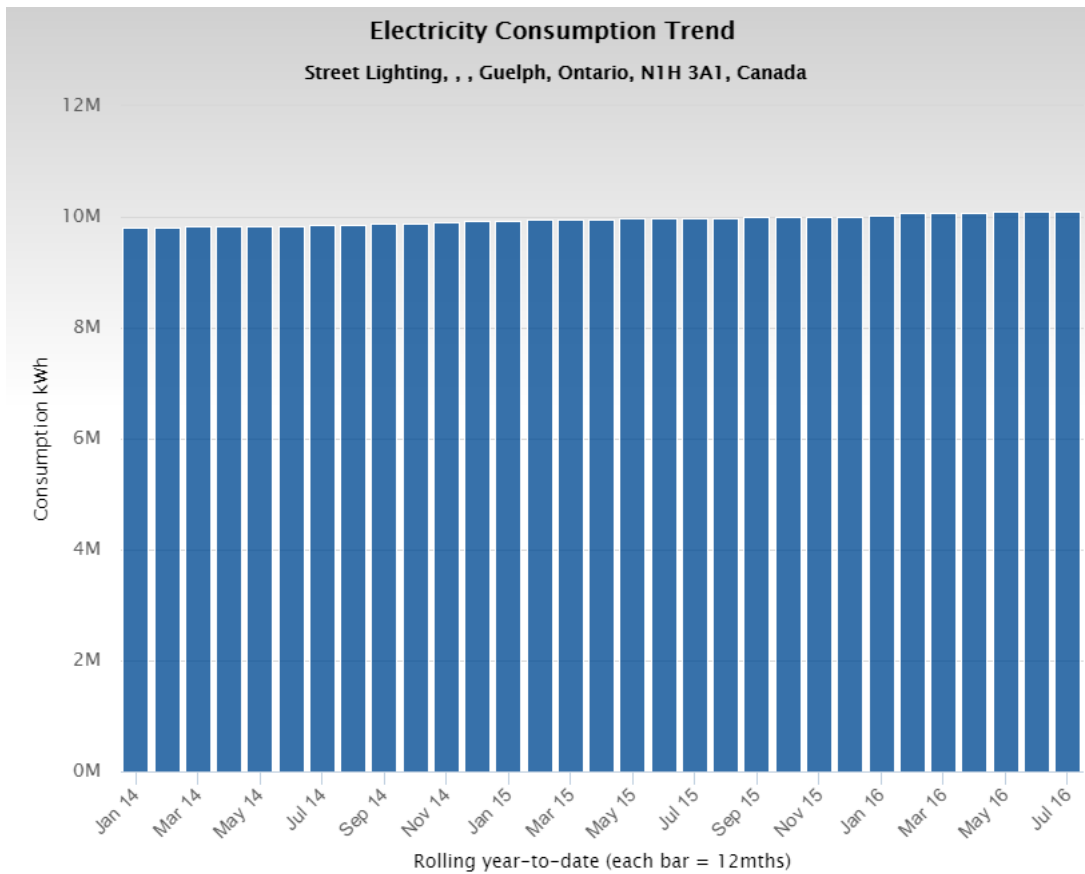
Recommended By

Scott Stewart, C.E.T.
Deputy CAO
Infrastructure, Development and Enterprise
519-822-1260, ext. 3445
scott.stewart@guelph.ca

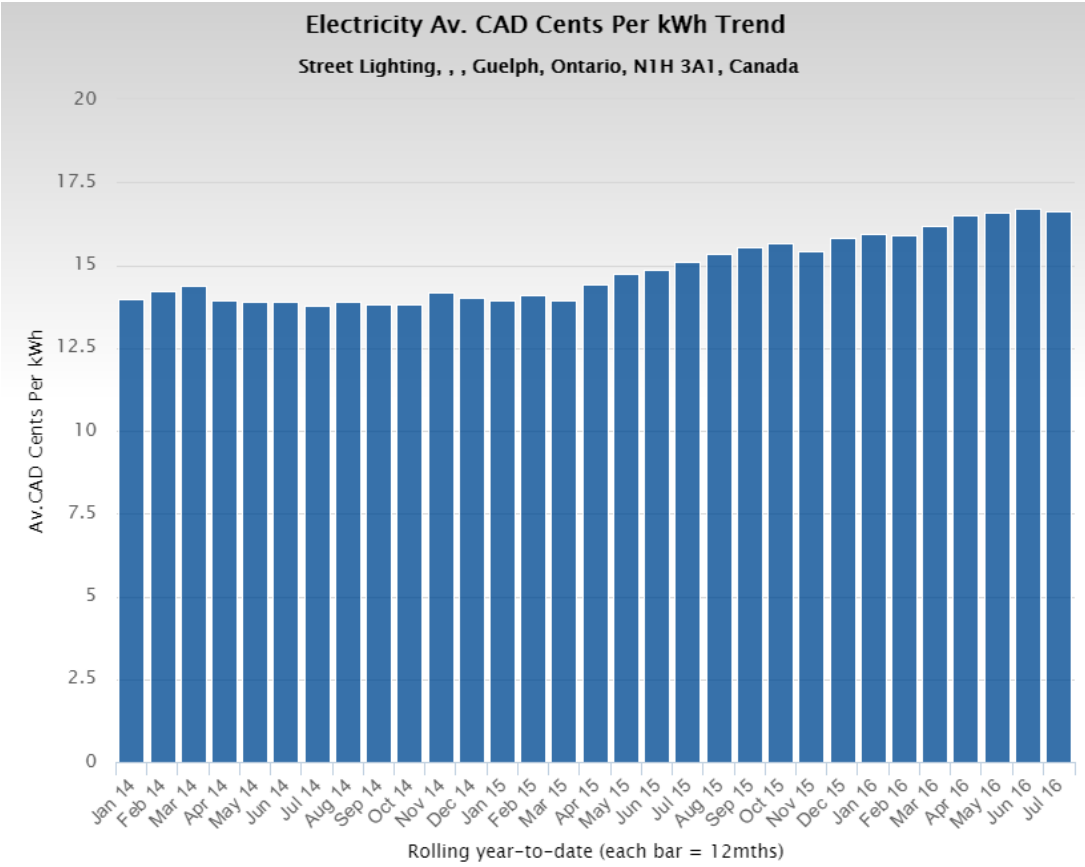
Attachment 1 Street Lighting Cost Trend

Street lighting electricity costs are essentially the unit rate (in cents per kilowatt-hours, kWh, as set by the IESO Hourly Ontario Electricity Price) multiplied by the electricity consumption (in kWh). Electricity consumption is the product of the energy that each luminaire consumes each hour and the number of luminaires (both obtained from a GHESI inventory database), and the hours each luminaire is activated (determined from astronomical sunrise/sunset tables).

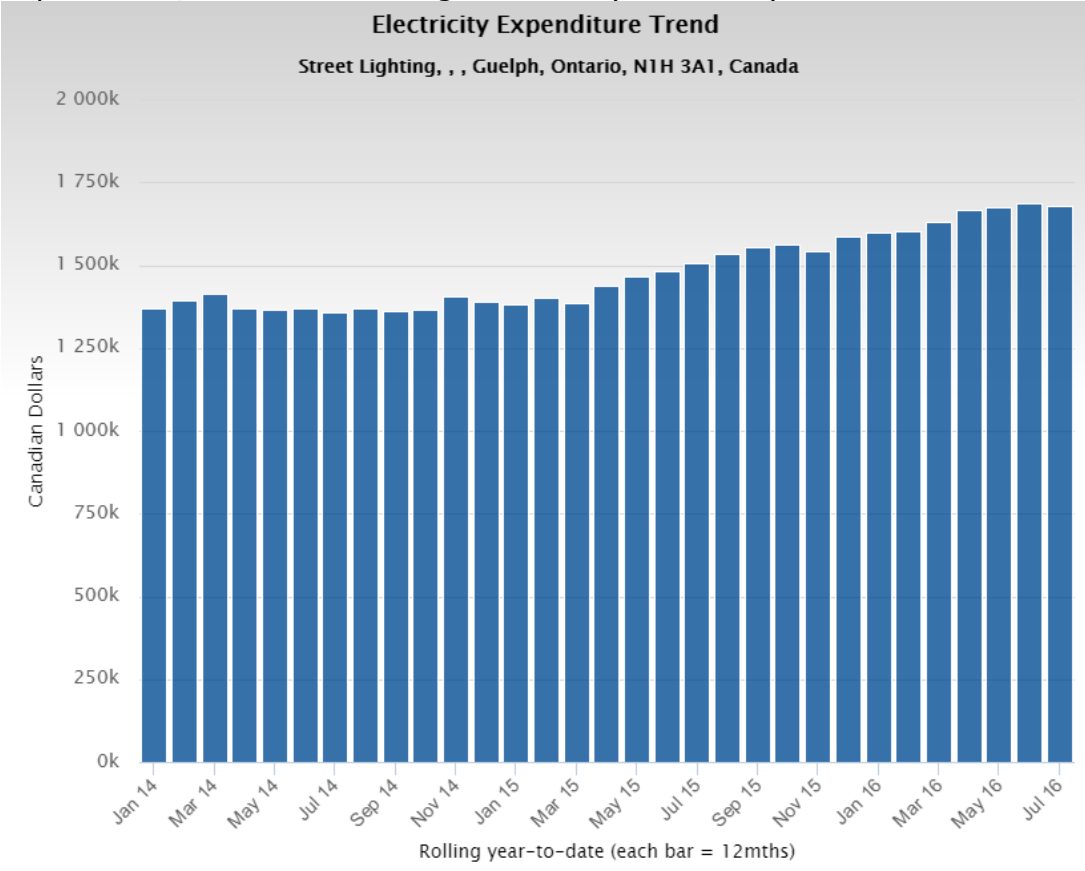
The utility cost trend is therefore driven by (1) growth in the size of the street lighting asset (number of luminaires), and (2) growth in the unit cost of electricity. Asset growth drives electricity consumption growth, and has averaged 1.21% per year as shown below (rolling 12-month total to smooth out seasonal variation):



Growth in the unit rate for electricity was essentially flat until March 2015, when it began an upward trend which has amounted to an average year-over-year increase of 13.2%.



Together, the growth in consumption and unit rates have driven growth in expenditure, which has averaged 14.6% year-over-year since March 2015:



Attachment 2

Summary of Alignment with Council Direction

In the Council meeting of April 25, 2016, the CEI Update process was discussed and resolutions were passed providing guidance to that process. Given the relationship between Corporate and Community Energy, measures have been taken to ensure the LED street lighting project is consistent with the spirit of the resolutions passed in that meeting:

1. Reporting on the LED street lighting project shall be consistent with other established reporting methods.
 - This has been accomplished by using the standard business case template and staff report structure.
2. The LED street lighting project shall include an appropriate level of community engagement, and strong interaction with local stakeholders.
 - This has been accomplished through the field trial and associated community feedback gathering process.
3. The LED street lighting project shall include partnering with support groups.
 - This has been accomplished by working with the Street Lighting Focus Group (SLFG), the Municipal Energy Managers Community of Practice (MEMCOP), the Environmental Advisory Committee, Wellington-Dufferin-Guelph Public Health, the K-W branch of the Royal Astronomical Society, and the International Dark-Sky Association.
4. The LED street lighting project shall include rigorous analysis, reporting and oversight in support of developing acceptable baseline and targets and communicating measurable results.
 - This has been accomplished by using the Corporate standard business case methodology, by convening an internal advisory group, and through detailed analysis of existing and anticipated electricity consumption and maintenance requirements.
5. The LED street lighting project shall include performance metrics which measure annual local performance, and measure such performance against benchmark communities.
 - This will be accomplished by reporting back to Council when actual cost avoidance results are established. Benchmarking has been (and will be) accomplished by continuing dialogue with peer municipalities through the SLFG and MEMCOP.
6. The LED street lighting project shall include a rigorous business case with net present value calculations and fully disclosed assumptions.
 - This has been accomplished by using the standard business case methodology and supporting financial analysis tools.

Attachment 3

LED Street Lighting Capabilities

LED street lights reach full illumination instantly upon activation. It is also possible to modulate their output (i.e. dimming). These characteristics are not found in our existing street lighting technology. By adding Adaptive Controls to street light luminaires and connecting them together with a wireless mesh network, the capabilities listed below become possible.

1. **Centrally Controlled Street Light Activation** - Street lights in Guelph are currently activated by an individual simple photocell on each luminaire. When light levels drop below a certain threshold (at dusk) the luminaire activates; when light levels rise above the threshold (at dawn), the luminaire deactivates. This threshold does not necessarily correspond to the level of illumination required under the RP-8-14 guideline. It may be possible to delay activation and hasten deactivation while still meeting RP-8-14, reducing the asset's energy consumption.
2. **Sensor-Based Dimming** - Currently our street light luminaires can only be on or off. It is not possible to dim them when they are not required, such as late at night when there is no vehicle or pedestrian traffic. LED lighting makes dimming possible. Products are available that use motion sensing technology to create a moving island of illumination around a vehicle or pedestrian, and then to resume a standard low lighting level when the street is unoccupied. This can reduce energy consumption up to 80%, while further reducing light trespass and urban glow. As with motion-sensing exterior building lighting, this can also enhance security by making it evident that a person or vehicle is in the vicinity of the activated luminaire.
3. **Centralized Outage Detection** - Currently GHESI relies on citizen reporting to detect non-functioning street lights. Proactive patrols are used by some municipalities, such as the City of Mississauga prior to implementation of their Adaptive Controls system. If long periods pass without a defective street light being repaired, the municipality is potentially at risk of a third-party claim due to failure to provide adequate illumination. Adaptive Controls technology can interrogate luminaires on a continual basis, and notify on-call staff via email or text message when a failure is imminent or has already occurred.
4. **Centrally Controlled Over-Illumination** - Currently our street light luminaires only have one level of output. LED lighting, on the other hand, can be intentionally designed to deliver only a fraction of rated output – say, 80%. When there is a requirement, this output can be increased to 100%, either on demand or on a predetermined schedule. Examples of situations that would benefit from this capability include nighttime public events (Nuit Blanche, the Guelph Jazz Festival, etc.), closing time for downtown clubs and bars, the vicinity of an after-dark traffic accident, and a crime scene. Higher illumination levels increase perceived public safety by making obstacles more visible, while reducing the likelihood of opportunistic crime such as petty theft, vandalism, and assault.

Attachment 4

Smart City Network Applications

The Smart City Network, also called an “Internet of Things (IoT) Canopy”, would provide a city-wide communication network. This would offer a platform on which it would be possible to implement a wide variety of additional capabilities as subsequent projects:

1. **Integration with 911 Dispatching** - Currently sirens and flashing lights are the only warning to pedestrians and drivers that a First Responder vehicle is responding to an emergency call in their vicinity. In dense traffic, these cues may arrive too late for drivers to be able to pull to the roadside to make way for the vehicle. By integrating 911 dispatch with the Adaptive Controls system and a route mapping application, the First Responder route can be illuminated in a distinctive way (e.g. one vendor offers a luminaire with a dedicated, separate horizontal beacon and an audible whistle) to warn pedestrians and drivers.
2. **Emergency Vehicle Intersection Prioritization** - Currently, First Responder vehicles are equipped with infrared strobe devices which transmit signals to traffic lights to ensure the signal is favourable when the vehicle reaches the intersection. This system, supplied by the company Opticom, has significant ongoing maintenance cost. Further, it relies on line of sight for proper operation, which may reduce the lead time available to cycle the traffic signal and is ineffective when the vehicle is travelling along a curve. The 911 capability mentioned above can be further enhanced by integration with GPS transmitters in the vehicles and with traffic signalling (supplementing and eventually replacing the existing Opticom system) to ensure First Responders only encounter green lights at intersections. The software would also manage conflicts between multiple First Responders reaching the same intersection from different directions simultaneously.
3. **Transit Vehicle Intersection Prioritization** - Transit vehicles can be granted intersection priority as well. This can reduce intersection transit delays by up to 40%, reduce fuel costs by up to 19%, increase ridership by up to 10%, and reduce greenhouse gas emissions by up to 30% compared to status quo operations. Other City vehicles such as snowplows could also be given priority, enhancing efficiency while reducing fuel costs and air pollution emissions.
4. **Remote Telemetry** - Water Services may be able to use part of the Smart City Network as part of a future system to remotely read water meters and/or sensors in the water distribution system. At this time there is only a single water meter vendor that can connect to the proposed Silver Spring Networks radio network. There is concern about being potentially locked into a single water meter vendor. Thus, Water Services is taking a “wait and see” approach to see how this technology develops over the next few years. In time, hopefully additional water meter vendors begin offering products that can connect to this system. Please note that deploying a radio-based water meter reading system would also require additional investments, such as additional head-end network equipment, water meter replacements, upgrades to IT/billing systems, and updates to data storage systems, as well as discussions with Guelph Hydro (as Guelph Hydro currently provides

customer billing and manual meter reading services for Water Services). It should be noted that there are also several other radio-based water meter reading technologies currently available and developing, many of which support multiple water meter vendors.

5. **Smart Parking** - Sensors mounted on street light poles could detect vacant parking spaces, and broadcast that information to drivers via their mobile device. Mobile payments could be facilitated the same way. The system could also provide information to Bylaw Enforcement when a vehicle exceeds its paid time. Additional revenues could be generated by presenting promotional coupons from local businesses.
6. **Municipal Wi-Fi** - Street light poles could serve as a convenient mounting location for Wi-Fi access points. This would facilitate the deployment of a free, public Wi-Fi network in the downtown core and potentially other selected areas as has been done in other municipalities such as London and Kansas City (and has already been done to some extent in downtown Guelph). This would provide significant value to downtown businesses, enhancing the attractiveness of the area for retail commerce, tourism, and entertainment. Note that the bandwidth of a Smart City Network would be too low to be useable for municipal Wi-Fi service.
7. **Information Displays** - Street light poles could also be used as a mounting location for flat-panel displays providing important information to citizens. This could include a "smart bus stop" concept, providing information to riders regarding schedules and expected arrival times. This communication channel could also be used for paid-for-service advertising, yielding an opportunity for revenue generation, offsetting the capital and operating cost and even potentially delivering a positive revenue stream.
8. **Electric Vehicle Supply Equipment (EVSE)** - Street light poles could be used as an EVSE mounting location, for the purposes of charging electric vehicles. This would provide an incentive for adoption of this form of transportation. EVs can offer dramatically lower emissions, lower operating cost, and higher efficiency than petroleum-fuelled vehicles. More widespread adoption would contribute to greenhouse gas emissions reduction goals in the Community Energy Initiative. Further, with increased local generation of electricity from renewable sources, funds currently spent on imported fuels could instead be spent on locally-generated electricity, contributing to the local economy and reducing net cash outflows from the community. If this technology were combined with a payment mechanism, it could also generate revenue which would offset or exceed the capital and operating cost.
9. **Picocell hosting.** Street light poles are an attractive location for mobile wireless telephony providers to mount supplemental cellular base stations (picocells) to improve service coverage. Rental of space on street light poles could be a valuable source of revenue.
10. **Renewable Energy Generator Hosting** - As mentioned above under the heading Asset Management, the Town of Halton Hills has deployed solar photovoltaic panels on street light poles to generate electricity. The annual energy consumption of a street light could be completely offset by the energy generated by a solar panel mounted on the same lamp standard. The

installed cost of solar panels compared to the resulting energy savings does not make this economically attractive at present, but this may well change in the future as electricity costs continue to rise and as solar panel costs continue to decline.

11. **Environmental Sensors** - Street light poles can be equipped with a variety of sensors, which can then transmit their telemetry to the relevant departments over the Smart City Network. Sensors could include:
 - a. Airborne pollutants such as carbon monoxide and carbon dioxide, to aid in air quality assessment, industrial emissions monitoring, detection of fires in abandoned buildings, etc. Researchers at University College London are investigating the potential for semiconducting metal oxide gas sensors for detection of clandestine methamphetamine laboratories (“meth labs”).
 - b. Traffic counting, including pedestrians, cyclists, and motor vehicles, to aid decision-making related to Transportation Demand Management and potentially to provide cues for cycling intersection signals
 - c. Snowfall, to detect snow accumulation and facilitate timely dispatch of snow removal crews
 - d. Rainfall, to identify extreme weather events and facilitate proactive, coordinated response

Attachment 5 Environmental Advisory Committee Recommendations

Energy Management staff does not have the skill sets or professional qualifications to render an opinion on the environmental aspects of the proposed project. The members of the Environmental Advisory Committee (EAC) have the appropriate skills and qualifications. Operational initiatives such as this proposed project do not fall within EAC's purview, but EAC's mandate is focused on new developments. Such developments require street lighting provided in accordance with standards and specifications established by the Corporation and by GHESI. EAC is therefore the most appropriate entity to provide feedback on the proposed project.

EAC was briefed on the proposed project during its meeting held July 13th, 2016, and its feedback was contained in a motion passed during its meeting of September 14, 2016. The relevant excerpt of the meeting minutes is reproduced below.

5. Continuation from July 13, 2016 of Committee Discussion- Street Lighting in the City (Presentation)

General discussion regarding the suggested motion took place and the Environmental Advisory Committee noted the following:

- Timers, Motion sensors, dimmers
- White vs. warm LEDs and impacts of blue light
- Reduction of light pollution
- End of life disposal and recycling

Moved by C. Oakes and seconded by A. Baron

EAC recommends that the City comprehensively work towards reducing light pollution and lighting related environmental and health impacts within the City by:

- **Adopt the use of warm LED bulbs (3000K or less with reduced blue wave length);**
- **That the City consider the use of adaptive lighting controls (e.g. directional lighting, dimming, motion sensors) especially in areas where safety and ecological considerations exist;**
- **Include consideration for a neighbourhood by neighbourhood analysis to determine locally specific lighting needs;**
- **Consideration of any lighting include a comprehensive life cycle analysis for product hardware including end of life recycling;**
- **Comprehensively work towards reducing light pollution within the City;**
- **Partner and promote lighting best practices with existing ICIs in the City.**

Motion Carried

-Unanimous-

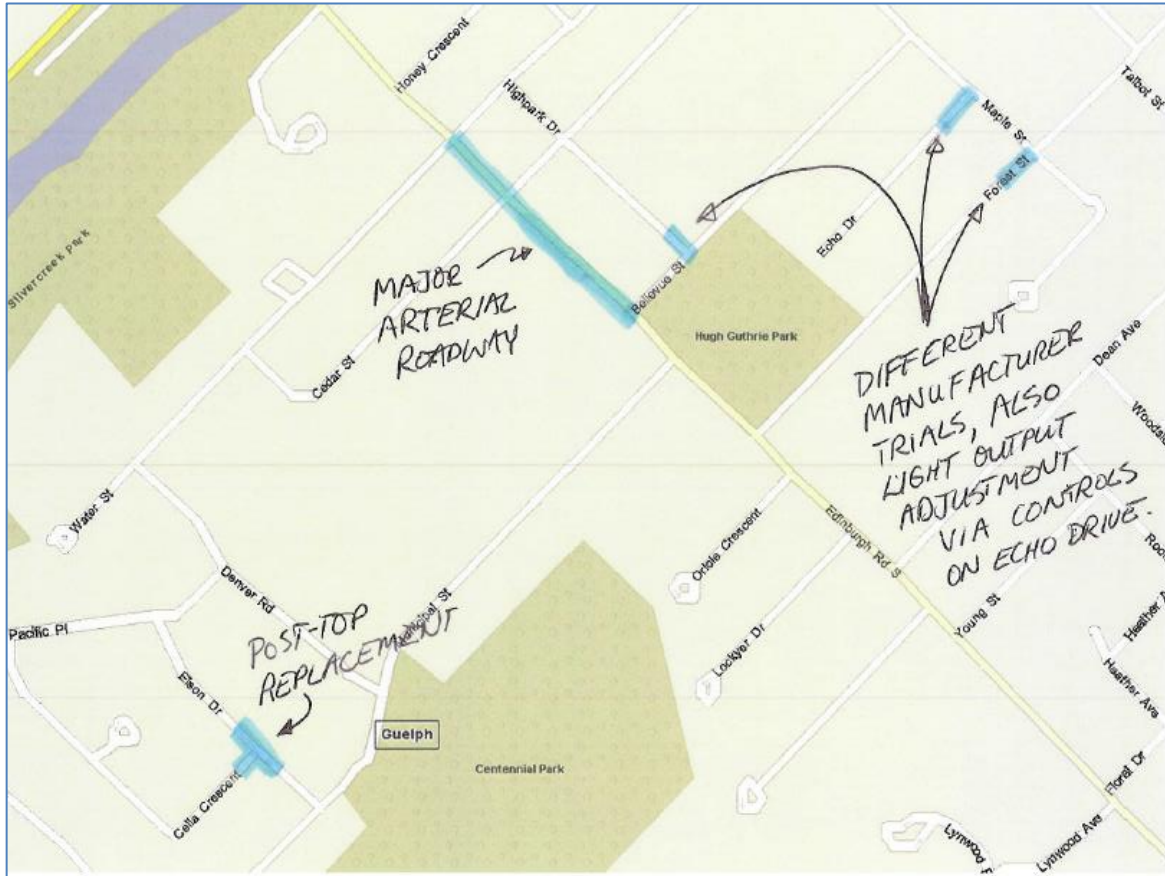
The last two bullet points in the EAC recommendations are not within the scope of this project to consider. However, it would fit within the provisional scope of the Energy, Water and Climate Change (EWCC) working group. An expedient method to implement these recommendations would be to enact some form of the Model Lighting Ordinance developed by the International Dark-Sky Association (IDA). More information is available at <http://darksky.org/our-work/public-policy/mlo/>.

Attachment 6 Field Trial Locations

The GHESI field trial involves test luminaires installed at the following locations:

1. Edinburgh Road South from Water Street to Bellevue Street (seven lamps);
2. Elson Drive at Celia Crescent (four lamps);
3. Echo Drive (four lamps);
4. High Park Drive (four lamps);
5. Forest Street (four lamps).

These locations are depicted in blue-highlighting on the map below.



Attachment 7 Field Trial Feedback

The GHESI field trial provided the opportunity to inform, engage, and solicit feedback from local residents and other interested parties. Letters were delivered to homes and businesses in the trial area, encouraging feedback and providing an email address for comments. Corporate Communications also issued a media release on January 18, 2016 (<http://guelph.ca/2016/01/city-tests-led-street-lights/>) and City staff participated in media interviews, which informed the following media coverage.

Media channel	Link
570 News (Rogers Kitchener Radio Group)	(Broadcast piece with interview, not published online)
CBC News	http://www.cbc.ca/news/canada/kitchener-waterloo/guelph-says-it-can-save-750k-by-using-led-street-lights-1.3410658 □
Electric Energy Online	http://www.electricenergyonline.com/detail_news.php?ID=560493&titre=City+testing+energy+efficient%2C+low+maintenance+LED+street+lights%2C++can+save+the+City+%24750K+annually
Guelph Mercury	http://www.guelphmercury.com/news-story/6242575-switching-to-led-street-lights-could-cost-city-of-guelph-10-7-million/
Guelph Tribune	http://www.guelphmercury.com/news-story/6243538-guelph-investigating-benefits-of-switching-to-led-streetlights/

One negative opinion letter was submitted to and published by the Guelph Tribune (<http://www.guelphmercury.com/opinion-story/6249078-led-lights-not-the-answer-for-guelph-streets/>). The author also submitted feedback directly (see below).

Email feedback was addressed with the assistance of Community Engagement. Comments fell into four main categories:

1. Residents of the area, or visitors to it, that looked at the installed units and provided specific feedback, 76% of which was neutral or supportive (some with the qualification that they would prefer a warmer colour).
2. Some residents of Echo Drive who experienced undesirable light trespass; this issue was not reported with the fixtures on other streets.
3. Residents from other parts of the city who had not reported visiting the trial area, but expressed strong negative impressions of LED technology. For one resident, this arose from her experience with an LED street lighting implementation in the Hanover area.
4. Members of the K-W chapter of the Royal Astronomical Society (RAS), recommending that the street lighting be "Dark Sky Compliant", i.e. bearing the Fixture Seal of Approval from the International Dark-Sky Association.

The feedback received is provided below, except for that from RAS as it is very lengthy with supporting documentation, and therefore is not reproduced here but can be provided upon request.

"We think they are a lot brighter and safer, they light up more of the street than the regular HPS lights. Even better if they will save money on hydro and replacements...we highly recommend them"

"We have one located directly in front of our house. I like it quite a bit better than the other lights, it is noticeably brighter, the light is cleaner and I feel safer with it in front of my house. Given these factors and the cost savings I would highly recommend the city pursue installing more of these lights."

"I am in favour of having LED lights in Guelph to save on electricity. Have they considered light sensors that only activate the light when motion is detected. I was talking to a co worker in Thornhill, and that is what they have there. Just a thought."

"I'm happy to see you are looking into this. I will have a look at the test sites. Please keep in mind that, regardless of bulb type, street lights that don't shine downwards (I.e., with poorly designed, or no reflectors, like the current HPS ones) are not only inefficient, but also contribute to light pollution. I hope that whichever new LED lights are chosen, they are better in this regard as well."

"I know that LED lights are expensive because we are gradually changing to them in our home but we feel it is money well spent because they are so much better. The condo next door to us had to change their lights in the parking lot because of complaints from the residents that they could not see at night and felt that it was dangerous. The city should look into grants that would help them with the cost like the Elliott retirement home did. Having better street lights would also help people see the numerous orange lines so they do not trip."

"This is a great move: 1. The illumination is better. 2. The cost of energy and maintenance is lower. What's not to like???? It took us a bit to get used to the new light, but we are very pleased that the city is making this move.....Thanks for your work!"

"So my wife...and I went for a walk-about this evening to have a look at all the new sets of LED lights.

- First of all, I must say that the High Park lights are too much. - In our opinion, they're too bright for that residential area. We could not easily count the number of LEDs in each (18?), but something like 10 or 12 of similar brightness would probably still be overkill.
- Aesthetically, we like the ones on Echo Drive the best. As well, as they appear single-point (rather than 6+) LEDs, the light is very clean and sharp. I realise that that single 'bulb' may contain multiple LEDs. - None-the-less, the light and shadows from these seemed more 'sun-like' to us. The enclosure/reflector also seems efficiently direct light downward.
- We have no clear preference amongst the others at this time.

[Note re the lights on Edinburgh: The north-western-most set (4?) are slightly different than those south of Cedar. They are either a different model, or 2 square diffusers were not installed, or were lost?]

All LED types being tested today seemed to be the same colour ('cool / blue-white'). There have been some advances in LED technology for home use to present a more 'natural' ('warmer / yellow') colour temperature, and I wonder if people would prefer that? I think I would; however, I suspect that 'warming' the

light may reduce efficiency (both in electricity, and in the ability off the human eye to use those frequencies), so that's why we're not going that way?"

"I have visited the 5 test sites for LED street lighting. Certainly, all of the lights appear to be brighter than the surrounding existing lights [blue tinge(mercury vapour?) and orange tinge (sodium vapour)]. However, as I was walking, and had to pass some distance from one site to another, I was really unable to make appropriate comparisons. The problem was that without an ability to compare the lights directly against each other, they all seemed very similar to my eyes. It was impossible for me to carry in my mind a lasting response to the lights at one site to another. I can only say, therefore, that ALL of the test lights appear to be much brighter and an improvement on existing street lighting. Thanks for giving me the opportunity to respond to your test."

"I am the resident-owner of a 102 year old classic red brick home located...in downtown Guelph. I purchased my home because of the beautiful ambiance of downtown Guelph's quiet residential streets. Last year I undertook to renovate my home keeping to its priceless antique character and 'feel'. My beautiful home will be destroyed in ambiance and character if LED lighting is installed on this old downtown Guelph street.

LED lights cast an UGLY STERILE OVERLY BRIGHT AND ENORMOUS ring of unsightly super-blue light over a large span. The light is particularly penetrating and will invade every corner of my property, front to back with an intrusive clinical glare. It's known blue quality is a medically proven hazard to the human retina, leading to macular degeneration.

Please do not install LED street lights on the residential streets of downtown Guelph. The only word to describe their damaging retina-destroying blue light is HORRIBLE.

I hope that the true character of Guelph, with its charm and beauty will be respectfully honoured and not be ruined by this 'short-sighted' installation of ugly LED lights."

"We have had LED lights installed on our street (Echo Drive). We find them to be too bright – and overly illuminate our house in the night. We like the idea – but something slightly dimmer would be better for us."

"We live at...Elson Drive, so one of the new lights is directly in front of our home. We are very pleased with the new light and find it to be a huge improvement over our previous street light! The light is in front of our master bedroom window, and we found the previous light shone directly in our window and kept our room light at night, which was unwanted. The new light has a different colour and casts light differently. Outside it appears much brighter and clearer than the older lights, and it lights up a larger area of the street and sidewalk, but the quality and direction of the light mean it no longer shines into our room - we greatly appreciate all of these characteristics!"

"We find the LED light very bright! We are at...Echo Drive and our bedroom is so bright that we have to put a blanket on top of our curtain to sleep. These lights would be great on busy city streets but not so near to houses. Thanks for considering and getting the yellow lights back."

"I held off on this email to provide myself some time to get over the "newness" factor of the LED lighting. I've had a look a number of times over the past weeks -

here are my thoughts. Negatives: I find the lighting harsh. It's too bright and drastic and intense. The thing about nighttime is that there should be some dark. These lights present a daytime look in their direct proximity. The City letter lists a number of factors under evaluation. Missing from the list are human and wildlife factors from living in an environment that is never completely dark. I believe this lighting will contribute to the negative effects of "constant light" that affects our urban society at large. Positives: In comparison to the current sodium lights, the LED lighting seems to be more localized – the light is more directly underneath the fixtures. While I understand the appeal of less electricity usage and lower maintenance costs, I cannot imagine our entire city lit by these particular LED fixtures. It would be far too much. Perhaps there are compromises. A few thoughts that come to mind are:

- Can a filter or lens be used to make the light more subtle?
- Use a lower wattage fixture.
- Use LED lighting in key areas or on main streets only.

In summary, if I had to choose between current lighting and these LEDs, I would not hesitate to choose our current fixtures, even with higher costs in mind"

"I had a look at the new street lights on Forest, Echo and High Park recently after 8:30 pm. I found that they lit the street much better than the present halogen ones and the light is a comfortable yellow tone, not too blue or harsh. The only drawback might be that there would be more light getting in people's windows when sleeping, but that is certainly not a game changer. I do think it is a good idea to replace the older, less efficient and more costly lights. LED lighting seems to be the way of the future. We are working on replacing our lighting at home with LEDs, especially as the cost becomes more affordable. Good luck with the project!"

"The LED lamps selected for the demonstration of LED street lighting as part of the proposal to replace existing street lights with LED lamps will severely increase light pollution levels effecting human health, wildlife and reducing night sky visibility. LED lamps installed to demonstrate possible replacements for street lighting employ LED's that emit a blue rich light, or light energy that falls towards the blue end of the visible spectrum. Exposure to blue rich light during the evening is known to have adverse effects on human health by interfering with hormone levels in the body and has been linked to disruption of sleep patterns and to a rise in certain cancers in humans. They also have a negative effect on wildlife interfering with everything from behavior to gathering food. Blue rich lighting will have a negative effect on the visibility of the night sky, making it harder to see stars or the Milky Way.

One advantage of the high pressure sodium lamps currently used is the amber light they emit falls towards the yellow and red part of the spectrum. I personally dislike the appearance of blue rich LED's which are similar to the mercury vapour lamps that are still used in parts of the city. The light is dull, cold and hard on the eyes. Despite their apparent brighter appearance, blue rich lighting reduces your night vision; actually making it harder to see in the shadows.

Manufacturers tend to select blue LED s when designing lamps because they can achieve a higher lumen score. I argue that this value is misleading and that blue rich light can actually make it harder to see at night. The glare from blue rich light is more irritating to the human eye causing eye strain. Blue rich light interferes more with your night vision making it harder to see in the shadows. The eye's night vision takes longer to recover when one looks away from the blue rich light. This problem can be simply fixed through selecting a design of LED lamp which utilize different LED s that emit a different color of light. A LED lamp can be designed to emit a wide variety of light and need not be of a blue rich quality.

The potential energy savings that LED lamps can offer is important, but we must be careful that we do not trade one form of pollution for another. Guelph should hold off installing LED street lighting until a more appropriate LED fixture can be found."

"I happen to live on one of the test streets (Forest), so why not provide my two cents? On the bright side (how many times will you hear this pun?!):

- definitely improves night time visibility for all road users, which is particularly great for vulnerable road users like pedestrians and cyclists that don't tend to have their own headlights.
- Colour is more visible due to the white light, which could be a security benefit if ever a crime needs to be reported
- Likely improves visibility for people with diminished vision (seniors, vision-impaired, etc.)
- might just be my imagination, but I feel like there's more depth and relief to the landscape with these lights - less flat than the sodium lights

On the down side:

- the lights may be intrusively bright for adjacent homes. These test lights are well down the street from me so I can't speak personally, but walking past them last week, I did notice that the "footprint" seems wider, and if not focused onto the public realm, could be an irritant to residents.
- aesthetically, the white light is colder and less nostalgic than warm yellow tones of the old sodium lights

Good luck with this project!"

"I am a resident of Ward 1 in Guelph and was reading about the proposed street lighting switch to LED lights. There are a number of health, sleep and environmental related concerns associated with this type of lighting and I would like to pass along to city council my concern. CCT means Colour Correlated Temperature and as a generality, the higher the CCT, the bluer the light. Maximum CCT should be less than 3000K and anything over that should not be accepted. Lower is even better. The blue tinge of the light disrupts natural circadian rhythms among a number of other things. As a resident of the city, I would suggest reducing to below 3000K CCT, and to implement sharp cut-off shielding. Thank you for your concern and please let me know if you would like more information."

"I live in the neighbourhood of the lights on Elson. While I like the brightness and colour that the led provide the area lit seems smaller than the sodium vapour hence there seem to be more dark spots between the posts."

"Thank you for inviting community feedback and Bravo for seeking environmentally responsible, cost cutting that still protects and assists citizens. Regarding the lights on High Park Dr, which can be seen from our living room window and bedroom windows even though we are on Water St.

1. COLOUR They appear VERY COLD, compared to the warm light of the more yellow/gold/orange coloured existing lamps closer to Water Street. We believe that warmer coloured LED's are now available and would strongly favour a warmer light for both ambiance and good health

(Cold Blue LED's, according to the science we have read, create sleep problems)

2. GLARE They appear overly bright, to a point of excess that is visually annoying and unattractive, compared to the existing lights which seem adequately bright to make us feel safe walking in that area at night. Unnecessary brightness may cost more (prefer to save City money) and may interfere with citizens sleep by shining

too brightly into windows and creates an industrial area impression in a family homes oriented, warm, friendly neighbourhood area.

3. ILLUMINATION As mentioned above the existing lighting illuminates the street well enough to make us feel perfectly safe walking in the area at night. There is no need to exceed that level of illumination which the experimental lights appear to exceed.

We hope to be able to walk around the other three areas on Echo, Forest and Edinburgh and provide additional feedback by the deadline. Thank you again for your consideration of public impact and providing an opportunity for us to experience the options and express opinions."

"My first choice for LED Street Lights is for the ones located on High Park Drive. Second choice is for those at Celia Cr / Elson Drive. Third choice is for the lights on Edinburgh Rd / Water street... I did not like the ones on Echo Drive as much because I prefer a light style that illuminates some of the front of the adjacent properties not just the road. In my opinion the lights on High Park did the best job of this."

"We live at...Echo Drive. Our house is located on the south side of Echo and the lights are across the street... The glaring light produced is way too powerful for a residential street. The shadows they cast are extremely harsh. Our bedroom is located at the back of our home and the light streaming from our upstairs landing window affects the darkness of our bedroom. Our family room is on the eastern rear side of our home. Glaring light and harsh shadows appear in that room as well. We strongly feel that the lamps are too bright and intrusive for our street. We certainly don't look forward to summer evenings spent sitting on our veranda under such unnatural lighting. We have observed the other test lights in our area and feel that the ones on Forest Street would be a much more appropriate choice for Echo Drive. We are hopeful that at the end of this process the current lights will be removed and replaced with more acceptable ones."

"Took a look at the LED lights. The ones on high park seemed most reasonable. They are slightly yellower so don't ruin your night vision as much. One issue I noticed driving back north on Edinburgh was how bright the ones on it were - if you glanced at them directly, you were left with a blinding spot on your retina, unable to see through it to drive. Possibly slightly dangerous. Testing this same glance at the sodium vapour (orange) conventional lights, it did not produce this. Please keep in mind that there's no reason to have extremely bright LEDs - having very bright LEDs lights up one area near the light, and once exiting the cone of maximum brightness, ones eyes are now no longer used to the dark - this can be dangerous for possible tripping hazards or other things that need to be seen at night (other people, obstacles, reading street signs, etc.). The lit up areas should produce no areas that are so much darker than the lit areas that a regular street name sign could not be read, or a bump in a sidewalk not seen. I assume you are not replacing poles, so if the distance is fixed between poles, then consider not having the lights so bright, but a cone of lit area that is as even as possible shining wide enough to meet the next light's cone. Some very dark areas resulted on Echo drive behind the lights, it was quite pronounced. This could be a danger for some travellers. Please consider reducing the brightness and reddening the colour of the lights."

"LED is the way to go! Looks good, saves money on Hydro, lasts a long time without maintenance. What more could you want. Disappointed that LED was not installed during the recent upgrade on Foster Ave."

"We drove by them tonight on several streets. They are a whiter light but not objectionable. If a street had a mixture of LED and normal this might be distracting when driving so I do not think that would be a good practice. We thought the light from them was adequate on the side streets of Forest and the one just north. On Edinburgh however we thought there was not enough light going to the opposite side of the street but good on the side where the lights are located. That might be just a mounting angle issue or some other adjustment. I like them and suggest a slow start to replacing lights and over the next 20 years plan to complete the replacement, as well as LED on all new installations."

"Just to be clear - I am 100% for LED street lights, I just thought that you may be interested in this article regarding the particular colour of the lights in question. Perhaps something you have already considered.

<http://www.treehugger.com/sustainable-product-design/bright-white-led-street-lights-make-you-blue.html> Keep up the great work!"

Attachment 8 Net-New Street Lighting

Part of the scope of the project will be to ensure that as new street lighting is added (e.g. as new developments are built out) it will help solve existing problems rather than creating new ones. It is therefore proposed to create a roadmap whereby new street lighting shall eventually be self-powered, when it becomes cost effective and technically feasible. Products are available which provide what is, in effect, off-grid lighting, by combining the following technologies:

1. LED luminaire – Minimizes energy consumption when the luminaire is lit;
2. Motion sensor – Increases illumination to a predetermined level when pedestrians or vehicles are present, and dims down to a minimal level otherwise (with “fail-on”, i.e. if the motion sensor were to fail, the luminaire would revert to full brightness);
3. Solar PV panel – Provides energy to power the luminaire;
4. Battery and charge controller – Stores solar energy until it is needed;
5. Wireless network controller – Communicates fixture status over a wireless mesh network, through a gateway, across the internet, to a management console;
6. Management console – Monitors and reports on status of all luminaires, provides alerts to staff in the event of issues (e.g. component failure), triggers luminaires adjacent to one that has detected a moving vehicle or pedestrian to provide a safe zone of illumination.

Street lighting of this nature would not add to grid electricity consumption and therefore ongoing operating costs. Further, it would actually be cheaper to install; although the capital cost of the unit itself would be higher than a traditional street light, installation cost would be the same or lower as no trenching is required for cable installation.

1. Executive summary

Deloitte was retained as a third-party consultant to review the Light Emitting Diode (LED) conversion business case that was developed by the City of Guelph.

Deloitte (“we”, “us”, or “our”) have reviewed the business case, along with the assumptions and predictions used in the quantitative and qualitative analysis and have worked with business case project management team to understand the rationale and practicality of the assumptions used to develop the business case. The assumptions and predictions used in the business case model in arriving at the overall recommended option under the LED conversion project are appropriate and practical, based on our review and the approach, methodology and procedures performed as comprehensively described in this report.

Along with the status quo, there were 4 options identified in the business case by the City of Guelph for the LED Street Lighting Retrofit project.

Option #	Outcome
1 – Status Quo	Continue operating as is
2 - LEDs only, City owns	City constructs the LED only
3 - LEDs only, GHESI owns	Lighting Asset is sold and GHESI constructs and owns the LED
4 - Controls, City owns	City constructs and owns LED + Adaptive controls
5 - Controls, GHESI owns	Lighting asset is sold and the GHESI constructs and owns LED + Adaptive controls

Based on the quantitative and qualitative analysis performed by the City and reviewed in our analysis below, the City analysis is supported by reasonable assumptions. The most favorable financial option to the City is the selection of option #4 which requires the City of Guelph (through a 3rd party) to construct and own the LED and adaptive control asset as this option results in the highest cumulative cost benefit compared to the status quo over the life of the asset. This option requires the City of Guelph to work with an independent contractor, which specializes in LED conversion projects, to help the City achieve its target energy and maintenance cost savings.



Attachment 10

LED Street Lighting Retrofit Business Case

Prepared by: Alex Chapman

Date: June 2, 2017

Version: 1.0

TABLE OF CONTENTS

- TABLE OF CONTENTS 2**
- BUSINESS CASE DEVELOPMENT TEAM 3**
- SECTION 1: EXECUTIVE SUMMARY..... 5**
- SECTION 2: BACKGROUND (GAP ANALYSIS)..... 7**
- SECTION 3: SCOPE AND STRATEGIC ALIGNMENT..... 9**
- SECTION 4: ENVIRONMENTAL ANALYSIS 10**
- SECTION 5: STAKEHOLDER IDENTIFICATION 15**
- SECTION 6: OPTION IDENTIFICATION..... 17**
- SECTION 7: QUALITATIVE & QUANTITATIVE ANALYSIS..... 20**
- SECTION 8: CONCLUSION & PROJECT CONDITIONS 22**
- SECTION 9: HIGH-LEVEL TIMELINE & MILESTONES..... 27**
- SECTION 10: PROPOSED BUDGET 28**
- SECTION 11: PROPOSED PROJECT TEAM 34**
- SECTION 12: BUSINESS CASE REVIEW & SIGNATURES 35**

BUSINESS CASE DEVELOPMENT TEAM

Proposed Project Title

LED Street Lighting Retrofit

Target Audience

The audience this Business Case is written for

Audience

The target audience for this business case is Guelph City Council, as well as City staff with budget decision-making responsibilities, and their supporting staff.

Business Case Author

The person responsible for the development of the Business Case

Name	Title	Service Area
Alex Chapman	Program Manager, Energy	Infrastructure, Development, and Enterprise

Project Sponsor

The person to whom the Project Manager is accountable to for the Business Case

Name	Title	Service Area
Mario Petricevic	General Manager, Facilities Management	Infrastructure, Development, and Enterprise

Executive Sponsor

The executive to whom the Project Manager is accountable to for the Business Case

Name	Title	Service Area
Scott Stewart	Deputy Chief Administrative Officer	Infrastructure, Development, and Enterprise

Support Team

People who supported and contributed to the development of the Business Case

Name	Title	Service Area
Doug Godfrey	General Manager, Operations	Public Services
Kealy Dedman	General Manager, Engineering	Infrastructure, Development and Enterprise

Rodrigo Goller/ Kate Bishop	Community Engagement Coordinator	Corporate Services
Marina Grassi/Patricia Halajski	Communications Officer	Corporate Services
Greg Clark	Senior Corporate Analyst, Asset Management	Corporate Services
David Boyle	Manager, IT Infrastructure Operations	Corporate Services
Donna Jaques/Jeff Aitkens	General Manager, Legal, Realty, and Risk and City Solicitor	Corporate Services

SECTION 1: EXECUTIVE SUMMARY

1.0 Executive Summary

Keep it brief (1-2 pages) - this is a high-level summary of your analysis and conclusion. Write the Executive Summary **after** completing the business case document. Be sure to include key points and make this section a stand-alone document as this can be the only section that gets read by some of the readers.

1.1 Introduction

Provide a brief introduction of the topic (project)

Street lighting represents a significant cost in the City of Guelph operating budget. Annual expenditures on electricity and maintenance are approximately \$2M, with electricity costs rising faster than the rate of inflation. Controlling these costs is a high priority.

1.2 Reasons

Describe why the project is necessary and why it's important now.

LED street lighting technology offers the opportunity to reduce energy and maintenance costs. Adaptive Controls can drive further savings while creating a Smart City Network, which can support many other initiatives to reduce costs, to enhance existing services, and to introduce new capabilities.

1.3 Recommended Solution

Briefly describe the recommended solution and why it is the best solution.

It is recommended to proceed with deploying LED street lighting technology along with Adaptive Controls. This option offers the lowest risk, the greatest benefits, and the most attractive economic return. It also delivers a new asset (the Smart City Network) that can drive further cost reductions, efficiencies, and new revenue streams. The estimated investment of \$8M is expected to yield avoided cost of \$22.2M over fifteen years, for a net present value of \$14.2M (rising to \$18.6M if savings from adaptive controls are realized and if the expected \$1M in utility incentives are received). The project is estimated to have a simple payback of six years.

1.4 Potential Risk for Status Quo

Describe the potential risk for not implementing this initiative.

The status quo is effectively imposing a cost equivalent to nine FTEs. Any delay will cause this cost to continue and grow. An incentive is currently available from Guelph Hydro to assist with the capital cost, but as the cost of LED street lighting technology declines, the justification for this incentive diminishes and it will eventually be eliminated. In addition, with further delay the public may begin to perceive Guelph as being unjustifiably slow to implement cost-effective and socially beneficial new technology, given that neighbouring municipalities including the Region of Waterloo, Guelph-Eramosa Township, and Centre Wellington have either deployed it or are in the process of doing so.

1.5 Advantages (Pros)

<p><i>Describe the advantages (social benefits, ROI, etc.) of the initiative to the community and the corporation.</i></p>	<p>If implemented, this project will deliver sustained reductions for both electricity and maintenance. A complete re-examination of our street lighting fleet will also yield service improvements by ensuring all lighting is in line with the applicable standards. Reduced light trespass and urban sky glow may yield additional health, community well-being, and environmental benefits. The Smart City Network will open up a range of new opportunities to improve efficiency and deliver enhanced and new services.</p>
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1.6 Disadvantages (Cons)

<p><i>Describe the disadvantages (Risks, costs, etc.) of implementing this initiative, if any.</i></p>	<p>Street lighting is estimated to be responsible for nearly half of light pollution (http://agi32.com/blog/2015/07/07/color-temperature-and-outdoor-lighting/). When implemented well, LED lighting can reduce light pollution substantially; when implemented poorly, it can aggravate the problem.</p> <p>Opinions vary regarding the esthetics of LED lighting. Some individuals have formed negative opinions, likely based on experience with older-generation LED technology. A successful implementation will depend on open dialogue with the public regarding the various aspects of the project, and ensuring that technical specifications are developed in such a way as to address such issues as colour temperature and light dispersion patterns, thereby minimizing or eliminating potentially negative aspects of the project. The Guelph Environmental Advisory Committee has provided guidance to help address this risk.</p>
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SECTION 2: BACKGROUND (GAP ANALYSIS)

2.0 Background / Gap Analysis

2.1 Background / Gap Analysis

List key areas where gap exists between current and ideal, reasons for gap and opportunity or idea that may help to close the gap.

Current State	Ideal State	Reason for Gap	Opportunity / Idea to Close the Gap
All street lighting in Guelph uses either High-Pressure Sodium (HPS) or Metal Halide (MH) technology.	All street lighting in Guelph uses Light Emitting Diode (LED) technology.	The capital cost of LED technology has historically not been cost effective.	LED technology has fallen dramatically in price, yielding an attractive cost-benefit ratio. This indicates that LED technology should be broadly implemented.
Lighting has relatively low visual acuity.	Lighting has high visual acuity.	HPS technology has a colour temperature that is not optimal for contrast and colour rendering.	Implement LED technology, which provides much higher visual acuity than HPS.
Colour Rendering Index (CRI) is poor, reducing security (impairing the ability of witnesses to identify perpetrators of crime when viewed under legacy lighting).	CRI is high, improving security by ensuring that colours are rendered as faithfully under artificial light as under natural light.	Poor CRI is an unavoidable limitation of HPS and MH technology.	Implement LED technology, resulting in improved CRI.
Lighting takes up to 15 minutes to reach full illumination following deactivation or power interruption.	Lighting has instant strike (start/ restart) capability, restoring illumination immediately following power interruption, and improving public safety. Instant strike also enables features and capabilities not possible with the legacy lighting technology.	Long start-up is an unavoidable limitation of HPS and MH technology.	Implement LED technology, providing instant strike capability.

2.1 Background / Gap Analysis

List key areas where gap exists between current and ideal, reasons for gap and opportunity or idea that may help to close the gap.

Current State	Ideal State	Reason for Gap	Opportunity / Idea to Close the Gap
Light trespass is an ongoing issue.	Light trespass is reduced or eliminated; where sleeping quarters are affected, this leads to better quality sleep with multiple health benefits including reduced depression, insomnia, cardiovascular disease, and cancer.	Light trespass is an unavoidable limitation of current street lighting luminaires.	Implement LED technology with so-called full cut-off, resulting in much more directed light and reduced/eliminated light trespass.
Street lighting produces significant direct and reflected up-lighting, resulting in urban sky glow.	Urban sky glow is reduced or eliminated, with beneficial effects for amateur astronomers, migratory birds, and insect populations.	Up-lighting is an unavoidable limitation of legacy lighting technology.	Implement LED technology, thereby reducing or eliminating direct and reflected up-lighting.
Guelph Hydro Electric Systems Inc. performs street lighting maintenance with no formal contract.	Street lighting maintenance is performed by the most cost-effective party under a formal contract.	Street lighting maintenance had been performed under an informal agreement.	Establish a new contract for street lighting maintenance and issue RFP for the same to the bidder that is best able to meet City requirements.
Legacy street lighting technology continues to be added in new developments.	All new developments have LED street lighting as a standard.	No standard for LED street lighting has been specified.	Include a specification for LED street lighting for new developments in the project scope.
Street lighting is activated and deactivated by means of individual, independent photocells.	Street lighting is connected together and controlled centrally via Adaptive Controls.	Adaptive Controls are a relatively recent innovation.	Retrofit street lighting luminaires can include Adaptive Controls, or can be specified to ensure they can be upgraded to this technology in the future.
There may be dark spots between lamp standards, with detrimental effect on safety.	Dark spots are eliminated.	Street lighting standards have changed over time and existing installations may not have kept pace.	Implement LED technology with photometric design per the Illuminating Engineering Society RP-8-14 standard, to identify/eliminate dark spots.

SECTION 3: SCOPE AND STRATEGIC ALIGNMENT

3.0 Scope and Strategic Alignment

3.1 Scope

“IN” Scope	“OUT” of Scope
<i>Describe specific items that WILL be included as part of the project.</i>	<i>Describe specific items that WILL NOT be included as part of the project.</i>
<ul style="list-style-type: none"> • Investment Grade Audit to ensure accurate inventory of luminaires, including type, wattage, and geospatial data for photometric design • Procurement of luminaires • Retrofitting of all cobra head and post top street lighting within city limits • Revised standard for all new lighting installations • Incorporation of Adaptive Controls • Contract for street lighting maintenance • Arrangements for shared management/governance of Smart City network 	<ul style="list-style-type: none"> • Decorative/specialized street lighting within city limits • Parking lot lighting • Building external lighting • Any lighting not on City-owned property

3.2 Strategic Alignment

Explain how the proposed project aligns with overall Corporate direction.

Corporate Direction <i>(List corporate direction your initiative is aligned with)</i>	Description of Alignment <i>(Describe how your initiative aligns with a strategic direction)</i>
Financial stability	The project will dramatically reduce street lighting electricity consumption and maintenance costs.
Service excellence	LED street lighting offers numerous benefits for improved health, safety and security, while reducing environmental impact.
Innovation	The Adaptive Controls component affords the opportunity to create a city-wide Internet of Things (IoT) mesh network canopy, which can be used collaboratively by a variety of City departments in conjunction with the fibre optic networking project to deliver cost savings, improved service, and innovative new services.

SECTION 4: ENVIRONMENTAL ANALYSIS

4.0 Environmental Analysis

Conduct SWOT analysis on the current situation and describe the industry benchmarking information.

4.1 SWOT (Strengths, Weaknesses, Opportunities and Threats) Analysis on CURRENT SITUATION

Internal Environment

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> Streetlight electricity costs are aggregated in one monthly bill and are therefore easy to analyze. Fixed costs are minimal. The Utility Bill Management service facilitates analysis of costs, consumption, and trends. Guelph Hydro Electric Systems Inc. (GHESI) has experience with managing a wireless mesh network through its Advanced Metering Infrastructure (AMI, or “smart meters”), based on Sliver Spring Networks technology. There are several viable funding sources for this project. 	<ul style="list-style-type: none"> Street lighting costs vary significantly, making budgeting /variance forecasting very difficult. Neither the City nor GHESI has deployed LED street lighting. GHESI was not involved in the Guelph-Eramosa Township LED street lighting deployment, as the GHESI service area was dropped. GHESI has design and O&M experience with legacy technologies only (HPS and MH). There is no formal maintenance contract with GHESI and costs fluctuate dramatically. There are many different models of luminaire in service, adding to maintenance cost, inventory carrying cost, and complexity.

External Environment

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> Other municipalities such as the City of Mississauga have already deployed LED street lighting, allowing this project to build on their experience. LED technology has reached a level of maturity where costs and benefits are well established. Some providers have amassed extensive experience with LED street lighting conversion projects. Local Authority Services (LAS) and EARTH Corporation each offer a complete package for LED street lighting conversion. With the discontinuity in the transition from HPS/MH technology to LED, a wide range of providers could offer maintenance services. Adaptive Controls would yield a network platform able to support a variety of Smart City applications. 	<ul style="list-style-type: none"> Energy is the second largest operating budget line item after payroll costs, and electricity rates are rising faster than inflation. This is eroding the City’s ability to maintain existing service levels, and making energy efficiency and conservation an important priority. Many potential suppliers are offering low-cost product; most will not be of acceptable quality and the providers may be at risk of exiting the marketplace in the medium to long term. Although LED technology is touted to have a long service life, it is difficult to verify claims regarding performance near the end of product life. Some citizens in Centre Wellington municipality have expressed concerns about the LED lighting implemented there, saying that it has actually

External Environment	
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> GHESI could acquire the street lighting asset, resulting in a cash infusion. 	<ul style="list-style-type: none"> exacerbated light pollution. If GHESI acquires the street lighting asset, the timelines to obtain approval from the Ontario Energy Board will extend the project considerably and negate most or all of the benefit.

4.2 Industry Benchmarking

Refer to the Council Approved Comparators (in User Guide) when researching and contacting other municipalities. Don't limit your benchmarking to the comparators only. Consider different levels of government including beyond Canada. Also include private sector benchmarking information if applicable.

Trends and common practices of other municipalities, etc.

Guelph is part of the Ontario Street Lighting Focus Group, an informal body that shares street lighting information between municipalities. This group includes representatives from 25 of the 30 Council Approved Comparators.

Building on the success of this focus group, we will establish and/or enhance specific consultative relationships with the following municipalities that have executed LED street lighting conversion projects, or are in the process of doing so:

- Mississauga
- Hamilton
- London
- Barrie
- Kingston
- Guelph-Eramosa Township

Street lighting is strictly the domain of municipal governments; if other orders of government have direct involvement, those cases would be so unique that they would not provide a usable comparison for an urban area like the City of Guelph. It is unknown whether any private sector entities are responsible for street lighting, other than the local electricity utility (e.g. the City of Toronto, where street lighting is owned by Toronto Hydro).

Hamilton retrofitted 10,000 street lights and saved \$750,000 per year in electricity costs based on 2015 pricing. By comparison, this proposal would involve retrofitting 30% more luminaires with unit electricity cost that are 17% higher, but assumes similar gross savings arising from the LED conversion. This indicates that savings estimates in this business case are conservative. Hamilton did not deploy adaptive controls initially, so there is no basis for comparison on this portion of our estimated savings. Hamilton saw a 35% decrease in street lighting maintenance costs by re-tendering the contract to a 3rd party rather than their utility. This outsourcing was independent of the street lighting project.

Barrie retrofitted 10,649 fixtures and saw a decrease of 75% in maintenance cost and \$280,000 in electricity cost over four months to December 2015 (\$840K annualized). Their gross savings are 12% more than what this business case estimates, on a base of 18% fewer luminaires.

Mississauga saw a reduction of 13 million kWh (estimated \$1.82M assuming \$0.14/kWh) and a 50% maintenance cost reduction. Note that the local utility, Enersource, continues to provide maintenance.

4.3 Economic Impact

Economic impact that you are aware of including positive and negative related to your initiative. If applicable, include financial analysis as part of Appendix D.

The most significant economic impact of the implementation of LED street lighting will be its effect on the \$10 million utility operating budget. Street lighting accounts for \$1.53 million (16.2%) of that budget. Electricity cost savings arise from three factors:

- **More efficient light production.** LED technology uses a fraction of the energy of HPS to produce a given amount of light. This can result in energy savings in the range of 50% when legacy lighting is replaced with LED lighting on a one-for-one basis.
- **Permanent dimming.** Photometric analysis determines the level of light output necessary to meet the applicable standard (IES RP-8-14). However, this light output will not exactly match one of the luminaire models available from the manufacturer. Since under-illumination is not acceptable, the higher-output model must be selected to meet the minimum lighting level specified by the standard. This leads to an upward bias in luminaire wattage selection. For example, photometric analysis may indicate that a 77W fixture will meet the standard. Since only 70W or 100W models are available, the 100W option must be selected, resulting in 30% over-illumination. While LEDs do not directly solve this problem, the addition of Adaptive Controls allows them to be dimmed down to deliver the exact light level that photometric analysis dictates. This results in lower energy consumption and increased luminaire longevity.
- **Adaptive dimming.** The required level of roadway illumination depends on such factors as the level of conflict between pedestrians and vehicles, the prevailing vehicle speed, the volume of traffic, the composition of traffic (i.e. percentage of non-motorized vehicles), intersection density, and the presence of parked vehicles (*Design Criteria for Adaptive Roadway Lighting*, US Department of Transportation Federal Highway Administration, July 2014). Where these factors vary on a predictable basis, or can be detected with sensing technology, the level of illumination can be adjusted by means of an Adaptive Controls system. For example, given that traffic volume is typically low between the hours of 11PM and 5AM, the system can be programmed to dim the lights during this period without compromising safety.

The combination of permanent dimming and adaptive dimming can reduce energy consumption by a further 20%. Together with the efficiency improvement, the total energy savings are expected to be in the range of 70%, or \$1.05 million. This single initiative would reduce the corporate energy budget by 10%.

This project will also affect the street lighting maintenance operating budget of \$0.5 million. Maintenance primarily consists of group re-lamping, which must be done every three years on average (over 4,000 luminaires). By comparison, LED lighting typically has a warranty of ten years, although some municipalities have obtained 20-year warranties. The worst-case scenario for the annual failure rate is 2%, although 0.5% is more realistic, meaning that from 65-260 luminaires would require replacing each year. This reduction in maintenance requirements is expected to yield savings of up to 80%, or \$0.4 million.

Project cost is expected to be approximately \$8 million, with utility incentives of about \$1 million bringing the net cost to \$7 million. This yields a simple payback of 5 years. Adaptive Controls will also make the project eligible for a

<p><i>Describe economic impact that is relevant for your initiative, if any.</i></p>	<p>grant from the Smart Grid Fund of the Ontario Ministry of Energy, which, if it were awarded, would cover 50% of the cost of Adaptive Controls to a maximum of \$2 million.</p> <p>The expected electricity savings will have an impact on GHESI, as they constitute lost revenue from delivery of electricity. However, the IESO SaveONenergy incentive program provides “make whole” provisions that will compensate GHESI for this loss. The savings will also contribute to GHESI Conservation and Demand Management (CDM) program targets.</p> <p>The project involves significant investment, with corresponding economic benefit for any service providers and suppliers that are awarded contracts. This includes both the initial project and ongoing maintenance.</p>
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SECTION 5: STAKEHOLDER IDENTIFICATION

5.0 Stakeholder Impact

Identify what individuals, departments or organizations have a vested interest in this project. They are either affected by, or can have an affect on, the project. Anyone whose interests may be positively or negatively impacted by the project or anyone that may exert influence over the project or its results should be considered a project stakeholder.

5.1 Stakeholder Identification

Stakeholders <i>There are two pre-identified broad stakeholder groups for the City of Guelph.</i>		Specific Groups <i>Specify the group within the broader stakeholder that is affected by your business case (see Section 5.1 in Business Case Guides for list of stakeholder groups).</i>	Impact / Interest <i>Positive and/or negative points</i>	*Influence <i>Determine if each stakeholder group has a say (Yes/No)</i>
Internal	City of Guelph (staff, Corporation as a whole, Council, etc.)	Corporate Energy	Reduced energy budget; less impact of cost variability on ability to meet budget	YES
		Transit, Water Services, Emergency Services, Fire Department, Communications, Parking, Engineering, Downtown Renewal, GMHI	Opportunity to benefit from city-wide Smart City Network, resulting in ability to reduce costs, enhance existing services, and innovate with new services	YES
		Engineering; Operations	Ability to advise on project approach based on past experience	YES
		Community Energy	Progress toward reduction targets for energy consumption and GHG emissions	NO
External	Community (partners, residents, public, etc.)	Guelph Hydro Electric Systems Inc. (GHESI)	Progress toward CDM goals; reduced revenue; relationship with existing AMI network; interest in Adaptive Controls component	YES
		Potential contractors/service providers	Desire for open and transparent process for awarding contracts	NO
		General public	Changes to nighttime lighting environment when walking, cycling, and driving, as well as homes and surrounding property	YES

**If you have answered "YES" for any of the External stakeholder influence in Section 5.1, fill out Appendix A – Community Engagement Plan. If you have answered "NO" for all External stakeholder influence, fill out 5.2.*

5.2 Internal Decision

(only complete this section if "NO" in Section 5.1 under the column Influence)

Explain why community engagement is NOT appropriate for the projects. Involve Community Engagement Team to review this decision.

Not applicable – Community engagement is required

SECTION 6: OPTION IDENTIFICATION

6.0 Options Identification

Identify options that could address the problem or opportunity including “do nothing” (status quo). Describe each option and using a practical and common sense approach, identify whether the option is viable or not, with reasons why.

6.1 Possible Option Identification

Option	Description	Viable (Yes or No)	Reasons Why
<i>List all options – this list includes unviable options therefore generally a larger list than the viable options (6.2).</i>	<i>Explain key features and how the option will address the problem or opportunity.</i>	<i>Indicate if option is considered viable (YES/NO). Status Quo is always a viable option.</i>	<i>Provide a rationale for why the option is viable or not. Reference strengths and weaknesses.</i>
Option 1: Status Quo (Do Nothing)	Retain existing technology with its attendant costs.	YES	No new capital or operating investment required, and no additional staff resources to manage a large and complex project. However, electricity costs will continue to rise faster than inflation. Maintenance costs will continue to fluctuate unpredictably.
Option 2: LEDs with Photocells only	Implement LED street lighting with photocell actuators. Implement Adaptive Controls at a later date.	YES	Cost reduction of \$1M per year; security, safety, health, and environmental benefits. Additional future cost of replacing photocells with Adaptive Controls modules.
Option 3: Sell the asset to GHESI, upgrade to LED with photocells only	Sell the street lighting asset to GHESI. GHESI performs ongoing maintenance and LED upgrade, excluding Adaptive Controls.	YES	Sale would yield a cash infusion that could be used for a variety of purposes including establishing a revolving fund for energy efficiency investments.

6.1 Possible Option Identification

Option	Description	Viable (Yes or No)	Reasons Why
Option 4: LEDs with Adaptive Controls	Same as Option 2, but with the addition of Adaptive Controls, providing a Smart City Network that could be used by various City departments as a platform for Smart City applications.	YES	As option 2, with further energy savings and the additional benefit of a platform for Smart City applications.
Option 5: Sell the asset to GHESI, upgrade to LEDs with adaptive controls	Same as Option 3, but with the addition of Adaptive Controls.	YES	See options 3 and 4.
Option 6: Half and half	Deploy photocell-only luminaires to half the fleet in Year 1, deploy Adaptive Controls luminaires to the remaining half in Year 2, and replace the remaining photocells with Adaptive Controls in Year 3.	NO	Delay introduces the additional mobilization cost of revisiting half of the fleet, with no associated benefit.
Option 7: Induction	Deploy induction lighting technology to replace existing HPS and MH lighting.	NO	Energy savings are not sufficient to make this option attractive. Product longevity and output degradation characteristics do not compare favourably with LED.
Option 8: Postpone	Delay the entire project until costs for LED and Adaptive Controls components fall further.	YES	The economic business case for LED is already clear, so delay introduces the opportunity cost of missed savings.

6.2 Viable Options

Always include "Status Quo" as a viable option. Provide various options for your project implementation (at least 2 – i.e. full implementation, hybrid, less ideal but less cost for reduced scope, etc.)

Option #	Option	Brief Description of Scope
Option 1: Status Quo	Status quo.	Retain legacy street lighting technology.

6.2 Viable Options

Always include "Status Quo" as a viable option. Provide various options for your project implementation (at least 2 – i.e. full implementation, hybrid, less ideal but less cost for reduced scope, etc.)

Option #	Option	Brief Description of Scope
Option 2	LEDs with photocells.	Implement LED street lighting ASAP with photocell actuators. Implement Adaptive Controls at a later date.
Option 3	Sell the asset to GHESI, upgrade to LEDs with photocells only.	Sell the street lighting asset to GHESI. GHESI performs the LED upgrade and maintenance and charges the City a specified monthly fee for street lighting service.
Option 4	LEDs with Adaptive Controls.	Same as Option 2, but with the addition of Adaptive Controls, providing a Smart City Network that could be used by various City departments as a platform for new and enhanced applications.
Option 5	Sell the asset to GHESI, upgrade to LEDs with Adaptive Controls.	See options 3 and 4 above.
Option 6	Postpone.	Delay decision on the project until a more suitable time.

SECTION 7: QUALITATIVE & QUANTITATIVE ANALYSIS

7.0 Viable Option Analysis

Conduct Qualitative and Quantitative Analysis on each of the Viable Options identified in Section 6 using tools in Appendices B, C and D and provide summary below.

7.1 Qualitative Analysis Summary – RISKS (attach detail analysis in Appendix B using Risk Analysis Tool and transfer total scores below)

Viable Options	Risk Categories							
	Service Delivery	Employees	Public	Physical Environment	Reputation	Financial	Regulatory	TOTAL
Option 1: Status Quo	2	0	2	1	8	15	9	37
Option 2: LEDs with photocells	2	0	3	3	12	4	4	28
Option 3: Sell the asset to GHESI, upgrade to LED only	2	0	3	3	12	4	4	28
Option 4: LEDs with adaptive controls	1	0	3	3	3	8	4	22
Option 5: Sell the asset to GHESI, upgrade to LED plus adaptive controls	6	0	4	3	3	8	4	28
Option 6: Postpone	2	0	2	1	8	15	9	37

7.2 Qualitative Analysis Summary – BENEFITS (attach detail analysis in Appendix C using Benefit Analysis Tool and transfer total scores below)

Viable Options	Benefit Categories					
	Org Culture	Org Performance	Org Sustainability	Org Accountability	Total of 8 domains	TOTAL
Option 1: Status Quo	0	0	0	0	0	0
Option 2: LEDs with photocells	0	0	8	0	19	27
Option 3: Sell the asset to GHESI, upgrade to LED only	0	0	4	0	19	23
Option 4: LEDs with adaptive controls	0	0	8	0	23	31
Option 5: Sell the asset to GHESI, upgrade to LED plus adaptive controls	0	0	4	0	23	27

Option 6: Postpone	0	0	0	0	0	0
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7.3 Quantitative Analysis Summary – FINANCIAL (attach detail analysis in Appendix D using Financial Analysis Tool and transfer total costs below)

Viabile Options	Total One-time Operating Cost	Total Capital Cost	Total Annual Operating Cost	Total Savings (incl. Cost avoidance)	Total Revenues expected	ROI	NPV
Option 1: Status Quo	0	0	\$2.1M	0	0	0	0
Option 2: LEDs with photocells	0	\$5.9M	\$0.8M	\$28.6M	0	449%%	\$16.3M
Option 3: Sell the asset to GHESI, upgrade to LED only	0	-\$5.2M	\$1.9M	\$13.8M	0	N/A	\$16.8M
Option 4: LEDs with adaptive controls	0	\$8M	\$0.8M (\$0.6M with controls savings)	\$26.5M (\$30.5 with controls savings)	0	331% (382% with controls savings)	\$14.2M (\$17.6M with controls savings)
Option 5: Sell the asset to GHESI, upgrade to LED plus adaptive controls	0	-\$5.2M	\$2.2M	\$6.0M	0	N/A	\$11.8M
Option 5: Postpone	0	0	\$2.1M	0	0	0	0

SECTION 8: CONCLUSION & PROJECT CONDITIONS

8.0 Conclusion & Project Conditions

8.1 Recommended Option

Based on all the analysis (SWOT, qualitative, quantitative, etc.), identify the preferred option, summarizing why this option was selected. Note the recommended option should maximize benefits while minimizing risk and cost.

Option 3 – LEDs with Adaptive Controls is recommended. It has the lowest risk of the three non-status quo options, and offers nearly the same benefits as the highest-benefit option (a score of 31 versus 27 for the highest-benefit option). Although it does not have the most attractive option based on all relevant financial metrics (NPV, Payback Period, and ROI), the potential Smart City opportunities justify the difference. Further, if matters turn out as expected with Measurement Canada, the financial metrics will exceed those of the next-best option. It is expected that the risks inherent in this option can be mitigated through appropriately drafted legal agreements for the asset upgrade and the ongoing maintenance service contract.

Option 3 also immediately yields a new asset (the Smart City Network), which offers opportunities for several departments to deliver new and/or enhanced services. This asset will offer additional savings (e.g. eliminating the cost of water meter reading services), as well as significant potential for new/enhanced revenue generation (e.g. increasing transit ridership by using traffic signal prioritization to reduce trip times) and improved public perception of the Corporation as an innovator in municipal public service delivery.

Finally, Option 3 introduces the possibility of providing funding to invest in additional opportunities to avoid cost or produce revenues for the Corporation.

8.2 Assumptions

Assumptions are factors that are considered true, real or certain for purposes of planning. Certain unverified or unknown aspects which are likely to happen should also be considered.

1. Although LED fixtures are expected to have a service life of up to 20 years, this analysis uses only a 15-year planning horizon (which was the period used in the GHESI offer to acquire the asset). Longer service life will improve both ROI and NPV for all options other than status quo.
2. Based on experience from the City of Mississauga, Adaptive Controls are assumed to yield additional energy savings of 42% (dimming capability, constant light output over service life, and identification of day burners) and maintenance savings of 2% (identification of failed lamps, call centre and field operations efficiency improvements, avoided litigation) for Option 3 compared to Option 2 – Photocells Only.
3. Option 3 is assumed to offer the same hardware savings for bulb and photocell replacement compared to Option 2 – Photocells Only.
4. It is assumed that luminaires will be replaced on a one-for-one basis, with existing lighting levels being maintained. Past experience in other

8.2 Assumptions

municipalities has shown that over-lighting is common, and detailed lighting design with the purpose of compliance with the RP-8-14 standard will likely allow for lower-output luminaires or to reduce the required wattage. This is expected to yield additional savings, as well as reducing the risk of litigation related to under-lit areas.

5. It is assumed that existing incentives available through the SaveONenergy program will remain in place. GHESI has provided a lower limit to the expected incentive funding, and this has been assumed in this analysis. A higher incentive will improve the economics of the project.
6. A grant is available from the Ministry of Energy Smart Grid Fund, and the Adaptive Controls element of the project may well be eligible. This would mean that the fund would cover 50% of costs to a maximum of \$2M. This funding opportunity has not been included in this analysis, and would only affect Options 4 and 5.
7. It is assumed that energy savings for LED replacement will translate into cost savings. Current street lighting billing includes minimal fixed costs (about \$60K per year or 4%), and savings estimates were provided by an experienced third party, so this assumption is considered to be reasonable. Guelph Hydro has confirmed that energy consumption savings will be incorporated into the revised “virtual meter” billing model.
8. It is assumed that energy savings for adaptive controls will not translate into cost savings. Work is in progress to change street lighting billing rules to incorporate savings from adaptive controls, and it is considered likely that this change will be implemented before the end of 2017.

8.3 Constraints

Constraints are factors that are outside the control of the project manager/team that may restrict or regulate the proposed project. They limit available options and may affect performance of the project. Consider time, budget, scope, quality/availability of resources, priorities, legislative requirements, public opinion, etc.

It is feasible to complete the project in one year if funding permits, based on the experience of the comparably-sized project that the City of Barrie completed in six months.

8.4 Key Success Factors

Define the key factors that are critical to the success of the project. These factors must be satisfied to enable successful completion of the project. Include significant events or decisions that need to take place, support that is required, etc.

- Well-drafted and thorough legal agreements for the ownership and governance of the Adaptive Controls asset and for ongoing maintenance service from the 3rd party provider.
- Written acknowledgement from GHESI regarding the relationship between expected energy savings and corresponding financial savings.
- Written acknowledgement from Guelph Hydro regarding the incentive funding that will be provided to help defray project costs.

8.4 Key Success Factors

- Reliable and comprehensive data regarding existing street lighting fleet, to be provided through an Investment Grade Audit.

8.5 Post-Implementation Support

Outline how the project will be supported upon completion – i.e. where to get information, who the owner of the operationalized process / product is, where the instructions are, what the training plan is, etc.

It is recommended that ongoing maintenance of the luminaires be provided under an appropriate contract with a suitable party selected through a competitive bidding process. This party may be GHESI or some other entity.

The Adaptive Controls application and any ancillary tools (e.g. a system monitoring application for mobile devices) will likely be cloud-hosted and accessible to designated Facilities Management staff. This will necessitate training of staff and some additional staff time for responding to identified issues, but this is expected to be minimal based on the City of Mississauga experience.

The Smart City Network vendor will be required to provide support and maintenance as required, and the purchase contract will incorporate this consideration.

8.6 Dependencies on Others

Is your proposed project dependent on other projects, initiatives or City operating units? Identify any dependencies in your branch, department, other department, other municipality, Region, other external partner, etc.

Other Project/Initiative	Responsibility	Dependency	Impact
<i>List the project or initiative that your proposed project is dependent on.</i>	<i>Who is responsible for the project?</i>	<i>State the dependency – i.e. how is your initiative dependent on the project listed in the far left column?</i>	<i>Indicate the impacts – i.e. if the other project fails, what will happen to your initiative?</i>
Other construction work in roadway right-of-way areas	Engineering/Public Works	Street light replacement will have to be coordinated with any other road works to avoid conflicting work between crews.	Poor coordination may delay progress, resulting in later completion.
Existing Advanced Metering Infrastructure (AMI)	Guelph Hydro Electric Systems Inc. (GHESI)	There is the potential for interference between the Adaptive Controls system and the AMI infrastructure. There is also the	It is preferable to avoid interference issues through effective design rather than remediating them after the fact. The latter will introduce

8.6 Dependencies on Others

		opportunity to deliver a better-quality network by integrating it with GHESI's AMI.	extra cost and delay completion.
GHESI smart grid investment funding	Guelph Hydro Electric Systems Inc. (GHESI)	GHESI has access to funding for Smart Grid investments.	GHESI may be able to obtain funding to defray part of the cost of the Adaptive Controls component.
Wide Area Network maintenance and fibre optic upgrade	Information Technology	The Smart City Network provided by the Adaptive Controls system offers a new communications channel with a variety of possible applications.	Existing planned network infrastructure projects may need to be revised to address the Smart City Network opportunity. Fiber optic network could simplify architecture of the Adaptive Controls component.
Parking Master Plan	Engineering and Capital Infrastructure	The Smart City Network asset could provide a portion of the infrastructure required for Smart Parking capability.	A budgetary provision in the Parking Master Plan for technology upgrades could allow for an integrated solution.
Guelph Transit Priority Project	Guelph Transit	There is potential to integrate the Adaptive Controls system with technology to provide intersection priority to transit vehicles.	Integrating the two projects in some fashion will help ensure technology compatibility and mutually reinforcing solutions.
Opticom System long-term planning	EMS	There is the potential to integrate the Adaptive Controls system with a GPS-based traffic pre-emption system built on (or replacing) the legacy Opticom line-of-sight	Same as for Guelph Transit Priority Project.

8.6 Dependencies on Others

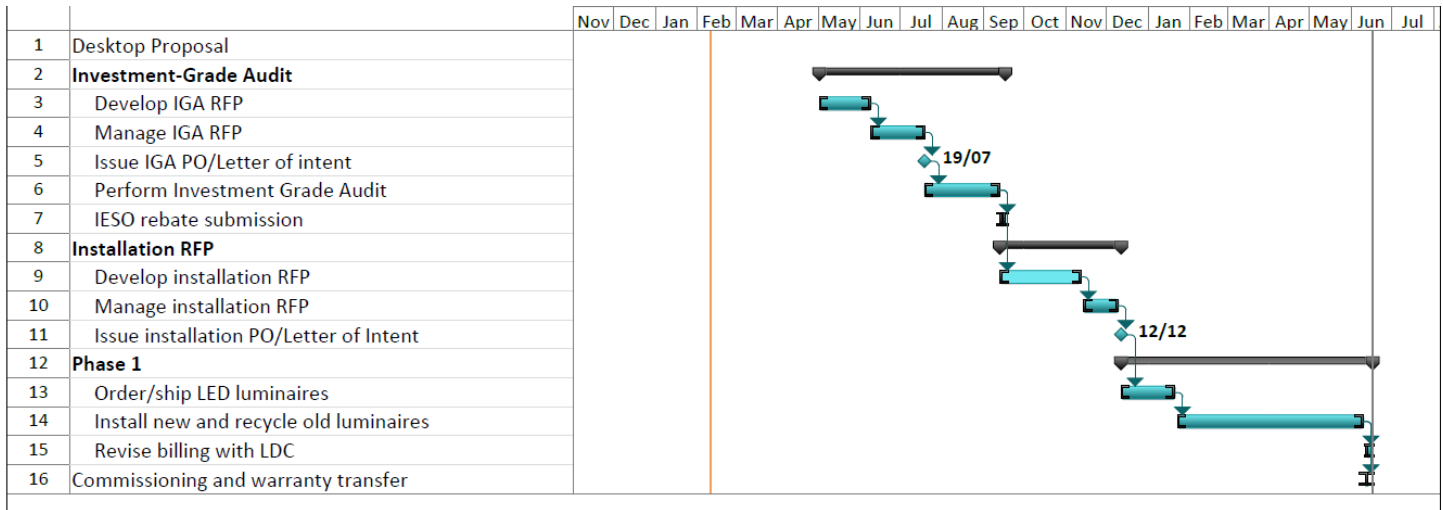
		system.	
Traffic signal centralized control and management	Engineering and Capital Infrastructure - Traffic	The Adaptive Controls system could offer the platform to integrate outlying intersection signal systems with the central Gordon fiber optic trunk.	Same as for Guelph Transit Priority Project.

SECTION 9: HIGH-LEVEL TIMELINE & MILESTONES

9.0 Project Deliverables and Implementation Timeline

Attach high-level implementation schedule, milestones and deliverables. Details to be described in Project Charter if this Business Case is approved.

Item	Task	Description	Timing
1	Desktop Proposal	Preliminary estimate of costs and savings	Complete
2	Develop IGA RFP	Facilities Management staff prepares Request for Proposal for the Investment Grade Audit (IGA).	Month 1
3	Manage IGA RFP	Procurement department issues Request for Proposal for IGA, receives bids from qualified vendors, and selects a vendor together with Facilities Management.	Month 2
4	Issue IGA PO	Engagement to perform IGA	Month 3
5	Perform Investment Grade Audit	Full system review, GPS mapping, lighting designs, luminaire selection, detailed costs and savings	Months 3-4
6	IESO rebate submission	Vendor administers IESO incentive application and provides resulting documentation to the Corporation	Month 4
7	Develop installation RFP	Facilities Management staff prepares Request for Proposal for street lighting retrofit installation phase and makes final revisions incorporating quantity and design details arising from the IGA.	Months 3-4
8	Manage installation RFP	Procurement department issues Request for Proposal for installation, receives bids from qualified vendors, and selects a vendor together with Facilities Management.	Month 5
9	Issue installation PO	Engagement to perform installation	Month 6
10	Order/ship luminaires	From 3 to 6 weeks to manufacture and ship	Month 6-7
11	Install new and recycle old luminaires	Local installers preferred, using vendor-provided installation and asset management tools	Month 7-12
12	Revise billing with LDC	Ensuring that reduced consumption is reflected in billing invoices	Month 12
16	Commissioning and warranty transfer	Transfer all GPS/Asset Management tools, maps, data, records, contracts, and calculations	Month 12



SECTION 10: PROPOSED BUDGET

10.0 Project Proposed Budget

Provide a cost summary of the selected option from the Quantitative Analysis (Section 7.3). Add 10.1 through 10.3 then subtract any savings in 10.4 to derive a net cost/tax levy impact. Specify funding source(s). Input cost as positive and revenues and any cost savings as negative.

10.1 Implementation Costs (One-time Operating Costs)

No one-time operating costs are expected.

10.2 Capital Costs

Total one-time capital costs are expected to be \$8 million for the warranty service life of ten years.

10.3 Operating Costs (Annual Operating Costs)

Adaptive Controls operating costs are expected to be \$74,800 per year for ten years. For the purposes of the economic analysis, this cost has been integrated into the initial project capital expenditure.

10.4 Cost Savings / New Revenues

Item	Cost
Electricity savings	\$ 865,000
Maintenance savings	\$ 398,000
Total	\$ 1,263,000

Savings shown above are for 2018, the year following project completion. Electricity savings escalate at an estimated rate of 6%, maintenance at a rate of 2%. This is conservative, as electricity costs have risen on average 12% per year over the last five years, while maintenance costs have risen 9% per year on average over the same period.

10.5 Net Cost / Tax Levy Impact Add 10.1 through 10.3 then subtract any savings in 10.4 to derive a net cost/tax levy impact.

Item	Cost
Capital cost	-\$ 8,000,000
Savings (fifteen years)	\$ 22,212,000
Net Present Value	\$ 14,212,000

Net present value for the project includes all capital and operating costs and expected savings, discounted where appropriate at the Corporation's cost of capital to account for the time value of money.

10.6 Funding Sources

A number of options are available for financing this project, each with varying suitability:

Item	Pros	Cons
1. Capital budget request. The project is funded through the standard capital budgeting process.	<ul style="list-style-type: none"> • Simple and standardized process. • No requirement for payback of funds. 	<ul style="list-style-type: none"> • Large number of competing demands on this resource. • Many of the competing demands are driven by regulatory, safety, and other requirements that will likely afford them a higher priority. • Difficulty of fitting this project into the multi-year plan may result in a delay of several years, if it can be accommodated at all.
2. Capital Asset Renewal Reserve. The CARR is used to finance the project, and the resulting savings are used to pay back the reserve over time.	<ul style="list-style-type: none"> • Lowest cost option. • Project economics fit well within the 10-year payback criterion for the fund. • No interest is charged. 	<ul style="list-style-type: none"> • This reserve has been fully committed elsewhere.
3. Dedicated bond issue. A specific debt offering is made to the Corporation's normal bond customer, and/or structured as a Green Municipal Bond.	<ul style="list-style-type: none"> • Direct relationship between the debt instrument and the repayment process. • Opportunity to demonstrate innovation in municipal project financing. 	<ul style="list-style-type: none"> • "Green" aspect of the project does not yield more favourable repayment terms. • Significant effort involved in developing this option as Green Municipal Bonds are new and comparatively unknown.
4. Energy performance contract. A 3 rd party provider (possibly the prime contractor) fronts the initial project capital, and is repaid from the resulting savings.	<ul style="list-style-type: none"> • No requirement for any debt or draws on existing City funds. • Simplification of project by using a "one stop shop" for both execution and financing. 	<ul style="list-style-type: none"> • Longer period before savings stream has an impact on operating budget. • Highest interest cost of all available options.

Item	Pros	Cons
<p>5. Borrow from reserves. The project is financed internally by borrowing (with interest) from existing capital reserves.</p>	<ul style="list-style-type: none"> • This funding would be more than sufficient to finance this project. • If repayment were fixed at 90% of savings, this option would generate positive cash flow immediately. 	<ul style="list-style-type: none"> • Other contingency plans would need to be developed to cover the cost in the event of an unexpected conflicting claim on these reserves.
<p>6. Gas tax. Other municipalities have used this source to fund similar projects.</p>	<ul style="list-style-type: none"> • This funding would be more than sufficient to finance this project. • There is no requirement to repay the funds, so savings would begin to accrue immediately. 	<ul style="list-style-type: none"> • There may be a large number of competing demands on this funding source.

Option 5, borrowing from reserves, is recommended as it has the lowest cost and the fewest drawbacks.

An incentive is available from Guelph Hydro Electric Systems Inc. (GHESI) under the SaveONenergy program of the Independent Electricity System Operator (IESO). This is reflected in the table below.

Item	Cost
SaveONenergy incentive	\$ 750,000
Funding source	\$ 7,250,000
Total capital cost	\$ 8,000,000

10.7 Other Potential Costs

Identify other potential costs related to the recommended option that cannot be readily quantified.

Some additional staff time will be required to manage the Adaptive Controls system and to respond to system events (such as luminaire failure) and dispatch the maintenance contractor as required. This is not expected to be significant.

10.8 Other Potential Revenues

Identify other potential revenues related to the recommended option that cannot be readily quantified e.g. assessment growth

See next item.

10.9 Other

Identify any other costs or savings.

The Smart City Network offers a variety of opportunities for cost savings, revenue generation, and service enhancement:

1. **Integration with 911 dispatching.** Currently sirens and flashing lights are the only warning to pedestrians and drivers of a First Responder vehicle responding to an emergency call. In dense traffic, these cues may arrive too late for drivers to be able to pull to the roadside to make way for the vehicle, and it can be difficult to identify which direction the a siren is coming from. By integrating 911 dispatch with the Adaptive Controls system and a route mapping application, the First Responder route can be illuminated in a distinctive way (e.g. one vendor offers a luminaire with a dedicated, separate horizontal beacon and an audible whistle) to warn pedestrians and drivers and to reduce the likelihood of misdirection.
2. **Emergency vehicle intersection prioritization.** Currently, First Responder vehicles are equipped with infrared devices which transmit signals to traffic lights to ensure the signal is favourable when the vehicle reaches the intersection. This system, supplied by the company Opticom, has significant ongoing maintenance cost. Further, it relies on line of sight for proper operation, which may reduce the lead time available to cycle the traffic signal and is ineffective when the vehicle is travelling along a curve. The 911 capability mentioned in item 5 in *Appendix A: LED Street Lighting Capabilities* can be further enhanced by integration with GPS transmitters in the vehicles and with traffic signalling (replacing or supplementing the existing Opticom system) to ensure First Responders only encounter green lights at intersections. The software can also manage conflicts between multiple First Responders reaching the same intersection from different directions simultaneously.
3. **Transit vehicle intersection prioritization.** Transit vehicles can be granted intersection priority as well. This can reduce intersection transit delays by up to 40%, reduce fuel costs by up to 19%, increase ridership by up to 10%, and reduce

greenhouse gas emissions by up to 30%.

4. **Remote Telemetry.** Water Services may be able to use part of the Smart City Network as part of a future system to remotely read water meters and/or sensors in the water distribution system. At this time there is only a single water meter vendor that can connect to the proposed Silver Spring Networks radio network. There is concern about being potentially locked into a single water meter vendor. Thus, Water Services is taking a “wait and see” approach to see how this technology develops over the next few years. In time, hopefully additional water meter vendors begin offering products that can connect to this system. Please note that deploying a radio-based water meter reading system would also require additional investments, such as additional head-end network equipment, water meter replacements, upgrades to IT/billing systems, and updates to data storage systems, as well as discussions with Guelph Hydro (as Guelph Hydro currently provides customer billing and manual meter reading services for Water Services). It should be noted that there are also several other radio-based water meter reading technologies currently available and developing, many of which support multiple water meter vendors.
5. **Smart parking.** Sensors mounted on street light poles could detect vacant parking spaces, and broadcast that information to drivers via their mobile device. Mobile payments could be facilitated by the same means. The system could also provide information to Bylaw Enforcement when a vehicle exceeds its paid time. Additional revenues could be generated by presenting promotional coupons from local businesses.
6. **Municipal Wi-Fi.** Street light poles could serve as a convenient mounting location for Wi-Fi access points. This would facilitate the deployment of a free, public Wi-Fi network in the downtown core and potentially other selected areas. This would provide significant value to downtown businesses, enhancing the attractiveness of the area for retail commerce, tourism, and entertainment.
7. **Information displays.** Street light poles could also be used as a mounting location for flat-panel displays providing important information to citizens. This could include a “smart bus stop” concept, providing information to riders regarding schedules and expected arrival times. This communication channel could also be used for paid-for-service advertising, yielding an opportunity for revenue generation, offsetting the capital and operating cost and even potentially delivering a positive revenue stream.
8. **Electric Vehicle Supply Equipment (EVSE).** Street light poles could be used as a mounting location for EVSEs, for the purposes of charging electric vehicles. This would provide an incentive for adoption of this form of transportation. EVs offer dramatically lower emissions than petroleum-fuelled vehicles. More widespread adoption would contribute to greenhouse gas emissions reduction goals in the Community Energy Initiative. Further, with increased local generation of electricity from renewable sources, funds currently spent on imported fuels could

10.9 Other

instead be spent on locally-generated electricity, contributing to the local economy and reducing net cash outflows from the community. If this technology were combined with a payment mechanism, it could also generate revenue which would offset or exceed the capital and operating cost.

9. **Picocell hosting.** Street light poles are an attractive location for mobile wireless telephony providers to mount supplemental cellular base stations (picocells) to improve service coverage. Rental of space on street light poles could be a valuable source of revenue.
10. **Renewable energy generator hosting.** As mentioned above under the heading Asset Management, the Town of Halton Hills has deployed solar photovoltaic panels on street light poles to generate electricity. Small vertical axis wind turbines are also available for this application.
11. **Environmental sensors.** Street light poles can be equipped with a variety of sensors, which can then transmit their telemetry to the relevant departments over the Smart City Network. Sensors could include:
 - a. Rainfall, to identify extreme weather events and facilitate proactive, coordinated response
 - b. Snowfall, to detect snow accumulation and facilitate timely dispatch of snow removal crews
 - c. Traffic counting, including pedestrians, cyclists, and motor vehicles, to aid decision-making related to Transportation Demand Management
 - d. Airborne pollutants such as carbon monoxide and carbon dioxide, to aid in air quality assessment, industrial emissions monitoring, detection of fires in abandoned buildings, etc.

10.10 Comments (if required)

Provide comments for any of the costs described in this section.

N/A

SECTION 11: PROPOSED PROJECT TEAM

11.0 Project Team

Identify the project team, partners and key stakeholders, and their role and time commitments. Ensure to include Community Engagement requirements if applicable (see Community Engagement Plan for guidelines). Keep it to highlevel and provide details in the Project Charter once the project is approved and resources are allocated.

11.1 Internal Resources Requirements

Position / Role within the Project	Position and / or Required Skills	Role Description	Proposed Name	Time Commitment	Period	Dept Head agreed?
<i>e.g.) SA rep., Project leader, advisor, etc.</i>	<i>e.g.) GM level, ED level, etc.</i>	<i>e.g.) Co-develop the new program manual, provide feedback, etc.</i>	<i>Provide names of preferred individuals or appointed individuals.</i>	<i>e.g.) 10 hours / week, one 1-hour biweekly meetings, etc.</i>	<i>e.g.) June 2014 – Aug 2015</i>	<i>Yes / No</i>
Project Leader	Manager level	Manage the project, including RFP coordination, vendor liaison, and project oversight	Alex Chapman	10 hours/week	January - December 2017	YES
Project Sponsor	GM level	Provide GM-level support and guidance	Mario Petricevic	1-2 hours/week	January-December 2017	YES
Energy specialist	Specialist level	Provide analytical support	Bryan Ho-Yan	2-3 hours/week	January-December 2017	YES

11.2 External Resource Requirements

Organization Name	Involvement	Role Description	Time Commitment	Period	Consulted? (Yes / No)
<i>e.g.) Downtown Guelph Business Association, etc.</i>	<i>e.g.) Receive, Provide input, Influence decisions, Approve, etc.</i>	<i>See above</i>	<i>See above</i>	<i>See above</i>	<i>Yes / No</i>
Consultant (TBD)	Perform Investment-Grade Audit	Full system review, GPS mapping, lighting designs, luminaire selection, detailed costs and savings analysis	Full-time	See work plan	NO
Contractor (TBD)	Perform installation services	Install new luminaires, test, and commission; recycle old units	Full-time	See work plan	NO
Contractor (TBD)	Perform maintenance services	Replace damaged units under warranty or otherwise	Full-time	See work plan	NO

SECTION 12: BUSINESS CASE REVIEW & SIGNATURES

12.0 Sign-Off

The Business Case must be approved and signed-off by involved parties. Once completed and signed-off, the Business Case forms the basis for detailed planning and future decision-making. Any agreed upon amendments to the Business Case should be signed off by the original Business Case Author). All but BC Author and Project Sponsor's sign-offs can be done electronically (i.e. email).

12.1 Business Case Author

Sign-off by the Business Case Author signifies that all available and known information, both positive and negative, has been provided.

Name (print or type)	Signature	Date
Alex Chapman		August 7, 2015

12.2 Project Sponsors Endorsement

Sign-off by the General Manager level Project Sponsor is an endorsement of the content of the Business Case.

Name (print or type)	Signature	Date
Mario Petricevic		

Sign-off by the Executive Director level Project Sponsor is an endorsement of the content of the Business Case.

Name (print or type)	Signature	Date
Scott Stewart		

12.3 Finance & Community Engagement Team Confirmation

Sign-off by a representative of Finance Department to confirm the Quantitative Analysis (Section 7.3) and Proposed Budget (Section 10) content has been reviewed.

Name (print or type)	Signature	Date
Greg Clark		

Sign-off by a representative of Community Engagement Team to confirm the Community Engagement (public consultation) appropriateness decision (Section 5.1) has been reviewed.

Name (print or type)	Signature	Date
Kate Bishop		

12.4 Support Team Contribution

Sign-off by key people who supported and contributed to the development of the Business Case

Name	Title	Sign-off	Date
Doug Godfrey	GM, Operations		
Kealy Dedman	GM, Engineering		
Marina Grassi	Communications Officer		
Greg Clark	Senior Corporate Analyst, Asset Management		
David Boyle	Manager, IT Infrastructure Operations		
Jeff Aitkens	General Manager, Legal, Realty, and Risk and City Solicitor		

12.5 Project Management Office

Sign-off by the Project Management Office signifies that the Business Case has been completed by appropriately using the template and tools as they are intended.

Name	Signature	Date
Tomoko King		

12.6 General Manager Finance and Deputy Treasurer Confirmation

Sign-off by the General Manager Finance and Deputy Treasurer or appointee signifies that the Business Case has been fully completed in a satisfactory manner.

Name	Signature	Date
James Krauter		

Comment

12.6 Executive Team Review & Recommendation

Sign-off by the Executive Directors to confirm that they have reviewed the Business Case. The recommendation to proceed or not to proceed for Council review to be indicated by each Executive Director.

Deputy CAO Name	Signature	Date
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Scott Stewart

Recommendation	Comment (optional)
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Deputy CAO Name	Signature	Date
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Colleen Clack

Recommendation	Comment (optional)
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Deputy CAO Name	Signature	Date
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TBD

Recommendation	Comment (optional)
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CAO Name	Signature	Date
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Derrick Thomson

Recommendation	Comment (optional)
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12.7 ET Decision

Final recommendation from the Executive Team as a whole to proceed or not to proceed. The Executive Sponsor is Responsible for completing this section.

Decision	Comment (optional)
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12.8 Revision History

Track any revisions/amendments to the Business Case.

Revision Date	Description of the Revision	Sign-off by Business Case Author

12.8 Revision History



Attachment 10

BUSINESS CASE APPENDICES

TABLE OF CONTENTS

- APPENDIX A: COMMUNITY ENGAGEMENT PLAN (SECTION 5) 3**
- APPENDIX B: RISKS ANALYSIS OF VIABLE OPTIONS (SECTION 7.1) 4**
- APPENDIX C: BENEFIT ANALYSIS OF VIABLE OPTIONS (SECTION 7.2) 10**
- APPENDIX D: FINANCIAL ANALYSIS OF VIABLE OPTIONS (SECTION 7.3)..... 16**
- APPENDIX E: RISK MITIGATION STRATEGY ON SELECTED OPTION (SECTION 9.1) 17**
- APPENDIX F: OUTCOME (TARGET) MEASUREMENT MATRIX (SECTION 9) 18**
- APPENDIX G: SUPPLEMENTARY BUDGET INFORMATION (SECTION 10.1) 20**
- APPENDIX H: SUPPLEMENTARY PROJECT TEAM INFORMATION (SECTION 11.1) 21**
- APPENDIX I: OTHER 22**

APPENDIX A: COMMUNITY ENGAGEMENT PLAN (SECTION 5)

Community Engagement Plan

(only complete this section if "YES" in Section 5.1 under the column Influence)

The Community Engagement Promise to the Community	We have considered community feedback when selecting the type of luminaire that will be implemented.					
Level of Community Engagement	Decision Making Process Place and X to show where engagement activities will take place.					
	<i>Define Problem / Opportunity</i>	<i>Gather Information</i>	<i>Establish Decision Criteria</i>	<i>Develop Alternatives</i>	<i>Evaluate Alternatives</i>	<i>Make a Decision</i>
Consult					X	
Involve						
Collaborate						
Empower						
Community Engagement Strategy Summarize the engagement level and activity for each stakeholder. Ensure to include these activities in Section 11 Deliverables and Timeline.	Stakeholders		Level of Engagement		Engagement Activities	
	Residents in the vicinity of the field trial		Consult		Distribute letters soliciting feedback; respond to feedback directly and post responses on Guelph.ca	
	All other Guelph residents		Consult		Issue press release; respond to feedback directly and post responses on Guelph.ca	

APPENDIX B: RISKS ANALYSIS OF VIABLE OPTIONS (SECTION 7.1)

Conduct this analysis for ALL viable options including Status Quo.

Viable Option	Option ID#	Description
Status Quo	1	Retain legacy street lighting technology.

Risk Categories	Category Definition	Risk ID#	Description	Impact	Likelihood	TOTAL
Service Delivery	<i>Risk of not meeting customer expectations</i>	1.1	Because street lights do not provide any telemetry, it is necessary to continue to rely on citizen reporting of non-functional street lights. This results in poor public image and potential liability in case of accident caused by sub-standard illumination.	1	2	2
Employees	<i>Risk that employees, contractors or other people at the City will be negatively impacted by a policy, program, process or project including physical harm.</i>	1.2	N/A – No risks identified in this category.	0	0	0
Public	<i>Risk that the policy, program or action will have a negative impact on the citizens of Guelph</i>	1.3	Continued use of legacy technology with its attendant light trespass and potential dark spots will continue to cause safety, health, and nuisance issues, resulting in complaints and/or legal action.	2	1	2
Physical Environment	<i>Risk that natural capital will be damaged</i>	1.4	Continued use of legacy technology will continue to produce urban sky glow, with a detrimental effect on migratory birds and insect populations as well as amateur astronomers.	1	1	1
Reputation	<i>Risk associated with anything that can damage the reputation of the City or undermine confidence in the City of Guelph</i>	1.5	Continued use of legacy technology will cause Guelph to be viewed as an innovation laggard.	2	4	8
Financial	<i>Risk related to decisions about assets, liabilities, income and expenses including asset management, capital and operational funding, economic development, theft or fraud</i>	1.6	Continued energy cost escalation impairs the ability of the organization to continue meeting its commitments to the community.	3	5	15

Regulatory	<i>Risk related to the consequences of non-compliance with laws, regulations, policies or other rules</i>	1.7	Legacy lighting environment fails to meet RP-8 roadway lighting standard due to lack of comprehensive audit and design, resulting in exposure to liability	2	3	9
OVERALL						37

Viabile Option	Option ID#	Description
LEDs with photocells	2	Implement LED street lighting with photocell actuators.

Risk Categories	Category Definition	Risk ID#	Description	Impact	Likelihood	TOTAL
Service Delivery	<i>Risk of not meeting customer expectations</i>	2.1	Because street lights do not provide any telemetry, it is necessary to continue to rely on citizen reporting of non-functional street lights. This results in poor public image and potential liability in case of accident caused by sub-standard illumination.	1	2	2
Employees	<i>Risk that employees, contractors or other people at the City will be negatively impacted by a policy, program, process or project including physical harm.</i>	2.2	N/A – No risks identified in this category.	0	0	0
Public	<i>Risk that the policy, program or action will have a negative impact on the citizens of Guelph</i>	2.3	Improper specification of street lighting leads to high BUG (Backlight/Uplight/Glare) rating, with resulting impacts on citizens.	3	1	3
Physical Environment	<i>Risk that natural capital will be damaged</i>	2.4	Improper specification of street lighting leads to high BUG (Backlight/Uplight/Glare) rating, with resulting impacts on the physical environment (particularly insect and migratory bird populations).	3	1	3
Reputation	<i>Risk associated with anything that can damage the reputation of the City or undermine confidence in the City of Guelph</i>	2.5	City reputation is damaged by the need to perform a second street lighting project soon after the LED retrofit, to replace photocells with Adaptive Controls modules. Project cost and photocell disposal cost may elicit criticism from the community.	3	4	12

<i>Financial</i>	<i>Risk related to decisions about assets, liabilities, income and expenses including asset management, capital and operational funding, economic development, theft or fraud</i>	2.6	Electricity and maintenance savings do not meet expectations.	4	1	4
Regulatory	<i>Risk related to the consequences of non-compliance with laws, regulations, policies or other rules</i>	2.7	New street light installations fail to meet RP-8 roadway lighting standard.	4	1	4
OVERALL						28

Viable Option	Option ID#	Description
Sell the asset to GHESI, upgrade to LED only	3	Sell street lighting asset to Guelph Hydro. Have GHESI implement LED street lighting ASAP with photocell actuators.

Risk Categories	Category Definition	Risk ID#	Description	Impact	Likelihood	TOTAL
Service Delivery	<i>Risk of not meeting customer expectations</i>	3.1	As 2.1	1	2	2
Employees	<i>Risk that employees, contractors or other people at the City will be negatively impacted by a policy, program, process or project including physical harm.</i>	3.2	As 2.2	0	0	0
Public	<i>Risk that the policy, program or action will have a negative impact on the citizens of Guelph</i>	3.3	As 2.3	3	1	3
Physical Environment	<i>Risk that natural capital will be damaged</i>	3.4	As 2.4	3	1	3
Reputation	<i>Risk associated with anything that can damage the reputation of the City or undermine confidence in the City of Guelph</i>	3.5	As 2.5	3	4	12
<i>Financial</i>	<i>Risk related to decisions about assets, liabilities, income and expenses including asset management, capital and</i>	3.6	As 2.6	4	1	4

	<i>operational funding, economic development, theft or fraud</i>					
Regulatory	<i>Risk related to the consequences of non-compliance with laws, regulations, policies or other rules</i>	3.7	As 2.7	4	1	4
OVERALL						28

Viable Option	Option ID#	Description
LEDs with Adaptive Controls	4	Same as Option 2, but with the addition of Adaptive Controls, providing a Smart City Network that could be used by various City departments as a platform for various applications. Scope would include enlisting other City departments to provide support for the additional investment.

Risk Categories	Category Definition	Risk ID#	Description	Impact	Likelihood	TOTAL
Service Delivery	<i>Risk of not meeting customer expectations</i>	4.1	Centralized street lighting control does not meet expectations. (This risk is deemed to be low as other municipalities have implemented the technology successfully.)	1	1	1
Employees	<i>Risk that employees, contractors or other people at the City will be negatively impacted by a policy, program, process or project including physical harm.</i>	4.2	N/A – No risks identified in this category.	0	0	0
Public	<i>Risk that the policy, program or action will have a negative impact on the citizens of Guelph</i>	4.3	As 2.3	3	1	3
Physical Environment	<i>Risk that natural capital will be damaged</i>	4.4	As 2.4	3	1	3
Reputation	<i>Risk associated with anything that can damage the reputation of the City or undermine confidence in the City of Guelph</i>	4.5	Adaptive Controls prove to be immature technology, resulting in implementation difficulties. (This risk is deemed to be low as other municipalities have implemented the technology successfully.)	3	1	3

<i>Financial</i>	<i>Risk related to decisions about assets, liabilities, income and expenses including asset management, capital and operational funding, economic development, theft or fraud</i>	4.6	As 2.6, with added possibility that Adaptive Controls do not deliver expected dimming savings. (This risk is deemed to be low as the savings estimates are based on actual experience from other municipalities.)	4	2	8
Regulatory	<i>Risk related to the consequences of non-compliance with laws, regulations, policies or other rules</i>	4.7	As 2.7	4	1	4
OVERALL						22

Viable Option	Option ID#	Description
Sell the asset to GHESI, upgrade to LED plus adaptive controls	5	Same as Option 3, but with adaptive controls.

Risk Categories	Category Definition	Risk ID#	Description	Impact	Likelihood	TOTAL
Service Delivery	<i>Risk of not meeting customer expectations</i>	5.1	As 4.1, with the added risks of losing sovereignty over the Adaptive Controls asset and inability to choose a low-cost maintenance service provider.	3	2	6
Employees	<i>Risk that employees, contractors or other people at the City will be negatively impacted by a policy, program, process or project including physical harm.</i>	5.2	N/A – No risks identified in this category.	0	0	0
Public	<i>Risk that the policy, program or action will have a negative impact on the citizens of Guelph</i>	5.3	As 4.3, with the additional risk that selling a public asset would be perceived negatively by citizens.	4	1	4
Physical Environment	<i>Risk that natural capital will be damaged</i>	5.4	As 4.4	3	1	3
Reputation	<i>Risk associated with anything that can damage the reputation of the City or undermine confidence in the City of Guelph</i>	5.5	As 4.5	3	1	3
<i>Financial</i>	<i>Risk related to decisions about assets, liabilities, income and expenses including asset management,</i>	5.6	As 4.6	4	2	8

	<i>capital and operational funding, economic development, theft or fraud</i>					
Regulatory	<i>Risk related to the consequences of non-compliance with laws, regulations, policies or other rules</i>	5.7	As 4.7	4	1	4
OVERALL						28

APPENDIX C: BENEFIT ANALYSIS OF VIABLE OPTIONS (SECTION 7.2)

Conduct this analysis for ALL viable options including Status Quo.

Viable Option	Option ID#	Description
Status Quo	1	Retain legacy street lighting technology.

Benefit Categories	Category Definition	Stakeholders (Specific Groups)	ID#	Description	Impact	Likelihood	TOTAL	
Organizational Culture	See Section 7 of Business Case User Guide	N/A	1A	N/A	0	0	0	
Organizational Performance		Facilities Management, Finance	1B	No benefit.	0	5	0	
Organizational Sustainability		Facilities Management, Finance	1C	No benefit. Continued exposure to electricity cost increases higher than the rate of inflation.	0	5	0	
Organizational Accountability		N/A	1D	N/A	0	0	0	
8 domains of Community Well-being		Healthy Populations	Citizens	1E	No benefit. Light trespass in sleeping quarters continues to detract from quality of sleep, resulting in higher incidence of depression, insomnia, cardiovascular disease, and cancer.	0	5	0
		Environment	Insect populations, migratory birds	1F	No benefit. Ongoing harm due to urban sky glow.	0	5	0
		Democratic Engagement	N/A	1G	N/A	0	0	0
		Community Vitality	N/A	1H	N/A	0	0	0
		Leisure and Culture	N/A	1I	N/A	0	0	0
		Education	Citizens, youth in particular	1J	No benefit. Ongoing inability to engage in amateur astronomy due to urban sky glow.	0	5	0
		Living Standards	N/A	1K	N/A	0	0	0
		Time Use	N/A	1L	N/A	0	0	0
OVERALL							0	

Viable Option	Option ID#	Description
LEDs with Photocells	2	Implement LED street lighting with photocell actuators.

Benefit Categories	Category Definition	Stakeholders (Specific Groups)	ID#	Description	Impact	Likelihood	TOTAL	
Organizational Culture	See Section 7 of Business Case User Guide	N/A	2A	N/A	0	0	0	
Organizational Performance		Facilities Management, Finance	2B	No benefit.	0	5	0	
Organizational Sustainability		Facilities Management, Finance	2C	Reduced street lighting electricity consumption reduces exposure to electricity cost increases higher than the rate of inflation.	2	4	8	
Organizational Accountability		N/A	2D	N/A	0	0	0	
8 domains of Community Well-being		Healthy Populations	Citizens	2E	Light trespass into citizen sleeping quarters is reduced or eliminated, resulting in better quality sleep and reduced incidence of depression, insomnia, cardiovascular disease, and cancer.	2	5	10
		Environment	Insect populations, migratory birds	2F	Reduced urban sky glow leads to reduced interference with normal biological processes.	1	5	5
		Democratic Engagement	N/A	2G	N/A	0	0	0
		Community Vitality	N/A	2H	N/A	0	0	0
		Leisure and Culture	N/A	2I	N/A	0	0	0
		Education	Citizens, youth in particular	2J	Reduced/eliminated urban sky glow yields opportunities to engage in amateur astronomy.	1	4	4
		Living Standards	N/A	2K	N/A	0	0	0
		Time Use	N/A	2L	N/A	0	0	0
OVERALL							27	

Viable Option	Option ID#	Description
Sell the asset to GHESI, upgrade to LED only	3	Sell street lighting asset to Guelph Hydro. Have GHESI implement LED street lighting ASAP with photocell actuators.

Benefit Categories	Category Definition	Stakeholders (Specific Groups)	ID#	Description	Impact	Likelihood	TOTAL	
Organizational Culture	See Section 7 of Business Case User Guide	N/A	3A	N/A.	0	0	0	
Organizational Performance		Facilities Management, Finance	3B	No benefit.	0	5	0	
Organizational Sustainability		Facilities Management, Finance	3C	As 2C, but without ability to choose a low-cost maintenance option.	1	4	4	
Organizational Accountability		N/A	3D	N/A	0	0	0	
8 domains of Community Well-being		Healthy Populations	Citizens	3E	As 2E.	2	5	10
		Environment	Insect populations, migratory birds	3F	As 2F.	1	5	5
		Democratic Engagement	N/A	3G	N/A	0	0	0
		Community Vitality	N/A	3H	N/A	0	0	0
		Leisure and Culture	N/A	3I	N/A	0	0	0
		Education	Citizens, youth in particular	3J	As 2J.	1	4	4
		Living Standards	N/A	3K	N/A	0	0	0
		Time Use	N/A	3L	N/A	0	0	0
OVERALL							23	

Viable Option	Option ID#	Description
LEDs with Adaptive Controls	4	Same as Option 2, but with the addition of Adaptive Controls, providing a Smart City Network that could be used by various City departments as a platform for various applications. Scope would include enlisting other City departments to provide support for the additional investment.

Benefit Categories	Category Definition	Stakeholders (Specific Groups)	ID#	Description	Impact	Likelihood	TOTAL	
Organizational Culture	See Section 7 of Business Case User Guide	N/A	4A	N/A	0	0	0	
Organizational Performance		Facilities Management, Finance	4B	No benefit.	0	5	0	
Organizational Sustainability		Facilities Management, Finance	4C	As 2C	2	4	8	
Organizational Accountability		N/A	4D	N/A	0	0	0	
8 domains of Community Well-being		Healthy Populations	Citizens	4E	As 2E	2	5	10
		Environment	Insect populations, migratory birds	4F	As 2F	1	5	5
		Democratic Engagement	N/A	4G	N/A	0	0	0
		Community Vitality	N/A	4H	N/A	0	0	0
		Leisure and Culture	N/A	4I	N/A	0	0	0
		Education	Citizens, youth in particular	4J	As 2J, with additional light reductions from adaptive controls.	2	4	8
		Living Standards	N/A	4K	N/A	0	0	0
		Time Use	N/A	4L	N/A	0	0	0
OVERALL							31	

Viabile Option	Option ID#	Description
Sell the asset to GHESI, upgrade to LED plus adaptive controls	5	Same as Option 3, but with adaptive controls.

Benefit Categories	Category Definition	Stakeholders (Specific Groups)	ID#	Description	Impact	Likelihood	TOTAL	
Organizational Culture	See Section 7 of Business Case User Guide	N/A	5A	N/A	0	0	0	
Organizational Performance		Facilities Management, Finance	5B	No benefit.	0	5	0	
Organizational Sustainability		Facilities Management, Finance	5C	As 3C	1	4	4	
Organizational Accountability		N/A	5D	N/A	0	0	0	
8 domains of Community Well-being		Healthy Populations	Citizens	5E	As 3E	2	5	10
		Environment	Insect populations, migratory birds	5F	As 3F	1	5	5
		Democratic Engagement	N/A	5G	N/A	0	0	0
		Community Vitality	N/A	5H	N/A	0	0	0
		Leisure and Culture	N/A	5I	N/A	0	0	0
		Education	Citizens, youth in particular	5J	As 4J.	2	4	8
		Living Standards	N/A	5K	N/A	0	0	0
		Time Use	N/A	5L	N/A	0	0	0
OVERALL							27	

Viable Option	Option ID#	Description
Status Quo	5	Postpone.

Benefit Categories	Category Definition	Stakeholders (Specific Groups)	ID#	Description	Impact	Likelihood	TOTAL	
Organizational Culture	See Section 7 of Business Case User Guide	N/A	5A	N/A	0	0	0	
Organizational Performance		Facilities Management, Finance	5B	No benefit.	0	5	0	
Organizational Sustainability		Facilities Management, Finance	5C	No benefit. Continued exposure to electricity cost increases higher than the rate of inflation.	0	5	0	
Organizational Accountability		N/A	5D	N/A	0	0	0	
8 domains of Community Well-being		Healthy Populations	Citizens	5E	No benefit. Light trespass in sleeping quarters continues to detract from quality of sleep, resulting in higher incidence of depression, insomnia, cardiovascular disease, and cancer.	0	5	0
		Environment	Insect populations, migratory birds	5F	No benefit. Ongoing harm due to urban sky glow.	0	5	0
		Democratic Engagement	N/A	5G	N/A	0	0	0
		Community Vitality	N/A	5H	N/A	0	0	0
		Leisure and Culture	N/A	5I	N/A	0	0	0
		Education	Citizens, youth in particular	5J	No benefit. Ongoing inability to engage in amateur astronomy due to urban sky glow.	0	5	0
		Living Standards	N/A	5K	N/A	0	0	0
		Time Use	N/A	5L	N/A	0	0	0
OVERALL							0	

APPENDIX D: FINANCIAL ANALYSIS OF VIABLE OPTIONS (SECTION 7.3)

TEMPLATE	EXPLANATION OF USE	WHEN WOULD YOU USE THIS...
Capital Outlay & Financing	This tab provides an estimate of what you expect your gross capital outlay to be by component. Staff are also asked to show the anticipated cash flow of the capital expenditures and associated financing sources.	This information should be provided when your project or initiative includes work that is capital in nature resulting in a new asset or a betterment to an existing asset. Under the City's Tangible Capital Asset Policy, a tangible capital asset is a: <i>Non Financial Assets having physical substance that are acquired, constructed, or developed and:</i> <ul style="list-style-type: none"> • Are held for use • Have useful lives beyond 1 year • Are used on a continuing basis • Are not for sale in the ordinary course of operations A "Betterment" is a cost incurred to enhance the service potential of a TCA.
Operating Budget	This tab provides an estimate of your current and expected operating budget requirements resulting from your initiative. A three-year forecast is also applied to show the multi-year impact of the initiative as well as identify costs that are one-time in nature.	This information should be provided if your project, initiative or service has additional expenses associated with it that will be incurred on a day to day basis. Operating costs include both fixed costs and variable costs.
Facility Net Present Value (NPV)	NPV can be described as the difference between cash inflows and cash outflows over an extended period of time. It compares the present value of money today to the present value of money in the future, taking inflation and returns into account. This would usually be used for a large, long-term project that has significant capital and operating cost implications, such as a new facility.	This information could be provided to assist in making the following decisions: (1) for a cash generating project, determine whether or not to proceed with the project (for example, if the project has a positive NPV, then all else being equal, you would proceed) (2) To compare two or more potential projects that are not case generating to determine the project with the lowest net present cost (3) simply determine the cost, in today's dollars, of undertaking a single long-term project.
Return on Investment (ROI) -Simple	This tab will provide a straight forward ROI calculation for those initiatives that have a short-term, straight forward investment. Return on investment represents a performance measure that shows the incremental net benefit of the investment divided by the cost of the	This is a performance measure used to evaluate the benefit of an investment or to compare the benefit of a number of different investments. This measure is presented as a percentage or ratio.
Return on Investment (ROI) -Complex	This tab will provide a more complex ROI calculation for those initiatives that have a longer term/more staggered investment period. Return on investment represents a performance measure that shows the incremental net benefit of the investment divided by the cost of the investment.	
Breakeven - Units	Determines the number of units required to breakeven if your service/product needs to be full cost recovery. If your product/service does not need to be full cost recovery, this also provides the subsidization rate being applied.	This would be used if you were considering providing a new product or service. It would tell you how many units you need to sell given the costs and any subsidization rate associated with the good or service.
Breakeven - Sales	Determines the selling price that would need to be set in order to breakeven. If a subsidy is allowable, it incorporates the subsidization rate when calculating the selling price.	This would be used if you were considering providing a new product or service. It would tell you the selling price you need to set given the costs, forecasted units that will be sold and any subsidization rate associated with the good or service.
TERM	DEFINITION	
Debt Servicing	The annual cost (principle and interest) of debt	
Fixed Cost	A cost that does not change with an increase or decrease in the amount of goods or services produced. Fixed costs are expenses that have to be paid, independent of any business activity.	
Total Cost	The sum of variable cost and fixed costs	
Variable Cost	The cost of labor, material or overhead that changes according to the change in the volume of production units	

APPENDIX E: RISK MITIGATION STRATEGY ON SELECTED OPTION (SECTION 9.1)

Risk Management

A risk is an event, the product of impact and likelihood resulting from a given action and/or inaction, which impacts the achievement of desired outcomes. Indicate what existing controls are in place to mitigate/manage the risk.

Risk Mitigation Strategy for High Risks

List the High Risks (Total score >10) for the Recommended Option previously identified from Appendix B Qualitative Risk Analysis and state the Mitigation Strategy for each. Include these strategies in Implementation Strategy in Section 9.1.

Risk ID# (from Apdx A)	Risk Categories	High Risks Identified (Copy from Appendix A)	Risk Score	Mitigation Strategy
Enter #	Click here to enter text.	Click here to enter text.	Enter #	Click here to enter text.
Enter #	Click here to enter text.	Click here to enter text.	Enter #	Click here to enter text.
Enter #	Click here to enter text.	Click here to enter text.	Enter #	Click here to enter text.
Enter #	Click here to enter text.	Click here to enter text.	Enter #	Click here to enter text.
Enter #	Click here to enter text.	Click here to enter text.	Enter #	Click here to enter text.
Enter #	Click here to enter text.	Click here to enter text.	Enter #	Click here to enter text.

APPENDIX F: OUTCOME (TARGET) MEASUREMENT MATRIX (SECTION 9)

9.2 Desired Outcomes (Targets)

Describe how the project deliverables from section 9.1 will be measured in clear measurable terms (SMART – Specific, Measureable, Achievable, Relevant and Time-sensitive). Be sure to include high benefits (> 8) on the selected option from Appendix C.

Outcomes <i>i.e. Improved Employee Engagement</i>	Measure(s) <i>i.e. >50% employee engaged</i>	Tracking Method <i>i.e. Employee Engagement survey</i>	Timeframe <i>i.e. 2016 Survey</i>
3B. Implementation of Adaptive Controls yields a Smart City Network, with a large range of additional applications.	Minimum of three additional “Smart City” applications successfully deployed.	Interviews with deploying departments, including reference to their project documentation (particularly success criteria).	Three years after project completion (end of 2020).
3C. Reduced street lighting electricity consumption reduces exposure to electricity cost increases higher than the rate of inflation. Dimming provides added consumption savings.	Minimum of 70% reduction in street lighting energy consumption compared to what would have been consumed in the absence of the project.	Review street lighting bills in Utility Bill Management System. 25% of expected reduction by end of 2016, 75% by end of 2017, 100% by end of 2018.	Annually beginning at end of implementation.
3E. Light trespass into citizen sleeping quarters is reduced or eliminated, resulting in better quality sleep and reduced incidence of depression, insomnia, cardiovascular disease, and cancer. Additional light trespass reductions through dimming.	Minimum of 50% reduction of light being cast on residential property.	Photometric analysis of a random sample of residential areas. (A telephone survey could be conducted in addition or as an alternative.)	Baseline measurement as part of Investment Grade Audit. Follow-up measurement at end of implementation.
3J. Reduced/eliminated urban sky glow yields opportunities to engage in amateur astronomy. Additional reduction of urban sky glow through dimming.	>50% increase in reported levels of satisfaction with night sky visibility.	Interview with University of Guelph Astronomy Club.	Baseline measurement prior to launch of retrofit phase. Follow-up measurement at end of implementation.

APPENDIX G: SUPPLEMENTARY BUDGET INFORMATION (SECTION 10.1)

Complete this Appendix only if Community Engagement Plan is required for your business case and transfer the total amount to the "Community Engagement Plan" line of Implementation Cost in Section 10.1.

ESTIMATED BUDGET

Contractors/consultants:	Click here to enter text.
Print information, materials:	Click here to enter text.
Paid advertising, Mail-Outs:	Click here to enter text.
Venue and refreshments:	Click here to enter text.
Participant expenses: (childminding, accessibility accommodations)	Click here to enter text.
Other expenses:	Click here to enter text.
Total Estimated Budget for Engagement	Click here to enter text.

APPENDIX H: SUPPLEMENTARY PROJECT TEAM INFORMATION (SECTION 11.1)

Complete this Appendix only if Community Engagement Plan is required for your business case and transfer the information to Section 11.1.

ESTIMATED STAFF TIME

Engagement Planning: (i.e. Planning meetings, survey design, consultant meetings, etc.)	Click here to enter text.
Communications:	Click here to enter text.
Display/Materials preparation:	Click here to enter text.
Engagement activities implementation: (i.e. Sending out survey, setting up and staffing public meetings, follow up with participants, etc.)	Click here to enter text.
Data management:	Click here to enter text.
Evaluation:	Click here to enter text.
Total Estimated Staff Time for Engagement	Click here to enter text.

APPENDIX I: OTHER

Attach any other background data or additional information for your business case.



Presentation Outline



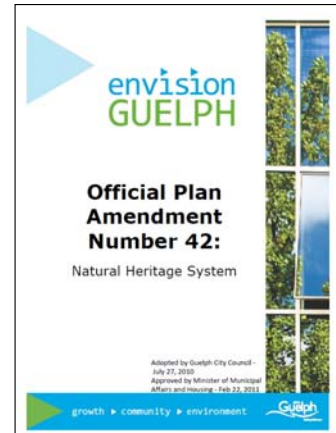
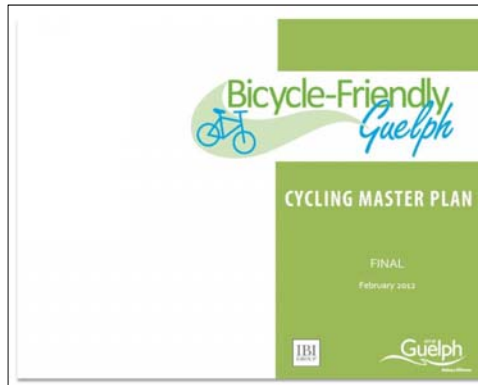
1. **Background**
2. **Study Objectives**
3. **Process**
4. **Public Engagement**
5. **Recommended Active Transportation Network**
6. **Details**
7. **Opinion of Cost**
8. **Priorities / Next Steps**



1. Background



- **Two Key Policies**




2. Study Objectives

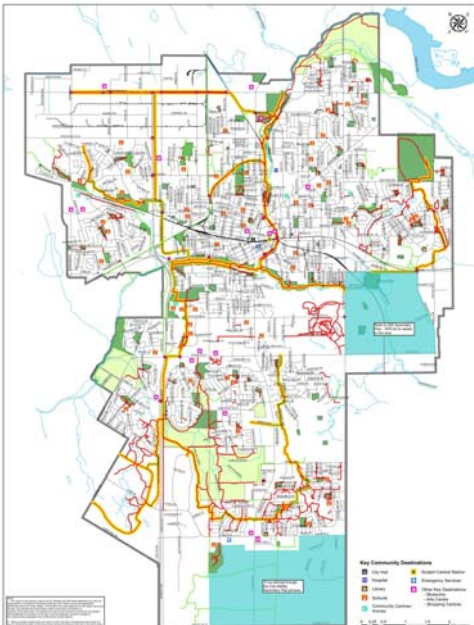


- **Understand current levels of use and existing trail conditions**
- **Engage with the public and stakeholders**
- **Confirm trail linkages that form part of the AT network (the “Yellow Line”)**
- **Prepare design guidelines to inform future trail upgrades**
- **Undertake feasibility assessment of the AT network route**
 - identify improvements based on industry guidelines, and actions, costs for the improvements
 - Identify sections that may require an environment impact study (EIS) as part of trail improvements
 - Prepare EIS terms of reference for each applicable section




2. Study Objectives





Focus on a portion of the off-road trail network

- On-road cycling network has been well developed
- Examine main spines of the trail network
- Existing rails
- Important new trail links



2. Study Objectives



Upgrades to existing trails including

1

trail surface



Changing the surface from hard packed natural or a granular surface to asphalt

2

trail width



Widening narrower trails to achieve a consistent width

3

sightlines



Removing visual obstructions (e.g. trimming vegetation, modifying trail alignment)

4

maintenance



Improving trail maintenance
Consideration for winter maintenance on main trails

5

trail slope



Modifying trails to reduce steep slopes, which may include realigning or hard surfacing of some slopes

6

Crossings of roadways & waterways



Bridging over waterways at key locations
Improvements at road crossings

7

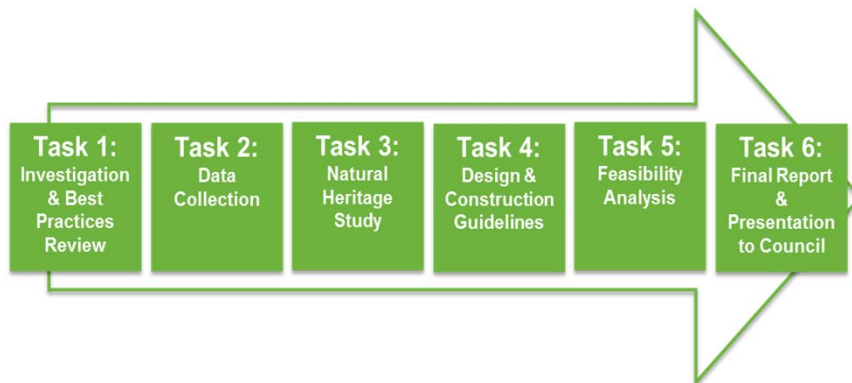
signage



Improving trail signage to provide better orientation and directional information



3. Study Process



4. Public Engagement



- Trail counts and intercept surveys
- Mindmixer
- Website / email / Facebook
- Stakeholder Workshops (2 rounds)
 - Technical Agencies
 - Community Stakeholders
- PIC #1 – Canada Day (2015 Riverside Park)
- Tour de Guelph (July 7, 2015)
- Meetings (e.g. running clubs)
- Mobile display
- PIC #2 – Guelph Farmers' Market (October 31, 2015)



4. Public Engagement



Design

- Focus on connectivity first
- Improve wayfinding
- Don't remove all the challenges on trails
- **Paving / asphalt (...NO)**
 - Environmental impact, aesthetic concerns, enables cyclists to travel more quickly, harder on feet, hips and knees, potential for black ice
- **Paving / asphalt (...YES)**
 - Key routes north-south, east west
 - On steep slopes where there is trail erosion
 - More reliable for commuting all year around

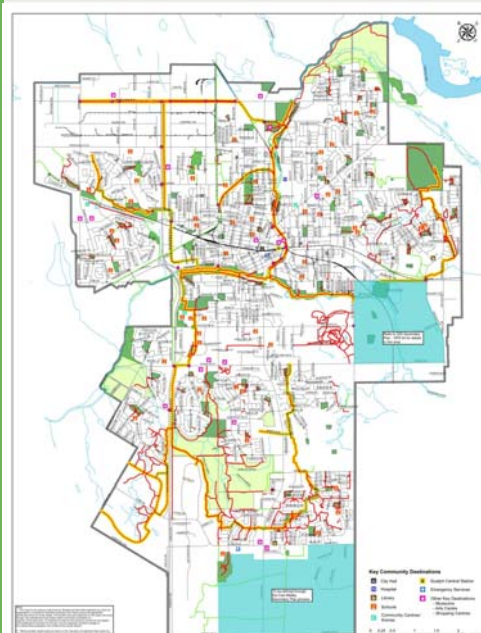


Management / Implementation

- Reinststate a Trail Advisory Committee
- Dedicated staff person for trail improvements
- More general trail maintenance and expand winter maintenance of key routes
- Trail monitoring to measure use and surveys to gauge satisfaction



5. Recommended ATN Routing

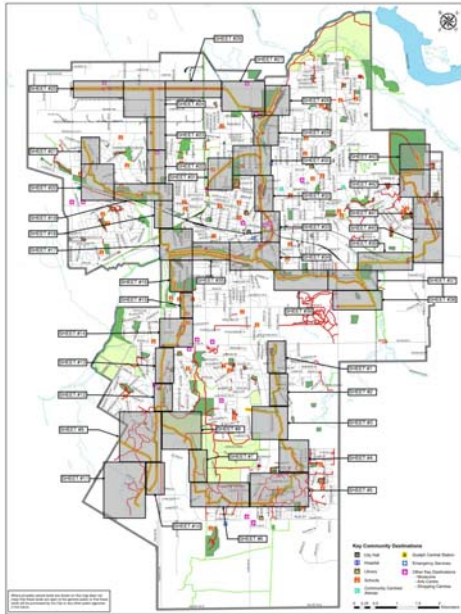


The 'Yellow Line'

- Comprised of existing off-road trails, new off-road trail links, critical on-road connections
- Complements and connects with on-road cycling network
- North-south and east west spines
- Connects neighbourhoods with recreation, employment and commercial destinations



6. Details

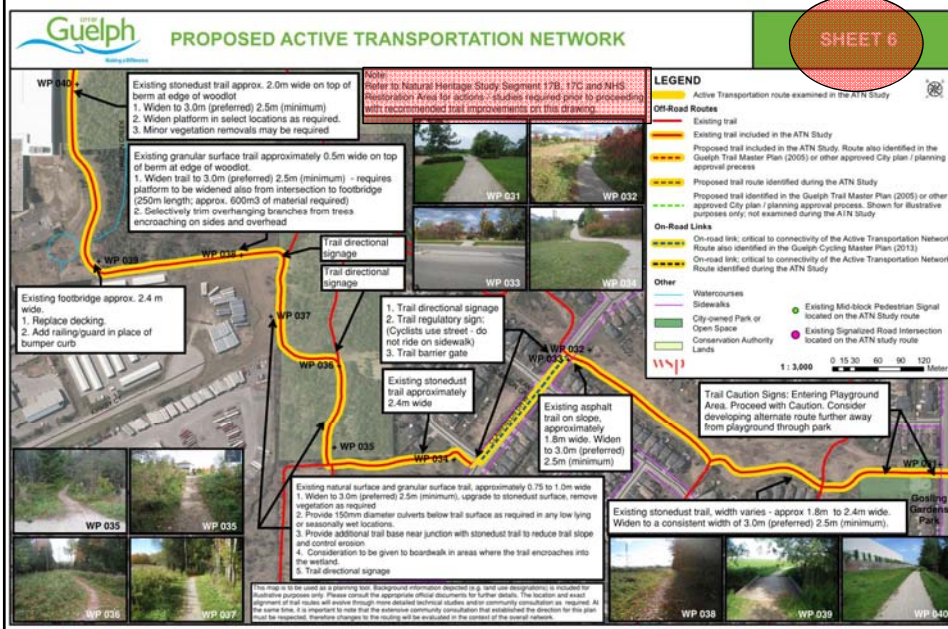


Key Plan to 43 individual maps throughout the ATN


- Maps grouped into Project Areas
- Details provided for each of the project areas
- Cross referenced to Natural Heritage Study




6. Details - Example



6. Details - Example





PROJECT AREA 3: JENSON BOULEVARD TO HANLON CREEK TRAIL (MAP SHEETS 5, 6)

1. Location

Start: The intersection of Summerfield Drive and Jenson Boulevard

End: The Hanlon Creek Trail north of Laird Road at Southgate Drive

Ward: 6

- Approximate Length: 3,900 m

Connects with:

- Existing bike lanes on Gordon Street
- Multiple connections to existing trail network in Westminster Woods and Clairfields neighbourhoods

2. Rationale

- Builds on / enhances existing trail network in southern part of the City
- Much of the routing can be using off-road trails with minimal requirement for on-road links
- Forms part of an east-west route in the south part of the City connecting to sport facilities, schools, parks, retail / commercial in the Clair Road / Gordon Street area, and to significant employment area in the Hanlon Business Park (east side of the Hanlon Expressway)

3. Observations and Recommendations

- Refer to accompanying drawing sheet 5 and 6

4. Detail Design Notes

- Facility Type: Off-road multi-use trail
- Typical Cross Section: 3.0 m wide multi-use trail (2.5 m minimum)
- Key Design Elements to be Considered:
 - Add short in-boulevard trail link along north side of Clairfields Drive
 - Provide curb cut where trail meets street on Clairfields Drive
 - Widening required to existing stonedust and granular 'A' trail between Gordon St and Gosling Gardens to a consistent minimum width of 2.5 m
 - Asphalt required on slope near Gosling Gardens to control erosion

- Existing stonedust and granular trails to be widened to a consistent width of 3.0 m where possible, and 2.5 m as a minimum
- Add additional base near trail junction to raise grade of approach and reduce slope
- Provide 150 mm culverts below trail surface in any low lying or seasonally wet areas along this section of the trail
- Platform widening required on top of berm along trail on south side of Hanlon Creek wetland to accept a minimum 2.5 m wide stonedust trail
- Provide curb cuts in various location where trails meets streets to improve accessibility as noted on map sheets
- Add cautionary signage near the playground in Westminster Woods Park Boulevard Park and Gosling Gardens Park to caution cyclists that young children may be playing on or near the trail
- Add trail directional signs at key decision points

Key Constraints:



- Trail improvements in a portion of Hanlon Creek wetland (i.e. from waypoint 053 to 038) will require significant widening and improvements over the existing trail, including tree removals

Natural Heritage: Portion of the route is located within the natural heritage system. Refer to Guelph STP, TTC, ISA and TRS Transportation Plans for detailed requirements.

- Road Crossings: Farley Drive: Existing crossing with curb cuts, Clairfields Drive East, Gordon Street, Gosling Gardens, Clairfields Drive West
- Structures Required: Repair / upgrade existing trail bridge on Hanlon Creek Trail north of Kirby Court (waypoint 039)


5. Public / Stakeholder Consultations

- Guelph Accessibility Advisory Committee (GAAC)
- Grand River Conservation Authority
- Notification of Construction

Guelph Active Transportation Network
June 2017
57


6. Details



Summary of ATN Route Lengths

- 46 km off-road on existing and new trail links
- 8 km on-road links critical to connectivity of the ATN

Category (corresponds with map legend)	Length (km)
Off-road	
Existing off-road trail included in the ATN	25.8
Proposed off-road trail included in the ATN (proposed from other City plans / studies)	17.0
Proposed off-road trail included in the ATN (route identified during the ATN study and not included in other City plan / studies)	3.4
Total Off-Road	46.2
On-road	
On-road link critical to connectivity of the ATN (also identified in the Guelph Cycling Master Plan)	3.8
On-road link critical to connectivity of the ATN (route identified during the ATN study and not included in other City plan / studies)	4.0
Total On-Road	7.8
Grand Total	54.0



6. Details



Design Guidelines

- Best practice review
- Covers a range of guidelines

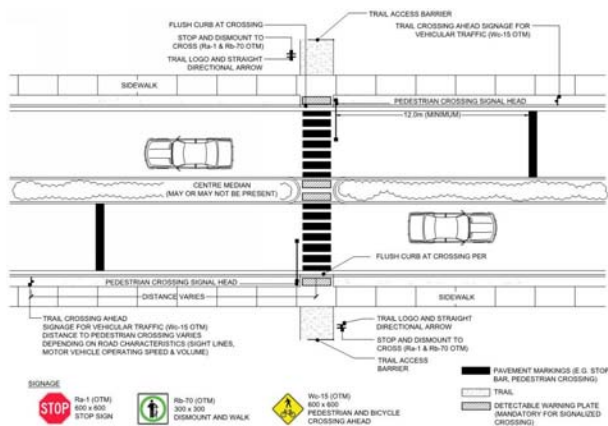


Figure 4.7: Trail crossing at a signal controlled location

wsp

6. Details



ATN Route Maintenance

- Summer and winter
- Sets out tasks based on frequency
 - (i.e. range from immediately / emergency to every 10-20 years for major capital replacements)
- \$8000.00 per kilometer, per year (includes summer and winter)
- Maintenance budget needs to increase as network expands
- Review current trail maintenance practices and modify as necessary based on recommendations in the study



wsp

7. Opinion of Cost



Capital

- Off-road
- On-road (only those links considered critical to connectivity of the ATN route)
- Improvements to existing links (\$5.1M)
- Addition of new links (\$6.8M)
- Includes contingencies (15% design and 20% general contingency)

Maintenance

- Off-road only
- Assumes on-road is included as part of road maintenance program
- Summer
- Winter (assumes entire ATN is maintained in winter)
- Existing off-road links \$200,000 annually
- New off-road links \$75,000 annually



8. Priorities / Next Steps



1. Upgrade select locations / sections of the existing ATN where the width, surface type or other conditions are clearly substandard
2. Complete short missing links in the existing ATN, with focus on links where demand is anticipated to be the highest
3. Ensure that improvements and new links are included in larger public infrastructure projects
4. Continue to work with the local development industry to plan, design and implement links as part of new neighbourhood developments.
5. Build upon projects already in the approval process or planned as identified by City staff.



8. Priorities / Next Steps



6. Focus on connections to key destinations such as community centres, schools, major City parks.
7. Complete advance planning for larger, more complex projects so they will be ready for implementation in the mid-term.
8. Monitor success, and modify approaches to future projects based on lessons learned from monitoring
9. Report back to Council on the successes and challenges related to the ongoing development of the ATN
10. Share successes and lessons learned with other municipalities



Staff Report



To **Committee of the Whole**

Service Area Infrastructure, Development and Enterprise Services

Date Tuesday, July 4, 2017

Subject **Guelph Active Transportation Network Design Guidelines and Feasibility Study**

Report Number IDE 17-88

Recommendation

1. That the Guelph Active Transportation Network Design Guidelines and Feasibility Study dated June 2017, prepared by WSP and Paradigm Transportation Solutions Limited, be approved;
2. That funding for year-round maintenance of the Active Transportation Network per the recommendations of the Guelph Active Transportation Network Design Guidelines and Feasibility Study be included in the proposed 2018 Operating Budget;
3. That funds to implement the Guelph Active Transportation Network Design Guidelines and Feasibility Study over the next ten years, estimated to be \$12,268,000, be included in the proposed 2018-2027 Capital Budget;
4. That the operating budget to provide year-round maintenance of the proposed active transportation network be increased as new trails are constructed to a total additional amount of approximately \$271,000 per year once fully implemented.

Executive Summary

Purpose of Report

The report describes the findings and recommendations of the recently completed Guelph Active Transportation Network Design Guidelines and Feasibility Study (GATNS), and proposes an implementation strategy to achieve the study recommendations.

Key Findings

The GATNS proposes a core network of primarily off-road routes to facilitate active transportation year round throughout the city. This trail network for both commuter and recreational use complements the on-road cycling network proposed in the

2013 Cycling Master Plan (CMP) and includes some on-road segments identified in the CMP to reach major destinations such as employment areas or schools. The study also recommends maintaining the network year-round so that users have a reliable transportation option through all seasons. The network, once fully implemented, will encourage more people to cycle and walk as a transportation choice year-round, resulting in reduced traffic congestion and related emissions as well as positively contributing to individual and community health.

The GATNS builds on existing policies and plans to ensure an integrated approach. Collaborative teams have been established across service areas to ensure coordinated implementation of the GATNS and that development of new policies and plans reflect the GATNS elements.

Financial Implications

The capital cost of implementing the proposed active transportation network is \$12.3 million. This is a conservative estimate that includes funding for additional studies and capital costs that may arise at the detailed design stage.

The anticipated annual operating expense of maintaining the complete proposed network year-round is estimated at \$271,000 per year.

Potential cost savings, cost avoidance and financial benefit resulting from implementation of the ATN are identified in the report.

Report

The City of Guelph is committed to encouraging sustainable transportation options including cycling as a means of reducing traffic congestion and related emissions. Cycling and walking are also active modes that positively contribute to individual and community health. The 2013 Cycling Master Plan established the City's vision to become one of Canada's most bicycle-friendly communities by providing a safe, attractive and practical cycling environment. The GATNS will help address the first two elements of the Bicycle-Friendly Guelph vision: to get more people cycling; and to create a safer and more connected network.

The Guelph Active Transportation Network Design Guidelines and Feasibility Study ("GATNS") in Attachment 1 identifies future upgrades of the City's network of trails to improve connectivity for active forms of transportation such as walking, running, cycling and inline skating. This study was initiated based on the principle that providing a core network of commuter-grade trails that have minimal on-street sections, controlled crossing locations, and pleasant terrain can be instrumental in the City's ability to achieve its mode-share targets for cycling.

WSP Consulting (formerly MMM group) and Paradigm Transportation Solutions Limited were awarded the contract to undertake the Guelph Active Transportation Network Design Guidelines and Feasibility Study. The process to complete the study included:

- Collection of background data, evaluation of existing and proposed facilities, and a review of best practices;
- Identification of segments requiring additional environmental impact studies;
- Consultation with local technical agencies, external stakeholder groups and local interest groups and the general public;
- Creation of design guidelines for different environments such as woodlands, wetlands, parklands and boulevards;
- Evaluation of the construction and cost feasibility of upgrading and maintaining the selected network.

The feasibility study determines which trails are best suited for upgrades as well as the estimated construction and maintenance costs of changes recommended by the design guidelines while the proposed design guidelines consider what upgrades will look like in different environments such as woodlands, wetlands, city parks and road boulevards.

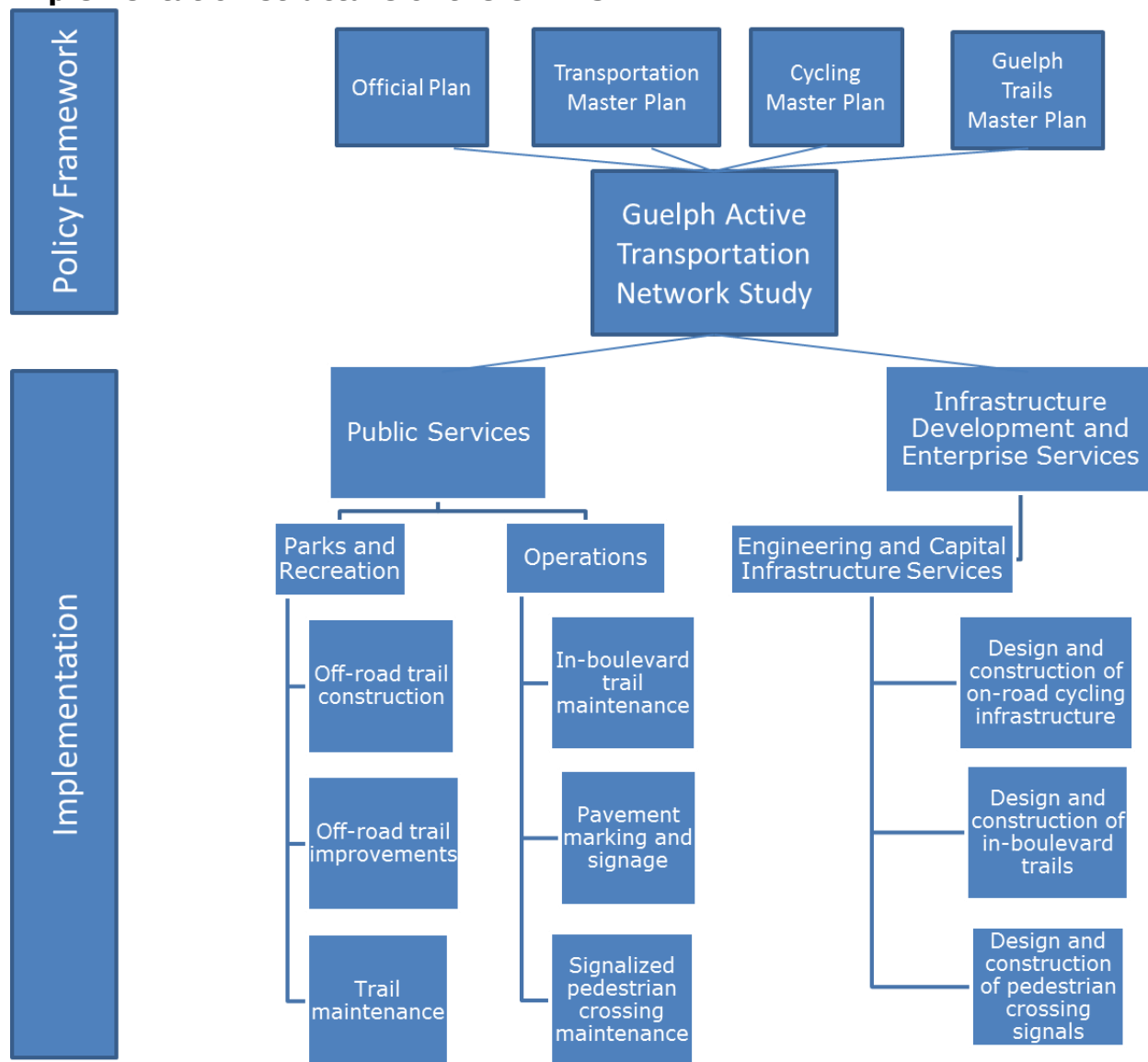
This commuter trail network complements the on-road cycling network proposed in the 2013 Cycling Master Plan. The GATNS includes some on-road segments identified in the Cycling Master Plan to reach major destinations such as employment areas or schools. The map in Attachment 2 illustrates how the two networks are integrated.

Integration of GATNS with existing policies and plans

The GATNS builds on existing policies and plans to ensure an integrated approach, as demonstrated in the following sections. Further, collaborative teams have been established across service areas to ensure that a coordinated implementation of the GATNS and that development of new policies and plans reflect the GATNS elements.

Figure 1 illustrates the policy and governance structure for the implementation of the GATNS.

Figure 1. This organizational chart describes the supportive policies and implementation structure of the GATNS.



2013 Cycling Master Plan

The City of Guelph is committed to encouraging sustainable transportation options including cycling as a means of reducing traffic congestion and related emissions. Cycling and walking are also active modes that positively contribute to individual and community health. The 2013 Cycling Master Plan (“CMP”) has a target of tripling the number of daily trips made by bicycle from one percent to three percent by 2022 as an indicator of successfully achieving a “bicycle-friendly” city. Growing from 1 percent to 3 percent of the daily mix of traffic on city streets was seen as an ambitious yet achievable objective. More than 54 percent of the proposed on-street cycling network has been completed since the CMP was approved by council in 2013. Data collected through the Transportation Tomorrow Survey for southern

Ontario communities in 2011 indicated that trips by bicycle accounted for 1.1% of all daily trips. This survey program is conducted every five years and the 2016 results, which have not yet been released by the program, will indicate how much mode-shift to cycling has been achieved since the Cycling Master Plan was adopted.

[Research of cycling perceptions in the United States](#) suggests that the majority of people consider themselves “interested but concerned” about cycling (Geller, no date). In order to help reach the CMP goal of three percent of daily trips made by bicycle, the perceived barriers of the “interested but concerned” group must be addressed.

The 2009 and 2015 Guelph cycling surveys both conclude that 62% of respondents would cycle more often if they had an off-road alternative for all or part of their trip. Three-quarters of survey respondents in both 2009 and 2015 indicated that a major barrier to cycling more often was poor road or trail conditions such as potholes, debris and snow. One way to achieve the CMP’s mode share target is to appeal to this group of residents who would cycle more often if they could use connected, maintained off-road routes.

Official Plan

The GATNS proposes using a subset of the existing and proposed off-road trail connections that are already in Schedule 7 – Trails Network in Official Plan Amendment 48 (currently under appeal). The GATNS recommends enhanced design guidelines and minor alignment improvements within the proposed active transportation network to bring trails up to a standard that supports year-round commuting by active modes: notably cycling and walking.

The GATNS includes a review of all trail segments that encroach upon or cross through the Natural Heritage System as defined in the City’s current Official Plan. Appendix B – Natural Heritage Study in Attachment 5 includes a review of potential impacts of the proposed active transportation network and scopes requirements for further studies at a high level. This technical appendix provides an understanding of the scope of work and budget required to implement the recommendations of the ATN study and mitigate impacts to the natural environment.

In some areas, the proposed active transportation network route is subject to specific planning processes. The proposed route will align with the Plan of Subdivision for the Hanlon Creek Business Park and shows additional conceptual off-road connections, subject to land owner agreements and site development (Sheets 9, 10 and 11 in Attachment 1).

The route through the Guelph Innovation District (GID) defers to the GID Secondary Plan (OPA 54, 2012) and will be subject to refinement through the block planning process.

The Clair-Maltby Secondary Plan will have regard for the recommended design guidelines and maintenance standards presented in the GATNS. This secondary plan was initiated in 2016 and is expected to be completed in 2019/2020. Opportunities

for extensions of the active transportation network into the Clair-Maltby secondary plan area will be addressed through the Mobility policies of this plan.

2005 Guelph Trail Master Plan

The GATNS includes a review of the 2005 Guelph Trail Master Plan in order to identify opportunities for improving the design guidelines and standards recommended in the 2005 document. Section 5.0 of the GATNS recommends design guidelines for trails that are part of the active transportation network, including boulevard trails, off-road typical trails, off-road trails through woodlands/wetlands and a boardwalk trail design.

The 2005 Guelph Trail Master Plan is being updated with anticipated completion in 2018/2019. It will be coordinated with the Guelph Active Transportation Network Study.

2005 Guelph-Wellington Transportation Study

Serving as Guelph's transportation master plan, the 2005 Guelph-Wellington Transportation Study provides the underlying policies to support the Cycling Master Plan and sustainable mobility options in Guelph.

The transportation master plan is being updated this year with an anticipated completion in 2019, and will include policies to support and sustain the Active Transportation Network study and the 2013 Cycling Master Plan.

Implementation

The GATNS provides guidance on the proposed trail routing and alignment, design standards, maintenance and costing. Details will be further refined during the detailed design and construction of trail sections through the coordination of the appropriate departments. The off-road trails of the proposed active transportation network are planned and operated by Parks and Recreation, Public Services. Sections within the public road right-of-way are designed and constructed by Engineering and Capital Infrastructure Services in order to coordinate with other planned road and infrastructure projects where possible. Operations Services is responsible for the maintenance of any facilities within the road right-of-way including in-boulevard multi-use paths, on-street cycling facilities and mid-block crossings.

The GATNS report groups related trail segments into "project areas" to describe the recommendations, implications and cost estimates. The GATNS suggests high, medium and low-priority rankings for each project area to help City staff prioritize the completion of the network. High-priority segments include:

- Project Area 11 - Sheets 22-25: Silvercreek hydro corridor trail and Woodlawn Road Multi-use trail from Silvercreek Parkway to Elmira Road.
- Project Area 12 - Sheets 26-27: Marilyn Drive, Woodlawn Cemetery and Woodlawn Road multi-use path up to Silvercreek Parkway.

- Project Area 14 - Sheets 30-31: Spurline Trail at London and Edinburgh Roads to the Trans Canada Trail at Eramosa Road.
- Project Area 17 - Sheets 40-43: Watson Parkway multi-use trail to Eastview Road multi-use trail

The GATNS recommends year-round maintenance to make trails accessible and reliably available in all seasons. This will result in operating costs for Parks and Recreation of approximately \$8 per linear meter per year. To compare, the average maintenance cost of the general trail network that is not winter maintained is approximately \$5 per meter per year. Operating costs for segments within the road right-of-way are estimated at the same level for simplicity, but may differ because facilities in the road right-of-way are held to different regulatory standards than off-road trails. The intent is for all sections of the network to be held to the same standards of year-round maintenance so that users can rely on a clear, connected route to get to and from their workplace, school or other destination any day of the year.

The GATNS will also serve as a guide to inform the design standards for future extensions of the active transportation network into currently undeveloped areas such as into the Clair-Maltby Secondary Plan area.

City staff have acquired pedestrian and cyclist count equipment that are being used to capture anonymous user counts on trails and bike facilities. Baseline counts were collected throughout the summer and fall of 2016 at various points throughout the proposed Active Transportation Network, and staff will be able to do follow-up counts as the GATNS network is implemented. The expectation is that the improvements will lead to higher counts along the proposed active transportation network compared to 2016.

Financial Implications

Overview of capital and operating costs

The capital cost of implementing the proposed ATN Study is estimated to be \$12,268,000 over a 10-year period. This is a conservative estimate that includes studies, design, and construction costs, as well as a contingency to address any additional technical studies or capital expenditures not identified by this report. For further details, refer to the project area summaries in Attachment 1.

The total off-road capital cost estimate is \$7,184,747. The total on-road capital cost estimate is \$5,082,615. These projects are summarized in Attachment 3 - Estimated capital costs of the proposed active transportation on-road network.

The estimated annual operating cost to maintain and repair the ATN as proposed is \$271,020 per year based on \$8 per linear meter per year. This includes trails maintenance by Parks and Recreation as well as maintenance of facilities within the road right-of-way by Operations.

Potential cost savings, cost avoidance and financial benefit resulting from implementation of the ATN include:

- Incorporates aspects of AODA compliance such as grading, surface improvements and signage, rather than this being an additional cost to Parks and Recreation Services;
- Enables more people to cycle to work or school thereby reducing vehicle demand for road space, parking spaces and road maintenance;
- A connected, well maintained commuter trail network makes it easier and more attractive to tourists to visit our city, which has economic benefit for local businesses;
- Good active transportation networks assist in attracting new employers who want to offer quality of life to their future employees.

Consultations

The GATNS considered public input from the community and stakeholders. The community engagement strategy included passive trail user counts, intercept surveys of trail users, engagement with residents at public events, a stakeholder workshop and public information centre, and online survey tools. Key themes that were identified included:

- Paved versus granular surface trails
- Need for improved road crossings
- Need for improved signage and way-finding
- Need for improved and increased year-round maintenance
- Retaining some of the challenging attributes of trails to keep it interesting
- Requiring developers to build trails at the same time as roads and houses
- Upgrade some trails and create more connections

There was no clear preference for paved versus granular trail surface treatment throughout the community engagement. As a result, the consultants have recommended context-sensitive surface treatments that take into consideration the natural environmental sensitivities, winter maintenance considerations and anticipated trail users such as cyclists, dog-walkers and runners. The system elements are described on the trail segment sheets in Attachment 1.

A full list of stakeholders consulted as part of this project is provided in Attachment 4 – Appendix A Consultation Record.

Corporate Administrative Plan

Overarching Goals

Service Excellence
Innovation

Service Area Operational Work Plans

Our Services - Municipal services that make lives better
Our Resources - A solid foundation for a growing city

Attachments

The attachments below are available at:

<http://guelph.ca/living/getting-around/traffic-demand-management/active-transportation-network/active-transportation-network-study/>

- ATT-1 Attachment 1 Guelph Active Transportation Design Guidelines and Feasibility Study
- ATT-2 Attachment 2 Map of Cycling master plan and proposed Active Transportation Network
- ATT-3 Attachment 3 Estimated capital costs of the proposed Active Transportation on-road Network
- ATT-4 Attachment 4 Appendix A – Consultation Record
- ATT-5 Attachment 5 Appendix B – Natural Heritage Study

Departmental Approval

Allister McIlveen – Manager, Transportation Services

Janet Sperling – Manager, Open Space Planning

Terry Dooling – Manager, Public Works

Melissa Aldunate – Manager, Policy Planning and Urban Design

Greg Clark – Program Manager, Capital Planning

Report Author

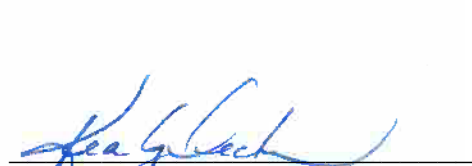
Jennifer Juste

TDM Program Manager

Approved By

Allister McIlveen

Manager, Transportation Services



Approved By

Kealy Dedman, P.Eng.

General Manager/City Engineer

Engineering and Capital

Infrastructure Services

519-822-1260, ext. 2248

kealy.dedman@guelph.ca



Recommended By

Scott Stewart, C.E.T.

Deputy CAO

Infrastructure, Development and Enterprise

Services

519-822-1260, ext. 3445

scott.stewart@guelph.ca



Draft Urban Design Manual: Vision and Action Plan
July 4, 2017



2009 Urban Design Action Plan

From Good Urban Design to Design Excellence?



➤ Action Plan to Urban Design Manual

Urban Design Manual Structure

Volume 1: Urban Design Vision

- Draft is attached to report

Volume 2: Urban Design Action Plan

- Draft is attached to report

Volume 3: Urban Design Standards and Directions

- Volume 3 is forthcoming

Vol. 1: Design Vision

- Environmental → Sustainability
- Health → Transportation and Parks
- Economic → Economic Dev.

“ Use good urban design to enhance the already established sense of place that its citizens enjoy, creating a complete and distinct community.”

Vol. 2: Urban Design Action Plan

Part 1: Opportunity Areas

1. Downtown
2. Nodes and Corridors
3. Employment Areas
3. Infill and Residential
4. City-Wide Opportunities

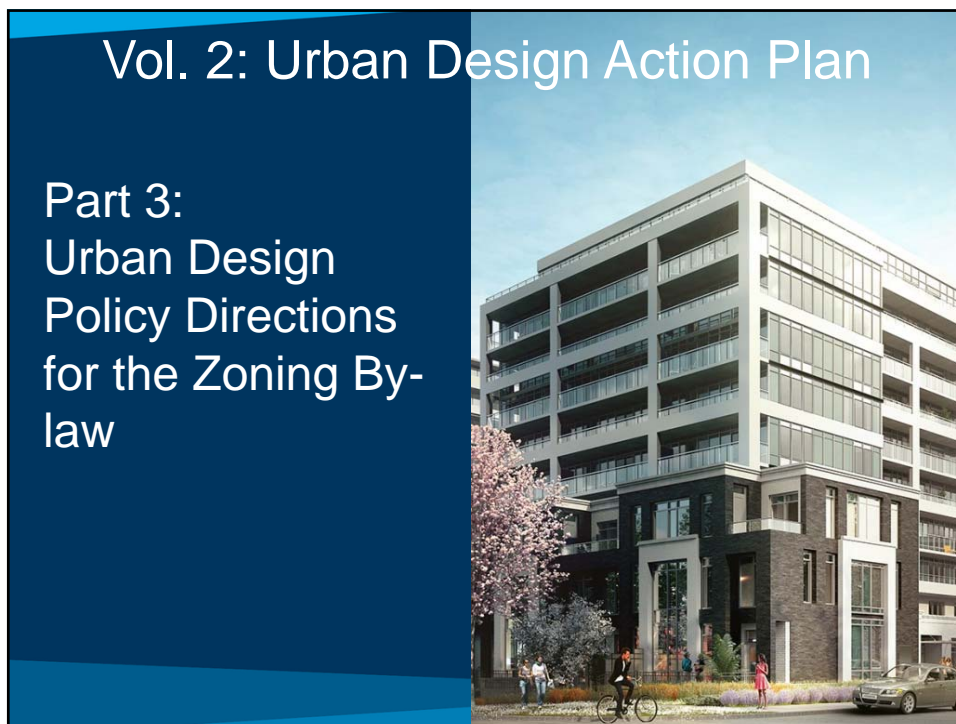


Vol. 2: Urban Design Action Plan

Part 2: Activating public space and Institutional Strengthening

1. Placemaking
2. Project review,
engagement and
education






Vol. 2: Draft Priority Actions

Zoning By-law Update
Embed urban design vision into the by-law

Commercial Built Form Standards
Provide clearer direction for commercial development

York Road Community Plan
Review function, design and character of this corridor

Update Engineering Standards
Update technical standards to support streetscape and community design vision



➤ Page 2-45

Vol. 2: Draft Priority Actions

Complete Townhouse and Mid-rise Standards

Provide clearer direction for these types of buildings

Intensification Analysis and Cultural Heritage Action Plan

Complete to review opportunities for sensitive infill

City-Wide Wayfinding System

Create an integrated and comprehensive city-wide directional signage

Event Planning System

Encourages community programming and animation of public spaces

Vol. 2: Draft Priority Actions

Tactical Urbanism

Use pilot projects to test ideas to activate public spaces and engage the community

Wind and Shadow Study Terms of Reference

Complete terms of reference for planning submission requirements

Public Symposiums or Lectures

Implement biennial event to speak on topics relevant to urban design and planning

Intensification Corridor Concept Plans

Prepare plans for Gordon Street, Stone Road and Silvercreek Parkway

Recommendation

That the draft Urban Design Vision and Urban Design Action Plan components of the Urban Design Manual be received.

➤ **Final version scheduled for Q3/4**

Staff Report



To **Committee of the Whole**

Service Area Infrastructure, Development and Enterprise Services

Date Tuesday, July 4, 2017

Subject **Draft Urban Design Manual: Urban Design Vision and Design Action Plan**

Report Number 17-79

Recommendation

That the draft Urban Design Vision and Urban Design Action Plan components of the Urban Design Manual be received.

Executive Summary

Purpose of Report

To provide Council with two draft components of the Urban Design Manual: the draft Urban Design Vision and draft Urban Design Action Plan. The documents address the Official Plan vision, objectives and policies and discusses how these can be achieved through urban design. This draft is being presented to Council to seek input directly from Council prior to finalizing the Urban Design Vision and Action Plan.

Key Findings

The Urban Design Action Plan is being developed by the Policy Planning and Urban Design division of Planning, Urban Design and Building Services in collaboration with other related departments. This project builds on the City's 2009 Urban Design Action Plan and will serve a number of purposes, including:

- assisting in implementing the new design directions introduced through the City's Official Plan Update;
- providing direction to a future review of our comprehensive zoning by-law;
- supporting an efficient development review process; and,
- informing future City projects that relate to the public realm.

Council was also circulated an Information Report with an earlier draft version of the document on April 21, 2017 and invited to provide individual feedback.

The draft Urban Design Vision and Urban Design Action Plan components of the Urban Design Manual have been prepared based on internal and external stakeholder engagement (Attachment 1). These documents have been drafted using broad interdepartmental coordination to implement the vision of OPA 48. It includes a vision for urban design in Guelph and updated urban design action plan items. Staff is presenting the draft document to Council for receipt and input.

Financial Implications

The development of the Urban Design Manual is funded through approved capital funding

Report

With significant population growth planned for Guelph, as required by Provincial legislation, the way Guelph is growing is changing, including further intensification and more complete, mixed-use greenfield neighbourhoods. Because urban design excellence is important on all scales (regional, city, neighbourhood, street and individual site), it plays a key role in managing this growth.

The Urban Design Action Plan is being developed by Policy Planning and Urban Design division of Planning, Urban Design and Building Services in collaboration with other related departments by way of an internal circulation and workshop conducted. It involves a corporate-wide review of current urban design policy and practices, engagement of staff and stakeholders in setting directions and creation of an action list to promote and enhance the delivery of improved urban policy and design in the City. The Urban Design Manual will provide a thoughtful and consistent approach to urban design in Guelph.

This project builds on the 2009 Urban Design Action Plan and will assist in implementing the directions established in the City's updated Official Plan (Official Plan Amendment 48), and provide direction to a future comprehensive Zoning By-law update. This project was introduced as part of the report (Urban Design Action Plan Update and Urban Design Manual Project, Report 16-24) presented in April 2016 (Attachment 2). Council also received an Information Report with an earlier draft version of the document on April 21, 2017.

The draft Urban Design Vision and Urban Design Action Plan components of the Urban Design Manual have been prepared based on internal and external stakeholder engagement (Attachment 1). These documents have been drafted using broad interdepartmental coordination to implement the vision of OPA 48. It includes a vision for urban design in Guelph and updated urban design action plan items. Staff is presenting the draft document to Council for receipt and input.

Draft Urban Design Manual: Urban Design Vision (Volume 1) and Urban Design Action Plan (Volume 2)

Volume 1: Urban Design Vision for Guelph

This volume describes the urban design vision that is based on the Official Plan vision, strategic goals, objectives and policies. It outlines what urban design is, why it is important and the Guelph context. Completed community engagement is also documented. Finally, it includes the Urban Design Principles for the City based on Council-approved Official Plan objectives.

Volume 2: Urban Design Action Plan

The Urban Design Action Plan addresses the Official Plan vision, objectives and policies and discusses how these can be achieved through urban design. It also addresses current challenges in realizing the vision. It is divided into three parts.

Part 1: Opportunity areas

This part focuses on distinct areas in the city with potential for significant change. It also considers city-wide opportunities. The recommended actions in Part 1 address the plans, policies and projects that should be developed and implemented. Each section in Part 1 briefly describes an opportunity area, its urban design vision, recommended objectives, challenges and actions. Part 1 also contains tables that outline expected outcomes of the actions for each opportunity area, the general timeframe for implementation and whether or not the action requires a new allocation in the City's budget. The tables also highlight priority actions. It is recommended the City initiate priority actions within the next two to three years and, in the case of plans, studies, guidelines and processes, complete them within the next three to five years.

Part 2: Activating public space and institutional strengthening

This part focuses on the processes and programs the City should improve or initiate to ensure urban design objectives are met and increase awareness about urban design. A section on project review describes general strategies related to consultation and communication and identifies specific actions that support them. A section on promotion and education outlines initiatives the City should pursue to ensure City staff and Guelph citizens are informed about the importance of urban design.

Part 3: Urban design policy directions

The final part focuses on strengthening City policies and regulations. Policy directions included are largely based on the Official Plan update and are primarily intended to guide the update of zoning regulations through the comprehensive Zoning By-law review.

Volume 3: Urban Design Standards and Directions (Not Attached)

Volume 3 has been initiated and will continue to be developed including:

- Urban design concept plans for Community Mixed-Use nodes. (These have been completed and are on the City's website [here](#))
- Urban design concept plans for select Intensification Corridors. Staff is currently preparing concept plans for key sites along the Gordon Street Intensification Corridor.
- Townhouse and mid-rise built form standards which is an on-going project (See report 17-53 for further details).
- Built form standards for specific areas or land use forms such as Commercial Built Form Standards .

Based on emerging needs, future chapters may be added as needed (i.e. key sites), and, as appropriate, will be reviewed with Council as they are developed.

Summary of Recent Consultation

Staff released a draft UDAP on April 21, 2017. The purpose of the draft was to seek further comments from internal and external stakeholders to inform the final draft which is attached to this report. This draft is being presented to Council to seek input directly from Council prior to finalizing the Urban Design Vision and Action Plan.

An online survey was also provided and was completed by 9 participants. The top priority identified by the respondents was the completion of an update to the City's Zoning By-law to support the City's vision as outlined in OPA 48. Staff also received letters from Guelph Urban Forest Friends (GUFF) Steering Committee (Attachment 3). In regards to Volume 1: Urban Design Vision, GUFF was concerned about the lack of mention of trees based on their importance in the City. While Volume 1 is meant to be more high level, staff has added reference to trees. GUFF also provided comments on Volume 2. GUFF had a number of comments and in particular were concerned about the lack of references to climate change. While the Urban Design Action Plan is multidisciplinary in its approach, it is not meant to be the only action for all topic areas. In some instances the Action Plan connects action with other studies or initiatives that address the matter e.g. for trees the Urban Forest Management Plan and the Tree Technical Manual more directly address the urban forest. In regards to climate change, the City has recently established a Climate Change Office to lead the City's efforts in climate mitigation, adaptation and sustainability. This office will manage a cross-departmental working group to deal with City climate change and sustainability initiatives.

A number of changes have been made to the draft Manual released in April, 2017 to reflect feedback received from the public, and internal City Departments. In addition, to minor wording changes to address grammar and administrative changes have been made. This concludes the community and stakeholder engagement for Volumes 1 and 2. There will be additional stakeholder and

community engagement for future components of Volume 3 and as specific Urban Design Action Plan projects are initiated.

Next steps

Next steps and community engagement timing are currently scheduled as outlined in the following table.

Timing	Deliverable
Q3/4 2017	Finalize the Urban Design Manual based on Council input received on Report 17-79 and bring forward a recommended version to Committee of the Whole and Council for adoption
2017-2018	Continued development of Volume 3 of the Urban Design Manual, including stakeholder and public engagement in accordance with established work plans.

Financial Implications

The development of the Urban Design Manual is funded through approved capital funding.

Consultations

In addition to the recent consultation described earlier, the following engagement activities have informed the preparation of Volumes 1 and 2:

- Meeting with councillors for tours of their Wards (2015-2016)
- An Internal Workshop (February 2016) was held with representatives from internal departments including Engineering, Economic Development, Parks, Zoning, Forestry and Transit to give departments an opportunity to provide feedback. An internal circulation was also completed.
- Urban Design Manual Workshop (December 2016) was attended by approximately 100 people. Participants reviewed urban design actions for different areas of the city and helped prioritize actions to be completed first.
- A follow-up feedback form was filled in by 75 participants. Staff used this information from the survey to inform the urban design actions and priorities.
- Public and external stakeholder commenting period for review of draft document was conducted between April 24, 2017-May 15, 2017. An online survey was also used to structure feedback and was completed by 9 participants.

Corporate Administrative Plan

Overarching Goals

Service Excellence
 Financial Stability
 Innovation

Service Area Operational Work Plans

Our Services - Municipal services that make lives better
Our People- Building a great community together

Attachments

- *ATT-1 Draft Urban Design Manual: Urban Design Vision (Volume 1) and Urban Design Action Plan (Volume 2), dated July 2017 is available on the City of Guelph website at [Guelph.ca/urbandesign](http://guelph.ca/urbandesign)
- *ATT-2 April 20, 2016 Urban Design Action Plan Update and Urban Design Manual Project (IDE Report 16-24) is available on the City of Guelph website at:
http://guelph.ca/wp-content/uploads/council_agenda_042016.pdf
- ATT-3 Public Comments from Guelph Urban Forest Friends (GUFF) Steering Committee

Departmental Approval

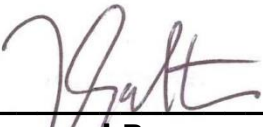
Not applicable

Report Author

David de Groot
Senior Urban Designer

Approved By

Melissa Aldunate
Manager of Policy Planning and Urban Design



Approved By

Todd Salter
General Manager,
Planning, Urban Design
and Building Services
(519) 822-1260 ext. 2395
todd.salter@guelph.ca



Recommended By

Scott Stewart, C.E.T.
Deputy CAO
Infrastructure, Development and Enterprise
519-822-1260, ext. 3445
scott.stewart@guelph.ca



Review of Urban Design Manual Volume 1

It is exciting to think Guelph will have a forward-looking Manual for Urban Design with lofty goals and statements that will help plans and policies to *“improve the livability, sustainability, economic vitality and attractiveness of Guelph and support its distinctive identity.”* { Pg 1-7}

We want to *“design our communities for walking and cycling through the establishment of complete neighbourhoods throughout our city”*. {Pg 1-8} *“Urban design deals with the design of buildings, groups of buildings, **spaces and landscapes**”*. {Pg1-7}

Energy efficiency and health are mentioned as important goals in this whole process, supported by

Street furniture, intersection layout, shading, lighting and traffic calming measures can all help to make walking and cycling along the street an attractive alternative to driving. { pg 1-8}

How is it with all these lofty goals the word Tree only appears once and that is in the one statement referring to the past before we encouraged density?

*Suburbs provided larger lots with single-detached homes surrounded by gardens, lawns and **trees**; a lifestyle seen as more appropriate for young children and growing families.* 1-12

In a denser environment, it takes much more planning to incorporate the trees- an essential part of any community where cycling and walking are encouraged, where health is important, where energy conservation is a prime goal and sustainability is critical. Trees and forested green spaces not only make for a better living environment and provide ecological services such as clean air, water retention, moderation of climate, but also contribute to lower stress and better mental health- an issue referred to on Pg 1-9 in research done by Professor C Ellard. Thus planning for individual trees as well as large connected green spaces are essential components of good urban planning.

All Guelphites know that ground water recharge is a key to managing our city and trees contribute immensely to that.

Humans aren't the only inhabitants of a healthy city: birds, insects, critters all need homes too. Trees are habitat for all of them. Spring flowering trees are a vital source of food (nectar and pollen) for pollinating insects such as bees (native bees and the non-native honeybee). Also the leaves of many trees including oak, willow, cherry and birch are essential food for the caterpillars of butterflies and moths. In turn, these caterpillars are a major source of protein for baby birds. Imagine a city without birds? So trees are essential to the sustainability of urban ecosystems as well as the livability of our city.

Guelph has always taken pride in its green city approach and even all the pictures scattered in the document have trees in them. But in this case, these are not worth a thousand words. If reference to trees and their role in Urban Design Planning are not mentioned, then there will not be trees in the pictures of the future. We can already see this in many developments in the newer areas of Guelph...there are no spaces for trees, only services, roads and sidewalks. The sidewalks roads and trails are unshaded and will be of limited use to walkers and cyclists in a warming climate.

The section of the document referring to the Economics of densifying and its tax return says: *“The resulting tax base associated with land use intensification will contribute to a more financially and environmentally sustainable city, help foster a healthier population, and generate long-term return on the taxpayers’ investment”*. {Pg 1-10} If we don’t assign an economic value to the trees and the services they provide, they will be left out of the equation. In the rush to increase tax return, green space and greenery are one of the first casualties.

The final text entitled Basic Urban Design Principles says, *“Adaptable and well-designed infrastructure, buildings and open space result in communities and places that remain viable and attractive for many generations, while supporting a high quality of life.”* {Pg 1-15}. Surely infrastructure includes growing things, especially trees that may in fact last longer than the sewer system. Open spaces are of much greater importance in a denser setting and require thoughtful attention to trees and other greenery.

How is it then in the Principles Based on Official Plan Objectives {Pg-1-15} there is no reference anywhere to the value of or space for trees, shrubs, greenery? Are they not part of the infrastructure in the development of a healthy, liveable, energy-efficient sustainable city? There is not one picture of Guelph in the document without green growing things adding to it.

So many trees and green spaces are lost by the sin of omission and neglect. This document seems to be part of that pattern.

Submitted by Guelph Urban Forest Friends Steering Committee

Contact: Sue Rietschin 519 821 6340
guffguelph@gmail.com



Guelph Urban Forest Friends Response to Urban Design Action Plan Volume 2

We have reviewed this document and noted areas where we have questions, concerns, comments and suggestions. We have a question regarding what seems to be a missing element in both documents: where is the issue of climate change and implications for Urban Design addressed? The document makes a single reference to it on page 2-29. We note that on page 3 of our response.

We support the overall vision for Guelph that would result in a beautiful, livable, sustainable city with city departments working together to achieve the outcomes. We are hoping our suggestions will contribute to that end.

Part 1 Opportunity Areas

Downtown

The picture (2-9) is a beautiful representation of MacDonnell street replete with trees...and full of possibility. But unless the appropriate space for trees is made, Guelph will end up with what Douglas St looks like in the picture (2-8) where there are very limited trees and no remediation possible.

The vision statement refers to a downtown “surrounded by leafy neighbourhoods” which perhaps describes it now. But as the picture (2-10) shows, perhaps inadvertently, there could be no “leafy” in the future except for trees in public parks, without appropriate zoning requirements.

Community Mixed Use Nodes

We support the vision of “over the long term, the nodes are intended to become urban villages that will feature main streets with on street parking, **street trees**, multi-story buildings” (2-12)

Pictures (2-13) of Woolwich St intensification show the trees remaining after intensification. That would require strong zoning regulations to preserve the trees or to ensure appropriate space for replanting is provided.

Under Challenges, it is recognized that “providing space for Green infrastructure (trees)” is difficult. This is the only place in the document that green infrastructure is implicitly defined as trees. Is this the definition?

In the Action Plans for the Nodes (2-15)

“5. Invest in **streetscape** improvements that **encourage** space for **green infrastructure**, pedestrian, bicycle and transit-friendly multi-modal strategies.” If we want trees we have to do more than encourage their planting within a streetscape. We must plan for the appropriate space required. Trees cost money to maintain, yet the financial and aesthetic benefits they return are much greater than the cost. The shade they provide is essential for pedestrian and bicycle friendly places.



Intensification Corridors

The picture of Gordon Street (2-16) exemplifies the current problem in much of our recent development...no place for trees in front of those townhomes to shade the sidewalk. In the text underneath, there is a reference to “the streetscape should also be reviewed to make the roads safer and attractive to pedestrians and cyclists.” Surely a sidewalk in front of developments with no shade is antithetical to encouraging walkers and cyclists?

The picture (2-17) showing the vision for the intensification on Woolwich at Marilyn is filled with trees...but unless there are clear strategies for appropriate spaces for trees, Guelph will get what that picture on Gordon St depicts.

Nowhere in the action plans does it include direct statements about trees and the appropriate requirements for them only referring to the ubiquitous “streetscapes”.

Employment Areas and Guelph Innovation District

We are glad to see the reference to amending “the zoning bylaw to include urban design regulations for existing and new employment areas with a focus on reducing surface parking, supporting different modes of travel and integrating **green infrastructure**.” (2-23). But, does this mean trees or nice landscaping or lawns? We surely hope the bylaws will specify and provide the appropriate space and requirements for trees as well as other elements of sustainable, native green infrastructure.

Neighbourhood Infill and residential Development

In the box on Challenges is listed “Integrating existing trees into new Developments” (2-25) and the pictures beside it and on page 2-24 shows exactly the issue...new infill houses with no space for trees in an old neighbourhood with lots of trees.

Action Plan for this section includes: “#1. Complete update to engineering standards to enable compact and innovative streetscape and community design, including street trees, cycling infrastructure and pedestrian amenities” (2-26). We are glad to see a direct reference to street trees and assume the standards will have the proper space requirements. In #5 which refers to “urban design standards for townhouses and mid-rise buildings” there is no reference to green infrastructure or trees. (2-26). Should this not be an important part of the standards?

Under Objectives (2-26) we are glad to see this reference:

“4. preserve existing trees to help retain the character of the neighbourhood.” Perhaps an addition to the objective should also be to ensure space to plant new trees as well.

City Wide Opportunities

On page 2-29 we are very happy to see the dominant place given to the Urban Forest Management plan and Natural Heritage areas. It is wonderful to see the Objective of “maintaining and increasing the tree canopy cover within the city.”

The vision of enhancing “Guelph’s natural heritage system and urban forest” and “using trees to define the character of neighbourhoods, streets and parks.” is exactly what we would want. But, the rest of the document does not sustain these objectives or vision in any tangible, measurable way.

This area of the document makes the only reference in either Volume 1 or 2, to what might be the most serious problem facing humanity, **climate change**.

The value of trees to a city, not just in natural heritage areas but everywhere, cannot be overestimated. Increasing urbanization and **climate change** necessitates closer monitoring of tree health and maintenance. (2-29)

Though GUFF is truly appreciative of this direct reference to the impact on trees, we are extremely concerned that there are no other references to this issue in any way. It would seem Urban Design should be closely focused on the impact of heat, rain events, flooding, water management etc. that could be mitigated by design elements both in buildings and their environments. Is this not an omission?

Following this observation of the needs of trees, is the statement:

“The value of trees to a city, not just in natural heritage areas but everywhere, cannot be overestimated. Increasing urbanization and climate change necessitates closer monitoring of tree health and maintenance. Besides protecting existing mature trees, planting more trees on public land is one of the most cost effective investments the City can make to improve its urban design”

This seems to reduce the application of the urban design vision to the easiest place where an urban forest can be increased- city parks. What about streets and neighbourhoods where shade, habitat and water uptake are critical?

In the Action Plan, #5 refers to completing “the Tree Technical Manual to update tree guidelines for right-of-ways to ensure they reflect current best practices for sustaining street trees”. This partially completed document has been in the works for years and deserves to have more than a TBD opposite the date. We have lost many trees to the lack of this comprehensive overview that would break through the silos of the city departments.

Utilities and lighting

The picture accompanying “Develop a strategy for burying hydro lines along Gordon Wyndham and York” (2-30) shows the beautiful trees as background to utilities. This will present a challenge that should be identified. There needs to be a statement as to the priority to maintain existing trees where possible as utilities are buried and the creation of appropriate space for planting new ones. A new tree requires 30 cu meter of space, 1 meter deep, which buried utilities can compromise.

Major Roadways

Hanlon Beautification Project will “encourage landowners to plant **native** trees along the edge of the highway” (2-31) and the action plan includes an objective for additional trees along the major roadways. We strongly support the emphasis on native trees for these plantings.

Part 2 Activating Public Space and Institutional Strengthening

Tactical Urbanism

We love the picture chosen (2-35) to illustrate this. It shows trees in pots as part of the design for imagining public spaces. Is this not a message of their importance and the need to explicitly state their place in all the action plans developed?

PART 3 Urban Design and Policy Directions

In spite of the concerns, importance and challenges expressed in the document for the preservation of trees and the need to grow the canopy, nowhere in this portion of the document are trees or even green infrastructure mentioned. It is spectacularly barren! There is some reference to “buffer landscape strips” in the Employment Zoning, which could be entirely made up of grass. Surely if we can talk about parking, driveways and built structures we can talk about trees and green infrastructure?

Streetscapes in almost all the pictures include trees, but trees will not get there just because they are in the pictures in a document. A well planted streetscape must include a growing zone of at least 30 cu m, 1 m deep for a single tree. This minimum amount of space and more space for groupings of trees should be stated in the Residential Zoning Bylaw Directions (2-49) so that space between driveways can be designed to accommodate this, utilities placed to allow space for roots and setbacks from streets and sidewalks managed accordingly.

Many of our comments in the other section of the document should also be reflected in the in the policy directions. Surely the policy directions should support the major themes underlying this document and address the missing piece of Climate Change? If the document is going to use the term “green infrastructure” it should also be defined as to what that includes. To some people that means grass. If it means trees, then use the word “trees” and be clear. But perhaps this document could go a step further and find a way to include the full range of habitat opportunities for creatures other than humans: birds, pollinators, mammals, amphibians. It could clearly identify which of these habitats should exist in the city and include policy directives to ensure that happens. Rainwater gardens, native shrubs and trees, pollinator friendly plantings and wetlands could be examples of what are included.

If the elements of green infrastructure are not clearly defined and specified, they won't happen. The only exceptions are lawns, invasive plants and non-native grass...and most of these are the least sustainable green infrastructure possible.

The GUFF Steering Committee

Contact Person: Sue Rietschin
Email: guffguelph@gmail.com
Website: guffguelph.ca

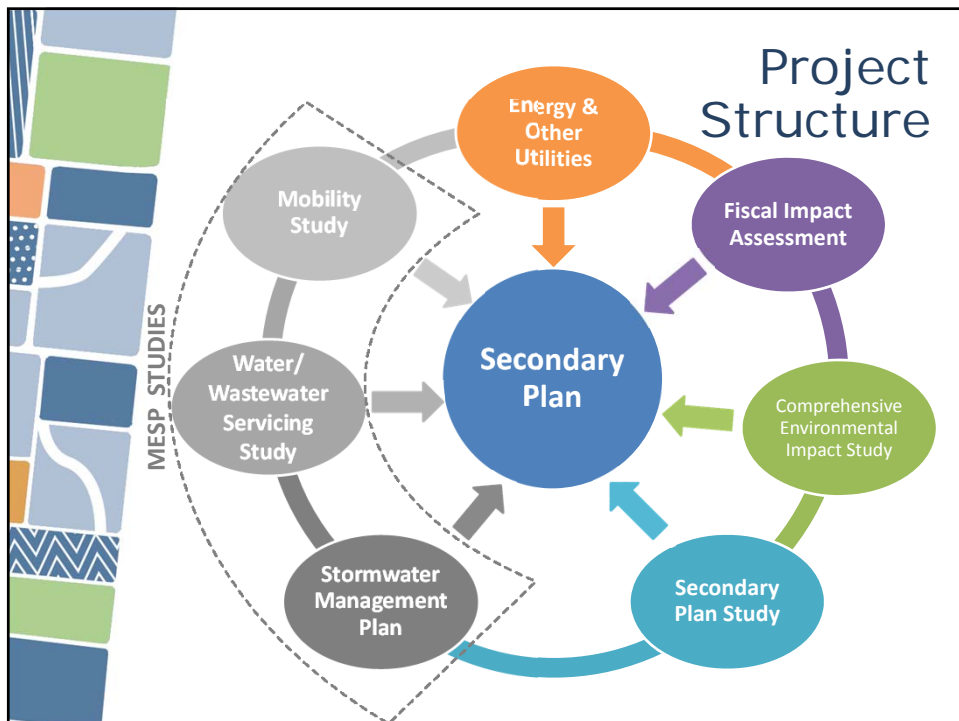


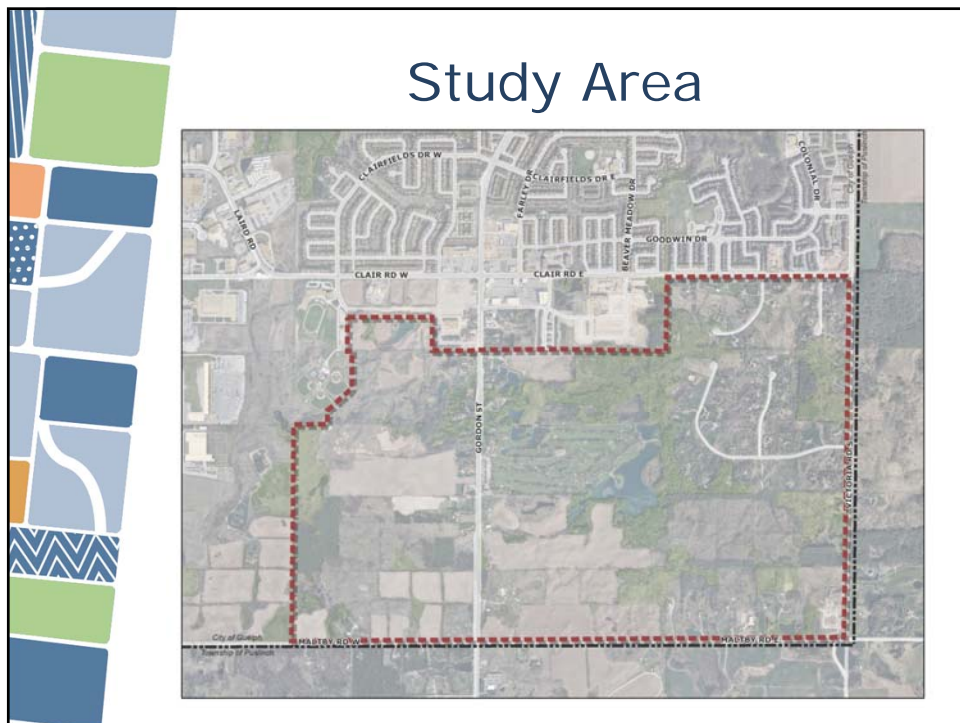
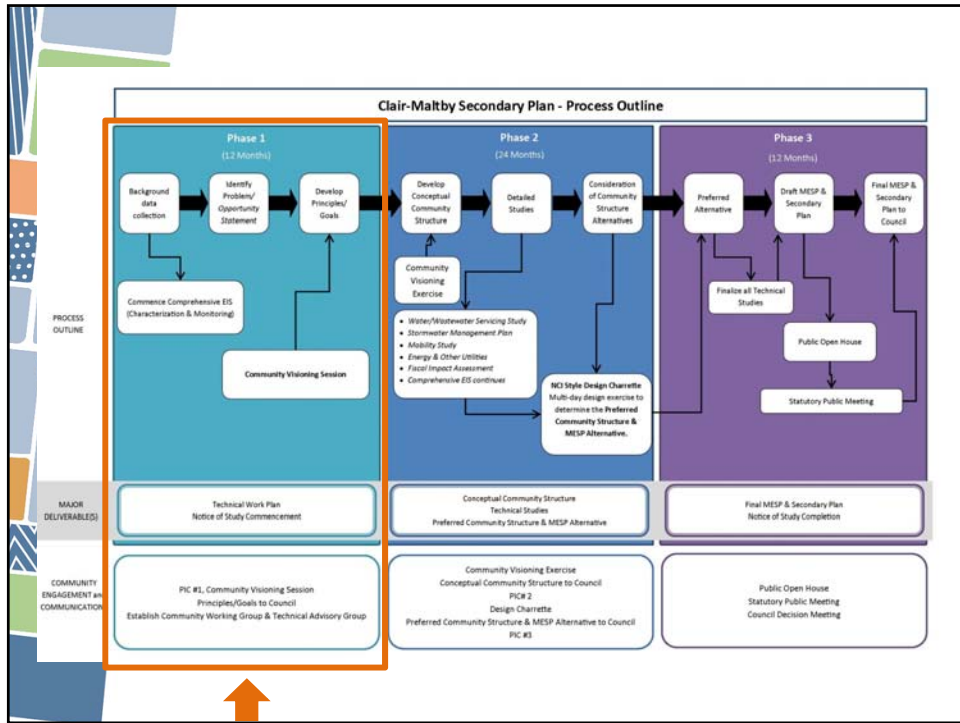
Clair-Maltby

Transform. Connect. Community.

Phase 1 Report

Recommended Vision & Guiding Principles







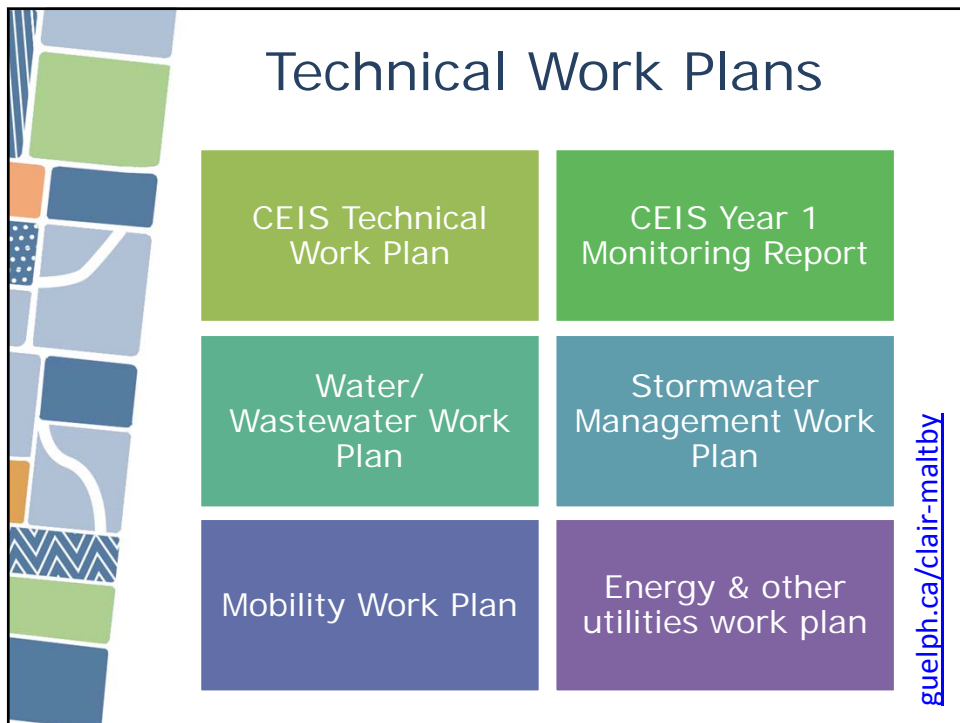
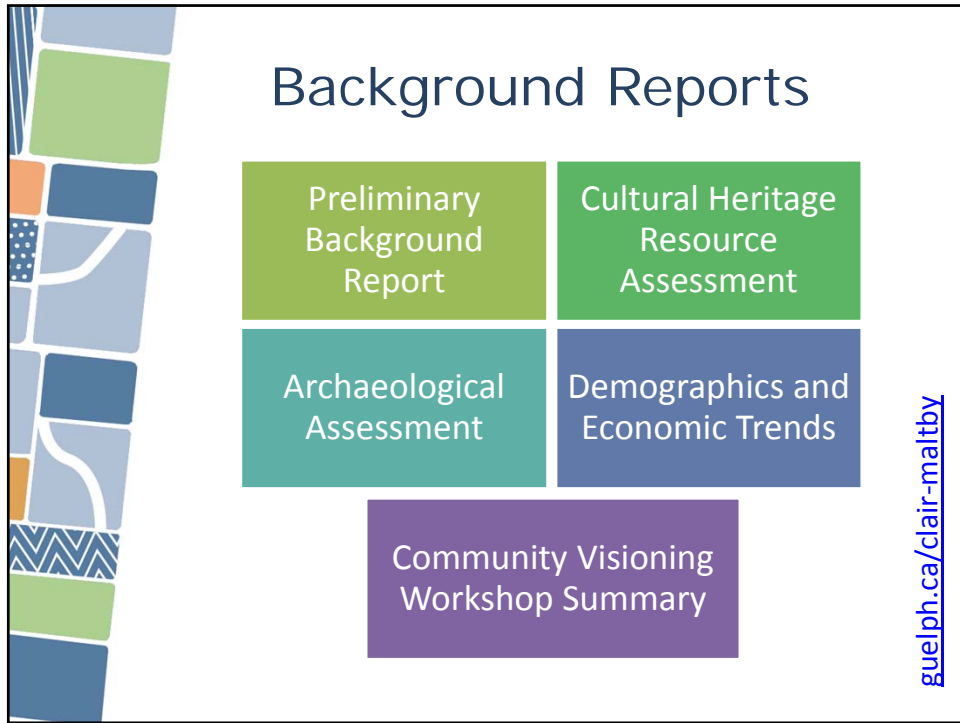
Phase 1 – Work

- Environmental monitoring & characterization
- Background reports & technical work plans
- Project specific graphics
- Problem/Opportunity statement
- Vision and guiding principles



Phase 1 Community Consultation

- Property Owner Meeting
- TAG
- CWG
- Notice of Study Commencement
- PIC #1 & Community Visioning Workshop





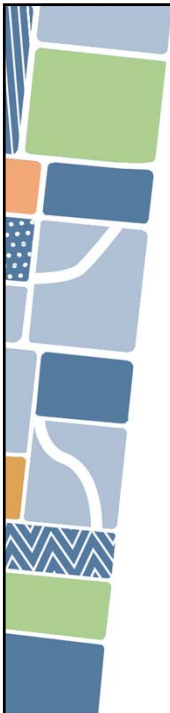
Vision

Clair-Maltby will be a vibrant, urban community that is integrated with Guelph's southern neighbourhoods, as well as having strong connections to Downtown, employment areas and the rest of the City.

The Natural Heritage System and the Paris Moraine provide the framework for the balanced development of interconnected and sustainable neighbourhoods.

This area will be primarily residential in character with a full range and mix of housing types and a variety of other uses that meet the needs of all residents.

A system of parks, open spaces and trails will be interwoven throughout to provide opportunities for active and passive recreation.



Guiding Principles

- Vibrant and Urban
- Green and Resilient
- Healthy and Sustainable
- Interconnected and Interwoven
- Balanced and Liveable



To **Committee of the Whole**

Service Area Infrastructure, Development and Enterprise Services

Date Tuesday, July 4, 2017

Subject **Clair-Maltby Secondary Plan Phase One Report and Recommended Vision and Guiding Principles**

Report Number IDE 17-76

Recommendation

1. That the Clair-Maltby Secondary Plan vision and guiding principles be approved as outlined in report IDE 17-76.

Executive Summary

Purpose of Report

The purpose of this report is to provide Council with a summary of the work completed during Phase 1 and provide Council the recommended vision and guiding principles for the Clair-Maltby Secondary Plan project for approval.

Key Findings

Phase 1 of the Clair-Maltby Secondary Plan began in early 2016 and concludes with the presentation of the Secondary Plan vision and guiding principles to Council. The recommended vision and 5 guiding principles focus on the following

1. Vibrant and Urban
2. Green and Resilient
3. Healthy and Sustainable
4. Interconnected and Interwoven
5. Balanced and Liveable

Work completed throughout Phase 1 of the project includes:

- Refinement of the study timeline;
- Finalization of the secondary plan boundary;
- Development and refinement of background reports and technical work plans for all components of the study;
- Establishment of graphics for all project materials;
- Development of a Problem/Opportunity statement for the Master Environmental Servicing Plan (MESP);
- Environmental monitoring and characterization;
- Establishment of a Technical Advisory Group (TAG) and Community Working Group (CWG);

- Notice of Study Commencement;
- Public Information Centre (PIC) #1 and a Community Visioning Workshop; and,
- Development of a vision and guiding principles for the study and secondary plan.

Phase 1 of the project has progressed on schedule and without exceeding the anticipated budget for the completed tasks.

Financial Implications

Capital funding to undertake this project was approved through the 2013-2015 and 2017 capital budgets.

Report

Purpose

The Clair-Maltby Secondary Plan is being undertaken in order to comprehensively plan the last unplanned greenfield area of the City. The purpose of the Clair-Maltby Secondary Plan is to develop a land use plan for the study area which provides more detailed planning objectives and policies than those found in the overall Official Plan. The purpose of the MESP component of the study is to determine appropriate municipal infrastructure and servicing related to water, wastewater, stormwater and mobility for the secondary plan area.

The Clair-Maltby Secondary Plan will generally address the following:

- an integrated mix of land uses (residential, employment and commercial);
- appropriate building heights, densities and built form to contribute to a vibrant community of neighbourhoods;
- the preservation of environmental features and functions, cultural heritage and archaeological resources;
- location of parks, trails, open space, schools and community facilities;
- integrated transportation networks to promote walking, cycling and transit;
- servicing and infrastructure (e.g. watermains, sanitary sewers, stormwater management); and,
- phasing of development.

Location

The study area is over 520 hectares located in the southeast corner of Guelph and is bounded by Clair Road to the north, Victoria Road to the east, Maltby Road to the south and the eastern limits of the Southgate Business Park to the west. The subject lands are shown in Figure 1.

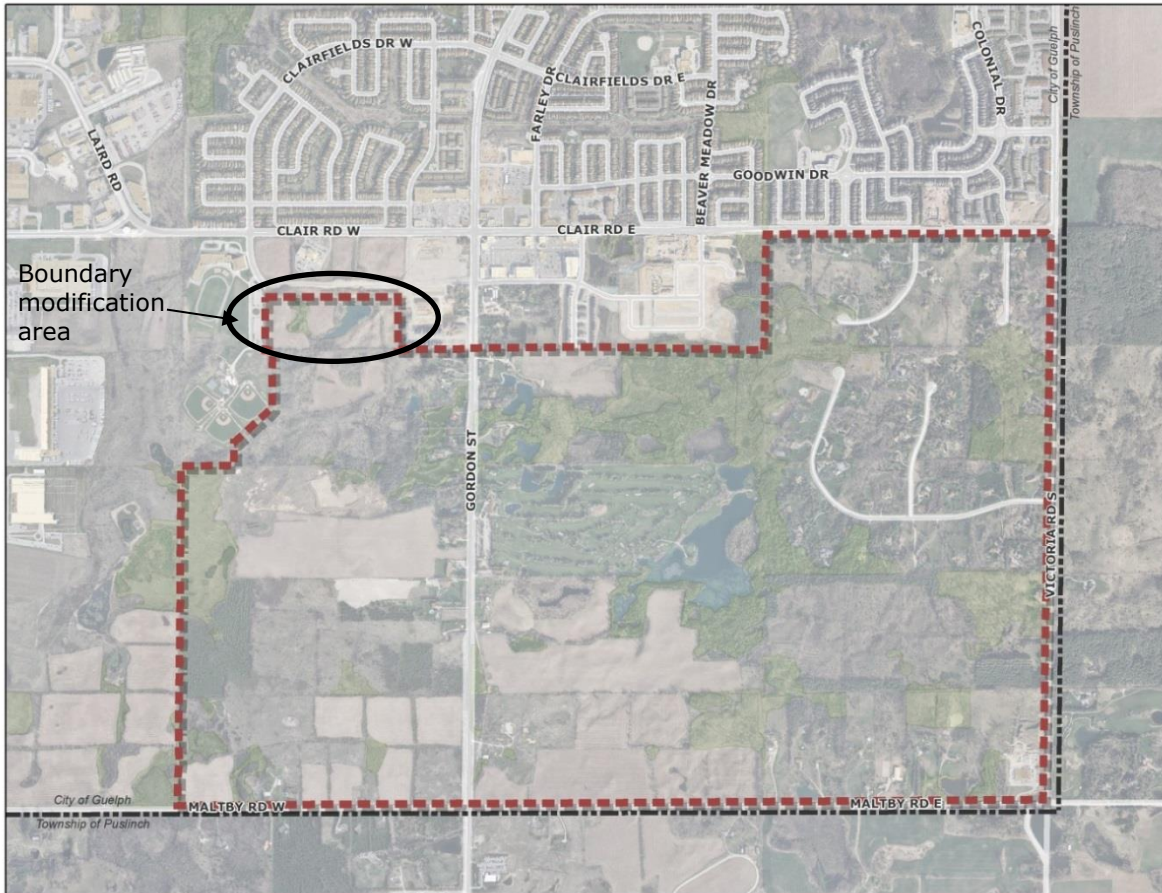


Figure 1: Clair-Maltby Secondary Plan Boundary

Background

On December 14, 2015, Council approved the [Terms of Reference](#) for the Clair-Maltby Secondary Plan and MESP. The combined secondary plan and MESP process integrates the study components and allows the City to appropriately address, in an efficient manner, the complexity and number of factors that need to be considered as the City moves forward with planning for development of, and providing municipal services to, the Clair-Maltby area. Further, this combined process meets the requirements of both the Provincial Environmental Assessment Act and the Planning Act.

The Clair-Maltby Secondary Plan project includes several components or tasks:

- Comprehensive Environmental Impact Study (CEIS)
- Water/Wastewater servicing study
- Stormwater management plan
- Mobility study
- Energy and other utilities study
- Secondary plan
- Fiscal impact assessment
- Community engagement and communications

The MESP component of the study includes the water/wastewater servicing study, stormwater management plan and the mobility study. Collectively, the project is referred to as the Clair-Maltby Secondary Plan – see Figure 2.

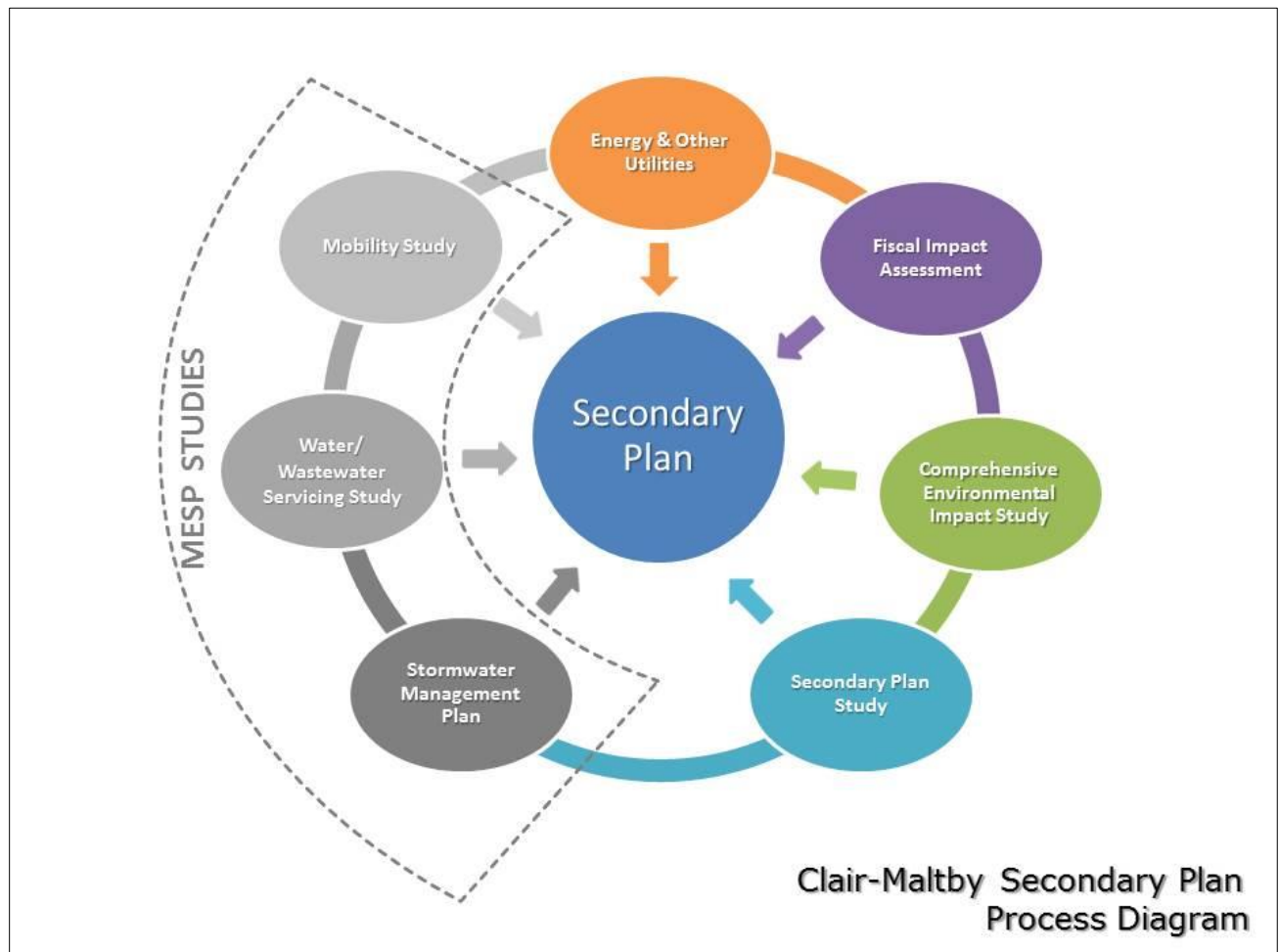


Figure 2: Clair-Maltby Secondary Plan Process Diagram

A consultant team was retained in early 2016, consisting of the following firms:

- Macaulay Shiomi Howson Ltd.
- Brook McIlroy Inc.
- Amec Foster Wheeler
- Beacon Environmental
- Matrix Solutions Inc.
- Daryl W. Cowell & Associates Inc.
- BA Group
- Watson & Associates Economists Ltd.
- ASI

The Clair-Maltby Secondary Plan process consists of three phases as outlined in Figure 3 below.

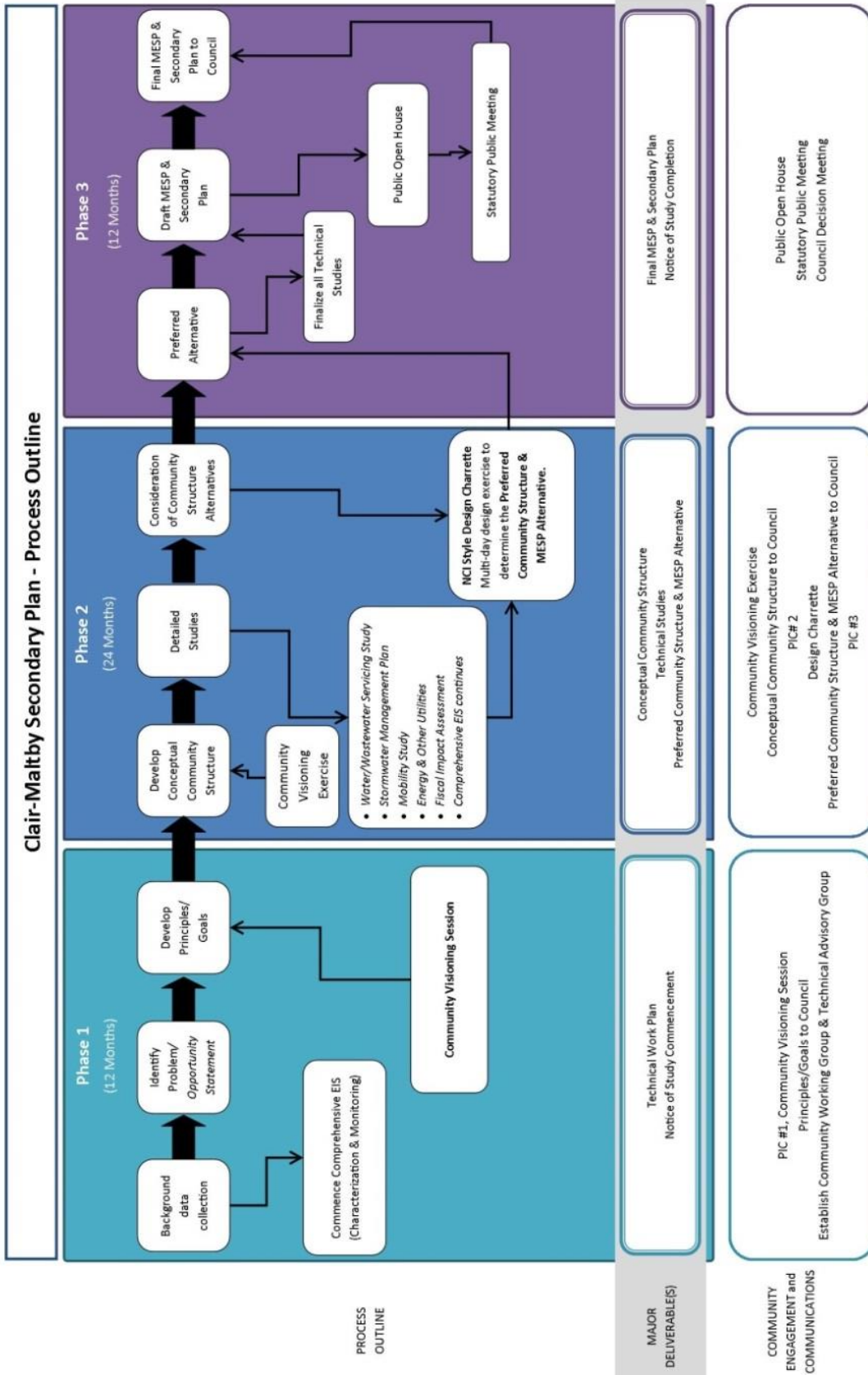


Figure 3: Clair-Maltby Secondary Plan Process Outline

Phase 1 – Project Work

The phase 1 work was generally complete as of April 2017. Presentation of the recommended Secondary Plan vision and guiding principles to Council for approval concludes Phase 1.

Major components of Phase 1 work include the following:

- Refinement of the study timeline;
- Finalization of the secondary plan area boundary;
- Development and refinement of background reports and technical work plans for all components of the study;
- Establishment of a consistent look for all project materials;
- Development of a Problem/Opportunity statement for the MESP;
- Environmental monitoring and characterization;
- Establishment of the TAG and the CWG;
- Notice of Study Commencement;
- PIC #1 and a Community Visioning Workshop; and,
- Development of a vision and guiding principles for the study and secondary plan.

Growth Plan 2017

The Growth Plan 2017 was released on May 18, 2017 and came into effect on July 1, 2017. All decisions on planning matters made on or after July 1, 2017 must conform or not conflict with the new Growth Plan.

While the Growth Plan 2017 introduces new density targets for the Designated Greenfield Area and intensification targets for the Built-up Area, it allows for the current targets to continue to apply until such time as the municipality undertakes its next municipal comprehensive review to bring the Official Plan into conformity with the Growth Plan. It is generally understood that this conformity exercise is to be completed by 2022.

The current density target for the Designated Greenfield Area of the City is 50 persons and jobs per hectare. This target will continue to apply until the next municipal comprehensive review. The Growth Plan 2017 includes a new density target of 80 persons and jobs per hectare for the Designated Greenfield Area, however, allows flexibility for council to request an alternative density target through the municipal comprehensive review.

The current intensification target for the Built-up Area of the City is 40% of residential development. This target will continue to apply until the next municipal comprehensive review. The Growth Plan 2017 increases the intensification target to 60% of residential development as of 2031. At the next municipal comprehensive review, an interim intensification target of 50% of residential development will be applicable. An alternative intensification target may be requested through the next municipal comprehensive review subject to the criteria outlined in the Growth Plan.

As the Clair-Maltby Secondary Plan continues, the policies of the new Growth Plan will be considered along with any conformity exercise or portion thereof the City

undertakes to ensure that the final recommendations conform to or do not conflict with the Growth Plan.

Refinement of the study timeline

The approved Terms of Reference for the Clair-Maltby Secondary Plan proposed a four year project timeline. The consultant team was requested to identify efficiencies in the timeline while still meeting all the requirements of the Terms of Reference and all applicable legislative, policy and regulatory requirements. Accordingly, the consultant team determined that if 2016 could be considered the first year of the required three years of groundwater monitoring, then there was an opportunity to reduce the project timeline to approximately three years.

On this basis, significant time and effort was immediately put toward gaining property access in order to conduct surface and groundwater monitoring at the beginning of Phase 1 of the project. These efforts were successful and surface and groundwater monitoring commenced in the summer of 2016 and thereby the project timeline may be potentially reduced to approximately three years. The revised tentative timeline is:

- Phase One: May 2016 – April 2017
- Phase Two: May 2017 – April/May 2018 (reduced from 24 months to approximately 12 or 13 months)
 - September 2017: Community Visioning Exercise to develop the Conceptual Community Structure
 - Q4 2017: Conceptual Community Structure to Council for endorsement
 - March 2018 – Design Charrette to determine the Preferred Community Structure Alternative
 - Q2 2018 – Preferred Community Structure Alternative to Council for endorsement
- Phase Three: May/June 2018 – April 2019

Project timeline risks

The revised tentative timeline remains dependent upon several factors including the water monitoring data that is collected over the next two years. If appropriately varying weather conditions are not experienced, hence not providing appropriate data (i.e. wet conditions, drought, etc.), additional data collection may be required. Further, the revised timeline proposes to determine the preferred community structure on the basis of substantial technical work and two years of groundwater monitoring. Should the final year of environmental monitoring data result in an unexpected outcome, refinements to the preferred community structure may be required, thereby potentially increasing the length of Phase Three of the project.

The new Growth Plan for the Greater Golden Horseshoe was introduced on May 18, 2017 and took effect on July 1, 2017 which changes provincial requirements and may impact the timeline of this project. Further analysis of these potential impacts will be completed as the project progresses.

Even with the above noted risks, it is anticipated that the project will be completed within four years as outlined in the approved Terms of Reference.

In addition to the risks identified above, the timelines are dependent upon achieving Council decisions/direction at key project milestones as set out in Figure 3: Clair-Maltby Secondary Plan Process Outline.

Finalization of the Secondary Plan Boundary

The boundary of the Secondary Plan was revised through Phase 1 of the project. A minor boundary adjustment was made to include lands in the northwest corner of the study area to the southerly limit of the future extension of Poppy Drive West. The modification to the boundary is shown on Figure 1 (page 3 of this report).

Background reports and technical work plans

Background data collection and the development and refinement of background reports and technical work plans for all study disciplines are a major part of Phase 1. These work plans will guide the ongoing work throughout the remainder of the project.

CMSP Phase One Background Reports and Technical Work Plans	
Clair-Maltby Consultation #1 Summary Community Visioning Workshop (Attachment 2)	April 2017
Clair-Maltby Preliminary Background Report (Attachment 4)	April 2017
Clair-Maltby Cultural Heritage Resource Assessment (Attachment 5)	December 2016
Stage 1 Archaeological Assessment of Clair-Maltby Secondary Plan and Supplementary Documentation (Attachment 6)	February 2017
City of Guelph- Review of Demographic and Economic Trends Influencing Future Development Trends in the Clair-Maltby Secondary Planning Area (Attachment 7)	June 2017
Clair-Maltby Comprehensive Environmental Impact Study Technical Work Plan Update (Attachment 8)	June 2017
Clair-Maltby Comprehensive Environmental Impact Study, Year 1 Monitoring Report (Attachment 9)	March 2017
Clair-Maltby Water/Wastewater Work Plan (Attachment 10)	June 2017
Clair-Maltby Stormwater Management Work Plan (Attachment 11)	June 2017
Clair-Maltby Mobility Work Plan (Attachment 12)	June 2017
Clair-Maltby Energy and Other Utilities Study- Background Report and Technical Work Plan (Phase 1) (Attachment 13)	June 2017

Establishing a consistent 'look' for the study

In early 2017, the project team began to work with Communications to create a distinct and project specific 'look and feel' with a theme of 'Transform. Connect. Community.' This theme describes, in a broad and general sense, what the project is striving to achieve – see Figure 4.



Figure 4: Project graphics

Environmental monitoring and characterization

Work related to the Comprehensive Environmental Impact Study (CEIS) was undertaken early in Phase 1 to begin surface and groundwater monitoring and the environmental characterization of the study area. This work included:

- Ground and surface water monitoring;
- Attending a joint RSAC/EAC meeting (November 16, 2016) to present the work plan for the CEIS;
- Meeting with the Ministry of Natural Resources and Forestry (MNRF) and the Grand River Conservation Authority (GRCA) to discuss the work plan for the CEIS (January 11, 2017);
- Winter wildlife surveys;
- Attending a TAG meeting (February 7, 2017) to discuss the CEIS work plan; and,
- Finalizing the CEIS Work Plan based on all comments received (April 2017).

Technical Advisory Group (TAG) and Community Working Group (CWG)

The Clair-Maltby Secondary Plan TAG and CWG were established during Phase 1 of the project. Both of these groups are made up of community members interested in the project or people that live outside of the community that are familiar with the study area.

The purpose of the TAG is to act as a forum for discussion of technical issues, concerns and solutions related to natural heritage, water resources, water/wastewater servicing, stormwater management and mobility. The group will suggest ideas or concerns and may test the validity or likely success of ideas and solutions brought forth regarding the above noted technical studies.

The CWG provides one forum for community input into the Clair-Maltby Secondary Plan project. It will provide input throughout the study process to assist the project team in understanding community opinions related to:

- guiding principles and a community vision;
- the Conceptual Community Structure (preliminary concept plan) for the area;
- land use policies for the secondary plan area; and,
- other project related feedback.

Terms of reference for these groups have been established and can be found at guelph.ca/clair-maltby. The TAG met twice during Phase 1 to review and provide comments on the CEIS, Mobility, Water/Wastewater and Stormwater Management technical work plans. The CWG met once during Phase 1 to provide input into the Clair-Maltby vision and guiding principles.

Notice of Study Commencement

The MESP is being carried out in accordance with the Master Plan (Approach #1) requirements of the Municipal Engineers Association Class Environmental Assessment (EA) process (Section A.2.7 of the Class EA document- October 2000, as amended in 2007, 2011 and 2015) which is an approved process under the Ontario Environmental Assessment Act. This approach will include Phases 1 and 2 of the Class EA process to identify a series of related projects/studies necessary to support urban development of this area. In addition this study will be integrated with the Planning Act as outlined in Section A.2.9 of the Municipal Class EA process.

The Notice of Study Commencement was issued (see ATT-1) on April 6, 2017, the problem/opportunity statement was developed and PIC #1 was held for public consultation in accordance with the requirements of the Environmental Assessment Act and the Municipal Class EA process.

Problem/Opportunity Statement

Problem: The City of Guelph is undertaking the Clair-Maltby Secondary Plan and Master Environmental Servicing Plan (MESP) Study to comprehensively plan the last unplanned greenfield area within the city. The current study area does not have full municipal services to support future development.

Opportunity: The Clair-Maltby Secondary Plan and the Master Environmental Servicing Plan (MESP) are being developed concurrently to provide an integrated planning approach to establish a plan for future urban development and full municipal services within this area.

PIC #1 and Visioning Workshop

The PIC #1 and Community Visioning Workshop were held April 27, 2017. The purpose of PIC #1 was to present the technical information related to the MESP to the public. The purpose of the public visioning workshop was to receive input regarding key ideas that should inform the development of the vision and guiding principles. The vision and guiding principles will inform the Conceptual Community Structure to be developed in Phase 2, as well as the remainder of the study and the secondary plan.

Clair-Maltby Vision and Guiding Principles

The vision and guiding principles are key deliverables of Phase 1 of the study. The vision and guiding principles have been developed based on feedback received from the public and stakeholders through the Visioning Workshop, a CWG meeting, a Staff and Technical Steering Committee Visioning Session and an online survey posted on the webpage.

Vision Statement

Clair-Maltby will be a vibrant, urban community that is integrated with Guelph's southern neighbourhoods, as well as having strong connections to Downtown, employment areas and the rest of the City. The Natural Heritage System and the Paris Moraine provide the framework for the balanced development of interconnected and sustainable neighbourhoods. This area will be primarily residential in character with a full range and mix of housing types and a variety of other uses that meet the needs of all residents. A system of parks, open spaces and trails will be interwoven throughout to provide opportunities for active and passive recreation.

Guiding Principles

1. Vibrant and Urban

Create identifiable urban neighbourhoods that are pedestrian oriented and human-scaled. Promote forward-thinking and innovative design that integrates new development into the rolling topography, while conserving significant cultural heritage resources.

2. Green and Resilient

Protect, maintain, restore, and where possible, improve water resources and the Natural Heritage System. Support resiliency and environmental sustainability through measures such as energy efficiency, water conservation and green infrastructure.

3. Healthy and Sustainable

Design the community for healthy, active living. Provide a mix of land uses including a diversity of housing choices at appropriate densities with appropriate municipal services to ensure long-term sustainable development which is fiscally responsible.

4. Interconnected and Interwoven

Establish a multi-modal mobility network that provides choice and connects neighbourhoods to each other and the rest of the City. Create a network of parks, open spaces and trails to provide opportunities for active and passive recreation, as well as active transportation choices.

5. Balanced and Liveable

A valued and livable community which reflects the right balance between protecting the environment and fostering a healthy, equitable and complete community.

Phase 1 – Progress Report

To date, the project has progressed on schedule and without exceeding the anticipated budget for the Phase 1 works. Using the corporate standard set of project status evaluation definitions (see Figure 5), this project is within scope, on schedule, and within budget.

In addition to maintaining the schedule to date, the project team is striving to reduce the overall project timeline from 4 years to approximately 3 years without exceeding the anticipated budget. Updates with respect to the progress of the project will be provided throughout the project.




Traffic Light	Overall Status	Definition
 Within Scope	All aspects of initiative status are progressing according to the plan or targets	<ul style="list-style-type: none"> No scope changes – note that minor scope changes are anticipated related to the methodology for some of the CEIS tasks in Phase 2 of the project. These scope changes will not impact the schedule or the Council approved budget for this project
 On Schedule		<ul style="list-style-type: none"> Deliverable quality at expected levels Approved major milestones are on schedule
 Within Budget		<ul style="list-style-type: none"> Forecasted expenditure is on budget

Figure 5: Project status evaluation definitions

Phase 2 – Community Structure

Phase 2 of the project began in May 2017 and is anticipated to take approximately 12-13 months, reduced from two years based on the refined timeline outlined earlier.

A preliminary concept plan, referred to as the conceptual community structure will be developed in Phase 2 based on a community visioning exercise, as well as input from the CWG, the TAG, city staff and the consultant team. The conceptual community structure will be guided by the approved vision and guiding principles and will include a potential land use and transportation structure together with servicing options, an open space system of parks and trails and major community facility locations.

The conceptual community structure will be used as a basis for on-going technical analysis (i.e. servicing, mobility) to inform the development of up to three (3) community structure alternatives. Once the technical studies are nearing completion, the design charrette will be held to establish the preferred community structure. The design charrette will include multiple “touch-points” with the public, stakeholders and technical experts. After the preferred community structure is endorsed by Council at the end of Phase 2, it will be used to inform the Phase 3 work.

Work on the MESP components will continue throughout Phase 2 and into Phase 3. The preferred community structure will form the basis for conducting the impact assessment and the development of management strategies.

Phase 3 – Community Plan and MESP

The final phase of the project will involve the preparation of the Secondary Plan and its formal review through a statutory public open house and meeting. As part of this process, the technical studies and MESP will also be reviewed and finalized. Following the statutory public meeting the Secondary Plan and associated Official Plan Amendment will be presented to Council for adoption and the MESP be supported for filing the Notice of Completion.

Public Participation

Community Engagement is a crucial component of the Clair-Maltby Secondary Plan project. Key touch points and workshops have been incorporated into the study to ensure that everyone has the opportunity to remain informed and involved in the process.

Community engagement opportunities completed to-date include:

Secondary Plan Project Initiation		
Clair-Maltby Secondary Plan: Project Initiation Report to Council	Outline of the proposed MESP and Secondary Plan process to Council for approval	June 22, 2015
Public Open House	Project introduction	August 11, 2015
Terms of Reference Focus Group Meeting	Focus group meeting with stakeholders to gather input for the Terms of Reference	September 17, 2015
Clair-Maltby Secondary Plan: Draft Terms of Reference	A draft Terms of Reference was released for public review and input prior to finalization	October 2015
Clair-Maltby Secondary Plan: Terms of Reference	Council approval of project Terms of Reference	December 14, 2015
Phase 1 – Background		
Property access landowner meeting	An information session for landowners to ask questions and provide comments in order to better understand the request for access to property within the study area	May 26, 2016
EAC/RSAC joint meeting	Meeting to present and discuss the CEIS work plan	November 16, 2016

Establishment of TAG		December 2016
TAG Meeting #1	Review of the CEIS Work Plan	February 7, 2017
Establishment of CWG		March 2017
Notice of Study Commencement	Notice of Study Commencement provided to the public, stakeholders, First Nations Communities and agencies	April 6, 2017
CWG Meeting #1	Visioning exercise to receive input regarding key ideas to inform the development of the vision and guiding principles for the study	April 11, 2017
PIC #1 and Visioning Workshop	Visioning workshop to receive input regarding key ideas to inform the development of the vision and guiding principles for the study	April 27, 2017
TAG Meeting #2	Review of Stormwater Management, Water/Wastewater and Mobility work plans	May 18, 2017
Meeting with Mississaugas of the New Credit First Nation	Meeting to introduce the Clair-Maltby Secondary Plan	June 19, 2017

Financial Implications

Capital funding to undertake this project was approved through the 2013-2015 and 2017 capital budgets. Work completed to date is within the proposed Phase 1 budget.

Consultations

See community engagement opportunities listed above.

A Technical Steering Committee (TSC) has been established for this project which is comprised of representatives from many City departments, Grand River Conservation Authority, County of Wellington and the Township of Puslinch. The City departments represented on the TSC include:

- Infrastructure, Development and Enterprise Services
 - Planning, Urban Design and Building Services
 - Policy Planning and Urban Design
 - Development Planning
 - Engineering and Capital Infrastructure Services

- Infrastructure, Development and Environmental Services
- Transportation Services
- Environmental Services
 - Water Services
- Business Development and Enterprise
- Facilities Management
 - Energy, Water and Climate Change
- Office of the Chief Administrative Officer
 - Corporate Communications
 - Intergovernmental Relations, Policy & Open Government
 - Community Engagement
- Corporate Services
 - Finance
- Public Services
 - Emergency Services
 - Guelph Transit
 - Parks and Recreation
 - Operations

The TSC participated in a staff visioning session on April 11, 2017 to provide input into the recommended Vision and Guiding Principles. In addition, members of the TSC have reviewed and provided input into the technical work plans and background reports related to their service areas throughout Phase 1 of this project.

Corporate Administrative Plan

Overarching Goals

Innovation
 Financial Stability
 Service Excellence

Service Area Operational Work Plans

Our Services - Municipal services that make lives better
 Our People- Building a great community together
 Our Resources - A solid foundation for a growing city

Attachments

The attachments below are available at guelph.ca/clair-maltby

- ATT-1 [Notice of Study Commencement](#)
- ATT-2 [Clair-Maltby Visioning Workshop #1 Summary](#)
- ATT-3 [November 16, 2016 EAC and RSAC Motions](#)
- ATT-4 [Clair-Maltby Preliminary Background Report](#)
- ATT-5 [Cultural Heritage Resource Assessment](#)

- ATT-6 [Stage 1 Archaeological Assessment of Clair-Maltby Secondary Plan and Supplementary Documentation](#)
- ATT-7 [City of Guelph- Review of Demographic and Economic Trends Influencing Future Development Trends in the Clair-Maltby Secondary Planning Area](#)
- ATT-8 [Clair-Maltby Comprehensive Environmental Impact Study, Technical Work Plan Update](#)
- ATT-9 [Clair-Maltby Comprehensive Environmental Impact Study, Year 1 Monitoring Report](#)
- ATT-10 [Clair-Maltby Water/Wastewater Work Plan](#)
- ATT-11 [Clair-Maltby Stormwater Management Work Plan](#)
- ATT-12 [Clair-Maltby Mobility Work Plan](#)
- ATT-13 [Energy and Other Utilities Study- Background Report and Technical Work Plan \(Phase 1\)](#)

Departmental Approval

Not applicable

Report Author

Stacey Laughlin
Senior Policy Planner

Report Author


Arun Hindupur, P.Eng.
Supervisor, Infrastructure Engineering

Approved By

Melissa Aldunate
Manager of Policy Planning
and Urban Design

Approved By

Terry Gayman, P.Eng.
Manager of Infrastructure Services



Approved By

Todd Salter
General Manager
Planning, Urban Design and
Building Services
519-822-1260 ext. 2395
todd.salter@guelph.ca



Approved By

Kealy Dedman, P.Eng.
General Manager/City Engineer
Engineering and Capital
Infrastructure Services
519-822-1260, ext. 2248
kealy.dedman@guelph.ca



Recommended By

Scott Stewart, C.E.T.
Deputy CAO
Infrastructure, Development and Enterprise
519-822-1260, ext. 3445
scott.stewart@guelph.ca