

5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or property area)?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge may include:

- property owner
- local heritage organizations and historical societies
- local museums
- municipal heritage committee
- published local histories

6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, 'adjacent' means 'contiguous', or as otherwise defined in a municipal official plan.

7. Has the property (or project area) been recognized for its cultural heritage value?

There is a strong chance there may be archaeological resources on your property (or immediate area) if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- your municipality
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA), including:
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)
 - an archaeological site (Part VI)
- subject to:
 - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
 - a notice of intention to designate (Part IV)
 - a heritage conservation district study area by-law (Part V) of the OHA
- listed on:
 - a municipal register or inventory of heritage properties
 - Ontario government's list of provincial heritage properties
 - Federal government's list of federal heritage buildings
- part of a:
 - National Historic Site
 - UNESCO World Heritage Site
- designated under:
 - *Heritage Railway Station Protection Act*
 - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

Part VI – Archaeological Sites

Includes five sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990 (Archaeological Sites) and 3 marine archaeological sites prescribed under Ontario Regulation 11/06.

For more information, check [Regulation 875](#) and [Ontario Regulation 11/06](#).

8. Has the entire property (or project area) been subjected to recent extensive and intensive ground disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- major landscaping – involving grading below topsoil
- building footprints and associated construction area
 - where the building has deep foundations or a basement
- infrastructure development such as:
 - sewer lines
 - gas lines
 - underground hydro lines
 - roads
 - any associated trenches, ditches, interchanges. **Note:** this applies only to the excavated part of the right-of-way; the remainder of the right-of-way or corridor may not have been impacted.

A ground disturbance does **not** include:

- agricultural cultivation
- gardening
- landscaping

Site visits

You can typically get this information from a site visit. In that case, please document your visit in the process (e.g., report) with:

- photographs
- maps
- detailed descriptions

If a disturbance isn't clear from a site visit or other research, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment.

9. Are there present or past water bodies within 300 metres of the property (or project area)?

Water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

Present

- Water bodies:
 - primary - lakes, rivers, streams, creeks
 - secondary - springs, marshes, swamps and intermittent streams and creeks
- accessible or inaccessible shoreline, for example:
 - high bluffs
 - swamps
 - marsh fields by the edge of a lake
 - sandbars stretching into marsh

Water bodies not included:

- man-made water bodies, for example:
 - temporary channels for surface drainage
 - rock chutes and spillways
 - temporarily ponded areas that are normally farmed
 - dugout ponds
- artificial bodies of water intended for storage, treatment or recirculation of:
 - runoff from farm animal yards
 - manure storage facilities
 - sites and outdoor confinement areas

Past

Features indicating past water bodies:

- raised sand or gravel beach ridges – can indicate glacial lake shorelines
- clear dip in the land – can indicate an old river or stream
- shorelines of drained lakes or marshes
- cobble beaches

You can get information about water bodies through:

- a site visit
- aerial photographs
- 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

10. Is there evidence of two or more of the following on the property (or project area)?

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

• Elevated topography

Higher ground and elevated positions - surrounded by low or level topography - often indicate past settlement and land use.

Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands, or other such features are a strong indication of archaeological potential.

Find out if your property or project area has elevated topography, through:

- site inspection
- aerial photographs
- topographical maps

• Pockets of well-drained sandy soil, especially within areas of heavy soil or rocky ground

Sandy, well-drained soil - in areas characterized by heavy soil or rocky ground - may indicate archaeological potential

Find out if your property or project area has sandy soil through:

- site inspection
- soil survey reports

- **Distinctive land formations**

Distinctive land formations include – but are not limited to:

- waterfalls
- rock outcrops
- rock faces
- caverns
- mounds, etc.

They were often important to past inhabitants as special or sacred places. The following sites may be present – or close to – these formations:

- burials
- structures
- offerings
- rock paintings or carvings

Find out if your property or project areas has a distinctive land formation through:

- a site visit
- aerial photographs
- 1:10,000 scale Ontario Base Maps - or equally detailed and scaled maps.

- **Resource extraction areas**

The following resources were collected in these extraction areas:

- food or medicinal plants e.g., migratory routes, spawning areas, prairie
- scarce raw materials e.g., quartz, copper, ochre or outcrops of chert
- resources associated with early historic industry e.g., fur trade, logging, prospecting, mining

Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Early historic settlement**

Early Euro-Canadian settlement include – but are not limited to:

- early military or pioneer settlement e.g., pioneer homesteads, isolated cabins, farmstead complexes
- early wharf or dock complexes
- pioneers churches and early cemeteries

For more information, see below – under the early historic transportation routes.

- **Early historic transportation routes** - such as trails, passes, roads, railways, portage routes, canals.

For more information, see:

- historical maps and/or historical atlases
 - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
 - Archives of Ontario holds a large collection of historical maps and historical atlases
 - digital versions of historic atlases are available on the Canadian County Atlas Digital Project
- commemorative markers or plaques such as local, provincial or federal agencies
- municipal heritage committee or other local heritage organizations
 - for information on early historic settlements or landscape features (e.g., fences, mill races, etc.)
 - for information on commemorative markers or plaques

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
 - is a recognized heritage property
 - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
 - the main project area
 - temporary storage
 - staging and working areas
 - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Perth Golf Course

Project or Property Location (upper and lower or single tier municipality)

Town of Perth

Proponent Name

Town of Perth

Proponent Contact Information

Forbes Symon

Screening Questions

1. Is there a pre-approved screening checklist, methodology or process in place? Yes No

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value? Yes No

If Yes, do not complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

3. Is the property (or project area): Yes No

- a. identified, designated or otherwise protected under the Ontario Heritage Act as being of cultural heritage value?
b. a National Historic Site (or part of)?
c. designated under the Heritage Railway Stations Protection Act?
d. designated under the Heritage Lighthouse Protection Act?
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) - the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has or is adjacent to a known burial site and/or cemetery?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. is in a Canadian Heritage River watershed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. contains buildings or structures that are 40 or more years old?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has a special association with a community, person or historical event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. contains or is part of a cultural heritage landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act*, *Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
 - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's [Ontario Heritage Toolkit](#) or [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

- i. designated under the *Ontario Heritage Act*
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note:** To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- [Ontario Heritage Trust](#)
- local land registry office (for a title search)

ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- [Ontario Heritage Trust](#) - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note:** To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- [Ontario Heritage Trust](#)

v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the [National Historic Sites website](#).

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the [Directory of Designated Heritage Railway Stations](#).

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the [Heritage Lighthouses of Canada](#) website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the [Federal Heritage Buildings Review Office](#).

See a [directory of all federal heritage designations](#).

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – [World Heritage Site website](#).

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- [municipal heritage committees](#) or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's [Heritage directory](#) – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a [list of plaques](#) commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a [list of plaques](#) commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the [Canadian Heritage River System](#).

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide [Heritage Property Evaluation](#).

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- [municipal heritage committees](#) or local heritage organizations
- Ontario Historical Society's "[Heritage Directory](#)" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through [Ontario Trails](#).

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
 - is a recognized heritage property
 - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
 - the main project area
 - temporary storage
 - staging and working areas
 - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name
Perth Golf Course

Project or Property Location (upper and lower or single tier municipality)
Town of Perth

Proponent Name
Town of Perth

Proponent Contact Information
Forbes Symon

Screening Questions

- | | | |
|--|--------------------------|-------------------------------------|
| | Yes | No |
| 1. Is there a pre-approved screening checklist, methodology or process in place? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
- If **Yes**, please follow the pre-approved screening checklist, methodology or process.
If **No**, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

- | | | |
|--|--------------------------|-------------------------------------|
| | Yes | No |
| 2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
- If **Yes**, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If **No**, continue to Question 3.

- | | | |
|---|--------------------------|-------------------------------------|
| | Yes | No |
| 3. Is the property (or project area): | | |
| a. identified, designated or otherwise protected under the <i>Ontario Heritage Act</i> as being of cultural heritage value? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. a National Historic Site (or part of)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. designated under the <i>Heritage Railway Stations Protection Act</i> ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d. designated under the <i>Heritage Lighthouse Protection Act</i> ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If **Yes** to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If **No**, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. has or is adjacent to a known burial site and/or cemetery?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. is in a Canadian Heritage River watershed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. contains buildings or structures that are 40 or more years old?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has a special association with a community, person or historical event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. contains or is part of a cultural heritage landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If **Yes** to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If **No** to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
 - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's [Ontario Heritage Toolkit](#) or [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties \[s.B.2.\]](#)

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

- i. designated under the *Ontario Heritage Act*
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note:** To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- [Ontario Heritage Trust](#)
- local land registry office (for a title search)

ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- [Ontario Heritage Trust](#) - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note:** To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- [Ontario Heritage Trust](#)

v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the [National Historic Sites website](#).

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the [Directory of Designated Heritage Railway Stations](#).

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the [Heritage Lighthouses of Canada website](#).

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the [Federal Heritage Buildings Review Office](#).

See a [directory of all federal heritage designations](#).

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – [World Heritage Site website](#).

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- [municipal heritage committees](#) or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's [Heritage directory](#) – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a [list of plaques](#) commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a [list of plaques](#) commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the [Canadian Heritage River System](#).

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide [Heritage Property Evaluation](#).

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- [municipal heritage committees](#) or local heritage organizations
- Ontario Historical Society's "[Heritage Directory](#)" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through [Ontario Trails](#).

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
 - is a recognized heritage property
 - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
 - the main project area
 - temporary storage
 - staging and working areas
 - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name
Tayview

Project or Property Location (upper and lower or single tier municipality)
Town of Perth

Proponent Name
Town of Perth

Proponent Contact Information
Forbes Symon

Screening Questions

- | | | |
|--|--------------------------|-------------------------------------|
| | Yes | No |
| 1. Is there a pre-approved screening checklist, methodology or process in place? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
- If Yes, please follow the pre-approved screening checklist, methodology or process.
If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

- | | | |
|--|-------------------------------------|--------------------------|
| | Yes | No |
| 2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

- | | | |
|---|--------------------------|-------------------------------------|
| | Yes | No |
| 3. Is the property (or project area): | | |
| a. identified, designated or otherwise protected under the <i>Ontario Heritage Act</i> as being of cultural heritage value? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b. a National Historic Site (or part of)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c. designated under the <i>Heritage Railway Stations Protection Act</i> ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d. designated under the <i>Heritage Lighthouse Protection Act</i> ? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has or is adjacent to a known burial site and/or cemetery?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. is in a Canadian Heritage River watershed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. contains buildings or structures that are 40 or more years old?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has a special association with a community, person or historical event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. contains or is part of a cultural heritage landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
 - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's [Ontario Heritage Toolkit](#) or [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

- i. designated under the *Ontario Heritage Act*
 - individual designation (Part IV)
 - part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note:** To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
 - [Ontario Heritage Trust](#)
 - local land registry office (for a title search)
-

ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- [Ontario Heritage Trust](#) - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
 - municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
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-

iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
 - municipal heritage planning staff
 - municipal heritage committee
-

iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note:** To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
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-

v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

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3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the [National Historic Sites website](#).

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the [Directory of Designated Heritage Railway Stations](#).

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

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The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the [Federal Heritage Buildings Review Office](#).

See a [directory of all federal heritage designations](#).

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – [World Heritage Site website](#).

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- [municipal heritage committees](#) or local heritage organizations – for information on the location of plaques in their community
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4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the [Canadian Heritage River System](#).

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide [Heritage Property Evaluation](#).

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- [municipal heritage committees](#) or local heritage organizations
- Ontario Historical Society's "[Heritage Directory](#)" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through [Ontario Trails](#).

Appendix E
Transportation Exhibits

EXHIBIT 1

OPTION 1 - 2041 PEAK AM HOUR TRAFFIC - Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary																					
General Information							Intersection Information														
Agency							Duration, h		0.25												
Analyst		Analysis Date		2/27/2018			Area Type		Other												
Jurisdiction		Time Period		Peak AM Hour			PHF		0.92												
Urban Street		West Annex		Analysis Year		2041		Analysis Period		1> 7:00											
Intersection		Peter/Wilson		File Name		2041_AM_OPTION 1.xus															
Project Description		West Annex - OPTION 1																			
Demand Information				EB			WB			NB		SB									
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R						
Demand (v), veh/h				164	264	4	7	108	362	4	30	10	389	57	123						
Signal Information																					
Cycle, s		80.0		Reference Phase		2															
Offset, s		0		Reference Point		End															
Uncoordinated		No		Simult. Gap E/W		Off		Green		10.2		33.2		22.2							
Force Mode		Fixed		Simult. Gap N/S		Off		Yellow		3.3		3.3		3.3							
								Red		1.5		1.5		1.5							
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT							
Assigned Phase						4				8				2							
Case Number						8.0				7.0				8.3							
Phase Duration, s						27.0				27.0				38.0							
Change Period, (Y+R _c), s						4.8				4.8				4.8							
Max Allow Headway (MAH), s						3.1				3.2				0.0							
Queue Clearance Time (g _s), s						24.2				7.8				9.5							
Green Extension Time (g _e), s						0.0				0.5				0.0							
Phase Call Probability						1.00				1.00				1.00							
Max Out Probability						1.00				0.00				0.00							
Movement Group Results				EB			WB			NB			SB								
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R						
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16						
Adjusted Flow Rate (v), veh/h				470			125 176			48			423 174								
Adjusted Saturation Flow Rate (s), veh/h/ln				1623			1875 1610			1779			1810 1703								
Queue Service Time (g _s), s				18.1			0.0 5.8			0.0			7.5 3.6								
Cycle Queue Clearance Time (g _c), s				22.2			4.1 5.8			1.2			7.5 3.6								
Green Ratio (g/C)				0.28			0.28 0.41			0.41			0.69 0.60								
Capacity (c), veh/h				512			568 652			898			1073 1026								
Volume-to-Capacity Ratio (X)				0.916			0.220 0.270			0.053			0.394 0.170								
Back of Queue (Q), ft/ln (50 th percentile)				288.3			43.6 50.1			12.3			51.4 30.3								
Back of Queue (Q), veh/ln (50 th percentile)				11.5			1.7 2.0			0.5			2.1 1.2								
Queue Storage Ratio (RQ) (50 th percentile)				0.68			0.10 0.53			0.03			0.30 0.18								
Uniform Delay (d ₁), s/veh				29.3			22.4 15.9			12.5			5.0 7.0								
Incremental Delay (d ₂), s/veh				20.9			0.1 0.1			0.1			0.1 0.4								
Initial Queue Delay (d ₃), s/veh				0.0			0.0 0.0			0.0			0.0 0.0								
Control Delay (d), s/veh				50.2			22.4 16.0			12.6			5.1 7.4								
Level of Service (LOS)				D			C B			B			A A								
Approach Delay, s/veh / LOS				50.2		D		18.7		B		12.6		B		5.8		A			
Intersection Delay, s/veh / LOS				23.5						C											
Multimodal Results				EB			WB			NB			SB								
Pedestrian LOS Score / LOS				1.69			B			1.95			B			2.19			B		
Bicycle LOS Score / LOS				1.26			A			0.98			A			0.57			A		

EXHIBIT 2

OPTION 1 - 2041 PEAK PM HOUR TRAFFIC - Peter (Foster)/Wilson

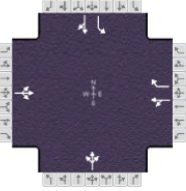
HCS7 Signalized Intersection Results Summary																			
General Information							Intersection Information												
Agency				Analysis Date		2/27/2018		Duration, h		0.25									
Analyst				Area Type		Other		Area Type		Other									
Jurisdiction				Time Period		Peak PM Hour		PHF		0.92									
Urban Street		West Annex		Analysis Year		2041		Analysis Period		1> 7:00									
Intersection		Peter/Wilson		File Name		2041_PM_OPTION 1.xus													
Project Description		West Annex - OPTION 1																	
Demand Information																			
				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				143	171	8	24	262	564	5	76	23	547	82	171				
Signal Information																			
Cycle, s		80.0		Reference Phase		2													
Offset, s		0		Reference Point		End													
Uncoordinated		No		Simult. Gap E/W		Off		Green		14.9		28.5		22.2					
Force Mode		Fixed		Simult. Gap N/S		Off		Yellow		3.3		3.3		3.3					
								Red		1.5		1.5		1.5					
Timer Results																			
				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4				8				2		1		6	
Case Number						8.0				7.0				8.3		1.0		4.0	
Phase Duration, s						27.0				27.0				33.3		19.7		53.0	
Change Period, (Y+R _c), s						4.8				4.8				4.8		4.8		4.8	
Max Allow Headway (MAH), s						3.4				3.3				0.0		3.1		0.0	
Queue Clearance Time (g _s), s						22.9				21.6						14.0			
Green Extension Time (g _e), s						0.0				0.2				0.0		0.9		0.0	
Phase Call Probability						1.00				1.00						1.00			
Max Out Probability						1.00				1.00						0.13			
Movement Group Results																			
				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate (v), veh/h				350			311			504			113						
Adjusted Saturation Flow Rate (s), veh/h/ln				1323			1833			1610			1807						
Queue Service Time (g _s), s				9.5			0.0			19.6			0.0						
Cycle Queue Clearance Time (g _c), s				20.9			11.4			19.6			3.4						
Green Ratio (g/C)				0.28			0.28			0.46			0.36						
Capacity (c), veh/h				432			558			747			803						
Volume-to-Capacity Ratio (X)				0.810			0.558			0.675			0.141						
Back of Queue (Q), ft/ln (50 th percentile)				186.4			123.4			171.7			34.8						
Back of Queue (Q), veh/ln (50 th percentile)				7.5			4.9			6.9			1.4						
Queue Storage Ratio (RQ) (50 th percentile)				0.44			0.29			1.81			0.08						
Uniform Delay (d ₁), s/veh				28.7			25.0			16.7			16.0						
Incremental Delay (d ₂), s/veh				10.3			0.8			2.0			0.4						
Initial Queue Delay (d ₃), s/veh				0.0			0.0			0.0			0.0						
Control Delay (d), s/veh				39.0			25.7			18.7			16.4						
Level of Service (LOS)				D			C			B			B						
Approach Delay, s/veh / LOS				39.0		D		21.4		C		16.4		B		6.7		A	
Intersection Delay, s/veh / LOS				18.2						B									
Multimodal Results																			
				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				1.69			B			1.95			B						
Bicycle LOS Score / LOS				1.07			A			1.83			B						

EXHIBIT 3

OPTION 1 - 2041 PEAK AM HOUR TRAFFIC - Foster/Gore

HCS7 Signalized Intersection Results Summary

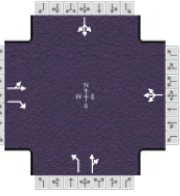
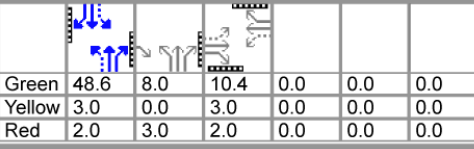
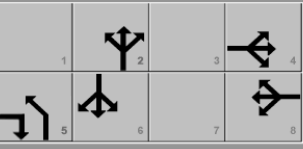
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Gore/Foster			File Name	2041_AM_OPTION 1.xus										
Project Description	West Annex - OPTION 1														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				13	163	464	16	54	10	405	160	16	3	127	13
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	48.6	8.0	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					15.4		15.4	11.0	64.6		53.6				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.2		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					9.9		4.9	2.0							
Green Extension Time (g _e), s					0.5		0.1	0.4	0.0		0.0				
Phase Call Probability					1.00		0.82	1.00							
Max Out Probability					0.03		0.00	0.57							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				191	178		76			440	175			155	
Adjusted Saturation Flow Rate (s), veh/h/ln				1873	1610		1779			1810	1898			1864	
Queue Service Time (g _s), s				2.8	7.9		0.0			0.0	2.1			0.0	
Cycle Queue Clearance Time (g _c), s				7.9	7.9		2.9			0.0	2.1			2.8	
Green Ratio (g/C)				0.13	0.21		0.13			0.72	0.74			0.61	
Capacity (c), veh/h				292	330		287			1025	1413			1294	
Volume-to-Capacity Ratio (X)				0.655	0.539		0.265			0.429	0.124			0.120	
Back of Queue (Q), ft/ln (50 th percentile)				88.1	74		32.5			67.1	14.2			23.3	
Back of Queue (Q), veh/ln (50 th percentile)				3.5	3.0		1.3			2.7	0.6			0.9	
Queue Storage Ratio (RQ) (50 th percentile)				0.21	0.30		0.08			0.71	0.03			0.14	
Uniform Delay (d ₁), s/veh				33.7	28.4		31.5			6.1	2.9			5.7	
Incremental Delay (d ₂), s/veh				0.9	0.5		0.2			0.1	0.2			0.2	
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0			0.0	0.0			0.0	
Control Delay (d), s/veh				34.6	28.9		31.7			6.2	3.1			5.9	
Level of Service (LOS)				C	C		C			A	A			A	
Approach Delay, s/veh / LOS				31.9	C	31.7	C	5.3	A	5.9	A				
Intersection Delay, s/veh / LOS				15.1						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.96	B	1.71	B	1.62	B	2.37	B				
Bicycle LOS Score / LOS				1.10	A	0.61	A	1.50	B	0.74	A				

EXHIBIT 4

OPTION 1 - 2041 PEAK PM HOUR TRAFFIC - Foster/Gore

HCS7 Signalized Intersection Results Summary

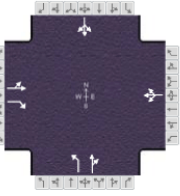
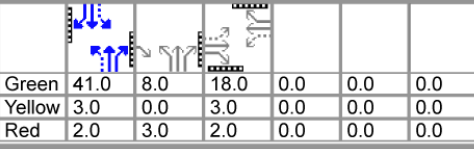
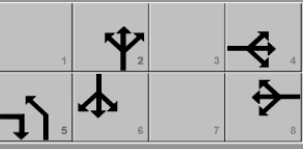
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak PM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Gore/Foster			File Name	2041_PM_OPTION 1.xus										
Project Description	West Annex - OPTION 1														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				14	102	646	19	163	14	655	167	26	3	145	29
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	41.0	8.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					23.0		23.0	11.0	57.0		46.0				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.3		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					19.1		9.4	2.0							
Green Extension Time (g _e), s					0.0		0.2	0.8	0.0		0.0				
Phase Call Probability					1.00		0.99	1.00							
Max Out Probability					1.00		0.00	0.70							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					126	376		202		712	193			192	
Adjusted Saturation Flow Rate (s), veh/h/ln					1847	1610		1849		1810	1879			1841	
Queue Service Time (g _s), s					0.0	17.1		0.0		0.0	3.2			0.0	
Cycle Queue Clearance Time (g _c), s					4.4	17.1		7.4		0.0	3.2			4.5	
Green Ratio (g/C)					0.22	0.30		0.22		0.62	0.65			0.51	
Capacity (c), veh/h					466	483		466		862	1221			1104	
Volume-to-Capacity Ratio (X)					0.271	0.779		0.434		0.826	0.158			0.174	
Back of Queue (Q), ft/ln (50 th percentile)					48.1	109.7		80.7		316.1	27.5			42.4	
Back of Queue (Q), veh/ln (50 th percentile)					1.9	4.4		3.2		12.6	1.1			1.7	
Queue Storage Ratio (RQ) (50 th percentile)					0.11	0.44		0.19		3.33	0.06			0.25	
Uniform Delay (d ₁), s/veh					25.7	25.6		26.9		17.1	5.5			9.4	
Incremental Delay (d ₂), s/veh					0.1	7.2		0.2		6.2	0.3			0.3	
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (d), s/veh					25.8	32.8		27.1		23.3	5.7			9.7	
Level of Service (LOS)					C	C		C		C	A			A	
Approach Delay, s/veh / LOS				31.1	C	27.1	C	19.5	B	9.7	A				
Intersection Delay, s/veh / LOS				22.6						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.95	B	1.70	B	1.65	B	2.37	B				
Bicycle LOS Score / LOS				1.32	A	0.82	A	1.98	B	0.81	A				

EXHIBIT 5

OPTION 1 - 2041 PEAK AM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

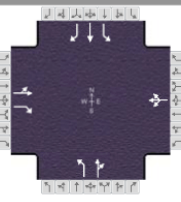
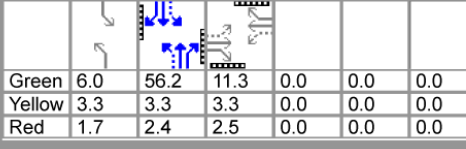

General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018		Area Type	Other							
Jurisdiction				Time Period	Peak AM Hour		PHF	0.92							
Urban Street	West Annex			Analysis Year	2041		Analysis Period	1 > 7:00							
Intersection	Wilson/Sunset			File Name	2041_AM_OPTION 1.xus										
Project Description	West Annex - OPTION 1														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				118	11	139	8	50	11	159	525	5	7	559	123
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	6.0	56.2	11.3	0.0	0.0	0.0									
Yellow	3.3	3.3	3.3	0.0	0.0	0.0									
Red	1.7	2.4	2.5	0.0	0.0	0.0									
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					7.0		8.0	1.1	4.0	1.1	3.0				
Phase Duration, s					17.1		17.1	11.0	61.9	11.0	61.9				
Change Period, (Y+Rc), s					5.8		5.8	5.0	5.7	5.0	5.7				
Max Allow Headway (MAH), s					3.3		3.1	3.1	0.0	3.1	0.0				
Queue Clearance Time (gs), s					10.8		5.2	3.7		2.1					
Green Extension Time (ge), s					0.5		0.1	0.3	0.0	0.0	0.0				
Phase Call Probability					1.00		0.83	1.00		1.00					
Max Out Probability					0.00		0.00	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				140	140		72		173	576		8	608	25	
Adjusted Saturation Flow Rate (s), veh/h/ln				1394	1610		1836		1810	1897		1810	1900	1610	
Queue Service Time (gs), s				5.6	7.5		0.0		1.7	14.7		0.1	15.9	0.5	
Cycle Queue Clearance Time (gc), s				8.8	7.5		3.2		1.7	14.7		0.1	15.9	0.5	
Green Ratio (g/C)				0.13	0.13		0.13		0.82	0.62		0.82	0.62	0.62	
Capacity (c), veh/h				251	202		275		653	1185		740	1187	1006	
Volume-to-Capacity Ratio (X)				0.558	0.696		0.261		0.265	0.486		0.010	0.512	0.025	
Back of Queue (Q), ft/ln (50 th percentile)				74.4	74.3		35.4		21.1	141.4		0.3	153.1	4.3	
Back of Queue (Q), veh/ln (50 th percentile)				3.0	3.0		1.4		0.8	5.7		0.0	6.1	0.2	
Queue Storage Ratio (RQ) (50 th percentile)				0.30	0.30		0.09		0.22	0.21		0.01	0.73	0.02	
Uniform Delay (d1), s/veh				38.3	37.7		35.8		5.9	9.1		3.0	9.3	6.4	
Incremental Delay (d2), s/veh				0.7	1.6		0.2		0.1	1.4		0.0	1.6	0.0	
Initial Queue Delay (d3), s/veh				0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0	
Control Delay (d), s/veh				39.0	39.3		36.0		6.0	10.5		3.0	10.9	6.5	
Level of Service (LOS)					D	D		D		A	B		A	B	A
Approach Delay, s/veh / LOS				39.2		D	36.0		D	9.5		A	10.6		B
Intersection Delay, s/veh / LOS				15.8						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.94		B	2.27		B	1.65		B	1.89		B
Bicycle LOS Score / LOS				0.95		A	0.61		A	1.72		B	1.54		B

EXHIBIT 6

OPTION 1 - 2041 PEAK PM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

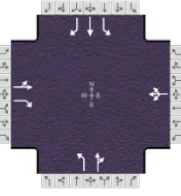
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak PM Hour										
Intersection	Wilson/Sunset			PHF	0.92										
Project Description	West Annex - OPTION 1			Analysis Year	2041										
				Analysis Period	1 > 7:00										
				File Name	2041_PM_OPTION 1.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				210	37	190	8	32	30	153	844	1	13	771	122
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off	Green	6.0	48.4	19.1	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.3	3.3	3.3	0.0	0.0	0.0					
				Red	1.7	2.4	2.5	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					7.0		8.0	1.1	4.0	1.1	3.0				
Phase Duration, s					24.9		24.9	11.0	54.1	11.0	54.1				
Change Period, (Y+R _c), s					5.8		5.8	5.0	5.7	5.0	5.7				
Max Allow Headway (MAH), s					3.2		3.2	3.1	0.0	3.1	0.0				
Queue Clearance Time (g _s), s					18.5		5.0	4.4		2.2					
Green Extension Time (g _e), s					0.6		0.1	0.2	0.0	0.0	0.0				
Phase Call Probability					1.00		0.84	1.00		1.00					
Max Out Probability					0.23		0.00	0.01		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					268	196		73		166	918		14	838	78
Adjusted Saturation Flow Rate (s), veh/h/ln					1419	1610		1778		1810	1900		1810	1900	1610
Queue Service Time (g _s), s					13.5	9.8		0.0		2.4	38.9		0.2	32.8	2.1
Cycle Queue Clearance Time (g _c), s					16.5	9.8		3.0		2.4	38.9		0.2	32.8	2.1
Green Ratio (g/C)					0.21	0.21		0.21		0.74	0.54		0.74	0.54	0.54
Capacity (c), veh/h					375	342		422		453	1021		352	1022	866
Volume-to-Capacity Ratio (X)					0.715	0.572		0.173		0.367	0.899		0.040	0.820	0.090
Back of Queue (Q), ft/ln (50 th percentile)					144.7	93.6		31.7		37	464		3.7	369.5	18.6
Back of Queue (Q), veh/ln (50 th percentile)					5.8	3.7		1.3		1.5	18.6		0.1	14.8	0.7
Queue Storage Ratio (RQ) (50 th percentile)					0.58	0.37		0.08		0.39	0.68		0.07	1.76	0.09
Uniform Delay (d ₁), s/veh					34.4	31.8		29.1		12.4	18.6		16.2	17.2	10.1
Incremental Delay (d ₂), s/veh					2.9	0.6		0.1		0.2	12.4		0.0	7.4	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh					37.3	32.3		29.2		12.6	31.0		16.2	24.6	10.3
Level of Service (LOS)					D	C		C		B	C		B	C	B
Approach Delay, s/veh / LOS				35.2		D	29.2		C	28.2		C	23.2		C
Intersection Delay, s/veh / LOS				27.7						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.93		B	2.19		B	1.67		B	1.90		B
Bicycle LOS Score / LOS				1.25		A	0.61		A	2.28		B	2.02		B

EXHIBIT 7

OPTION 1 - 2041 PEAK AM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

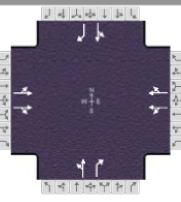
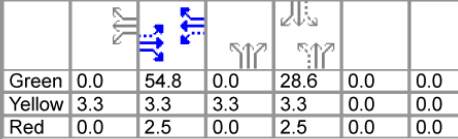
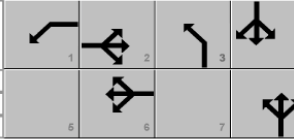
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak AM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 1			Analysis Year	2041										
				Analysis Period	1 > 7:00										
				File Name	2041_AM_OPTION 1.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				77	537	297	178	579	26	188	220	140	29	152	39
Signal Information															
Cycle, s	95.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	54.8	0.0	28.6	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					60.6	0.0	60.6	0.0	34.4		34.4				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.2		3.2				
Queue Clearance Time (g _s), s									26.9		9.7				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	1.7		1.8				
Phase Call Probability									1.00		1.00				
Max Out Probability									0.00		0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				507		484	295		556		443	152		197	42
Adjusted Saturation Flow Rate (s), veh/h/ln				1297		1519	566		1687		1539	1585		1736	1610
Queue Service Time (g _s), s				12.3		18.8	6.0		19.7		6.0	7.1		0.0	1.8
Cycle Queue Clearance Time (g _c), s				32.1		18.8	27.9		19.7		24.9	7.1		7.7	1.8
Green Ratio (g/C)				0.58		0.58	0.58		0.58		0.30	0.30		0.30	0.30
Capacity (c), veh/h				792		877	389		973		518	477		566	484
Volume-to-Capacity Ratio (X)				0.639		0.552	0.759		0.571		0.855	0.319		0.347	0.088
Back of Queue (Q), ft/ln (50 th percentile)				216.5		158	180.2		183.1		252.5	66		84.7	16.8
Back of Queue (Q), veh/ln (50 th percentile)				8.7		6.3	7.2		7.3		10.1	2.6		3.4	0.7
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00		0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh				14.9		12.5	25.1		12.7		32.5	25.7		25.9	23.8
Incremental Delay (d ₂), s/veh				3.9		2.5	13.0		2.4		4.3	0.1		0.1	0.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0		0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh				18.9		15.0	38.2		15.1		36.7	25.8		26.0	23.9
Level of Service (LOS)				B		B	D		B		D	C		C	C
Approach Delay, s/veh / LOS				17.0		B	23.1		C		33.9	C		25.7	C
Intersection Delay, s/veh / LOS				23.5						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.88		B	1.88		B		2.11	B		2.11	B
Bicycle LOS Score / LOS				1.30		A	1.19		A		1.47	A		0.88	A

EXHIBIT 8

OPTION 1 - 2041 PEAK PM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

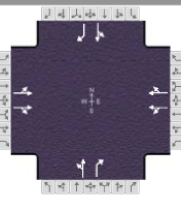
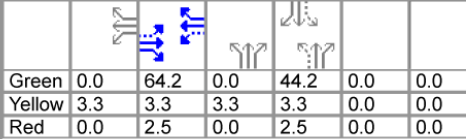
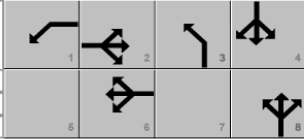
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak PM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 1			Analysis Year	2041			Analysis Period	1 > 7:00						
File Name	2041_PM_OPTION 1.xus														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	82	686	262	217	779	21	312	312	227	31	285	69			
Signal Information															
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	64.2	0.0	44.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					70.0	0.0	70.0	0.0	50.0		50.0				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.3		3.3				
Queue Clearance Time (g _s), s									46.2		18.9				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.0		3.5				
Phase Call Probability									1.00		1.00				
Max Out Probability									1.00		0.01				
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14			
Adjusted Flow Rate (v), veh/h	542		578	355		750		678	247		343	75			
Adjusted Saturation Flow Rate (s), veh/h/ln	652		1563	384		1693		1162	1585		1788	1610			
Queue Service Time (g _s), s	19.8		32.7	6.0		44.4		6.0	14.0		0.0	3.7			
Cycle Queue Clearance Time (g _c), s	64.2		32.7	64.2		44.4		44.2	14.0		16.9	3.7			
Green Ratio (g/C)	0.53		0.53	0.54		0.54		0.37	0.37		0.37	0.37			
Capacity (c), veh/h	384		836	256		906		473	584		692	593			
Volume-to-Capacity Ratio (X)	1.413		0.691	1.390		0.828		1.434	0.423		0.497	0.126			
Back of Queue (Q), ft/ln (50 th percentile)	824.1		311	542.7		472.2		680.1	133.9		189.2	35.5			
Back of Queue (Q), veh/ln (50 th percentile)	33.0		12.4	21.7		18.9		27.2	5.3		7.6	1.4			
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00	0.00		0.00	0.00			
Uniform Delay (d ₁), s/veh	35.9		20.6	44.1		23.3		42.3	28.4		29.2	25.1			
Incremental Delay (d ₂), s/veh	200.7		4.7	197.7		8.6		207.0	0.2		0.2	0.0			
Initial Queue Delay (d ₃), s/veh	0.0		0.0	0.0		0.0		0.0	0.0		0.0	0.0			
Control Delay (d), s/veh	236.6		25.2	241.8		31.9		249.3	28.5		29.4	25.1			
Level of Service (LOS)	F		C	F		C		F	C		C	C			
Approach Delay, s/veh / LOS	127.5		F	99.3		F		190.4	F		28.7	C			
Intersection Delay, s/veh / LOS				123.5						F					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS	1.90		B	1.90		B		2.12	B		2.12	B			
Bicycle LOS Score / LOS	1.41		A	1.40		A		2.01	B		1.18	A			

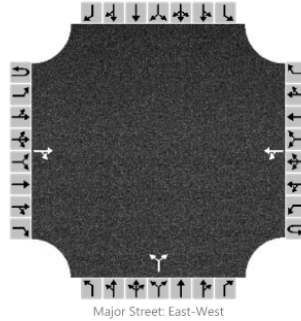
EXHIBIT 9

OPTION 1 - 2041 PEAK AM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak AM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 1		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Priority																	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0	
Configuration				TR		LT					LR						
Volume, V (veh/h)			226	0		52	139			0		7					
Percent Heavy Vehicles (%)						2				2		2					
Proportion Time Blocked																	
Percent Grade (%)										0							
Right Turn Channelized		No			No					No			No				
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																	
Critical Headway (sec)																	
Base Follow-Up Headway (sec)																	
Follow-Up Headway (sec)																	

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						57					8					
Capacity, c (veh/h)						1307					775					
v/c Ratio						0.04					0.01					
95% Queue Length, Q ₉₅ (veh)						0.1					0.0					
Control Delay (s/veh)						7.9					9.7					
Level of Service, LOS						A					A					
Approach Delay (s/veh)						2.4				9.7						
Approach LOS						A				A						

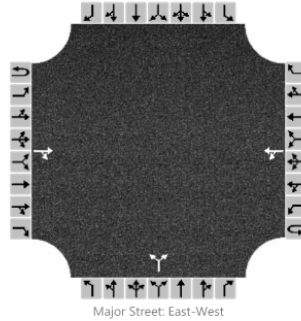
EXHIBIT 10

OPTION 1 - 2041 PEAK PM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak PM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 1		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			247	1		2	270			7		49				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No			No					No			No			
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						2						61				
Capacity, c (veh/h)						1281						701				
v/c Ratio						0.00						0.09				
95% Queue Length, Q ₉₅ (veh)						0.0						0.3				
Control Delay (s/veh)						7.8						10.6				
Level of Service, LOS						A						B				
Approach Delay (s/veh)						0.1				10.6						
Approach LOS										B						

EXHIBIT 11

OPTION 2 - 2041 PEAK AM HOUR TRAFFIC – Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary

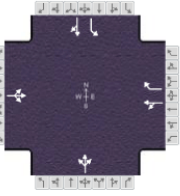
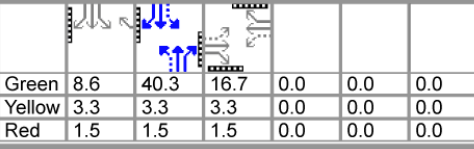
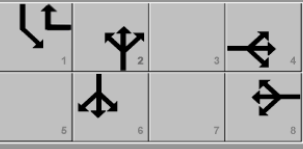
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Peter/Wilson			File Name	2041_AM_OPTION 2.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				42	264	4	7	108	362	4	30	10	389	57	82
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	8.6	40.3	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8		2	1	6				
Case Number					8.0		7.0		8.3	1.0	4.0				
Phase Duration, s					21.5		21.5		45.1	13.4	58.5				
Change Period, (Y+R _c), s					4.8		4.8		4.8	4.8	4.8				
Max Allow Headway (MAH), s					3.1		3.2		0.0	3.1	0.0				
Queue Clearance Time (g _s), s					16.4		8.7			7.8					
Green Extension Time (g _e), s					0.4		0.5		0.0	0.8	0.0				
Phase Call Probability					1.00		1.00			1.00					
Max Out Probability					0.12		0.00			0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				337			125	176		48			423	129	
Adjusted Saturation Flow Rate (s), veh/h/ln				1817			1873	1610		1780			1810	1737	
Queue Service Time (g _s), s				9.3			0.0	6.7		0.0			5.8	2.1	
Cycle Queue Clearance Time (g _c), s				14.4			4.5	6.7		1.1			5.8	2.1	
Green Ratio (g/C)				0.21			0.21	0.32		0.50			0.76	0.67	
Capacity (c), veh/h				430			439	510		1056			1163	1166	
Volume-to-Capacity Ratio (X)				0.783			0.285	0.345		0.045			0.363	0.111	
Back of Queue (Q), ft/ln (50 th percentile)				161.5			48.8	60.1		9.7			30.2	16.3	
Back of Queue (Q), veh/ln (50 th percentile)				6.5			2.0	2.4		0.4			1.2	0.7	
Queue Storage Ratio (RQ) (50 th percentile)				0.38			0.11	0.63		0.02			0.18	0.10	
Uniform Delay (d ₁), s/veh				30.6			26.8	21.0		8.8			3.1	4.7	
Incremental Delay (d ₂), s/veh				4.1			0.1	0.1		0.1			0.1	0.2	
Initial Queue Delay (d ₃), s/veh				0.0			0.0	0.0		0.0			0.0	0.0	
Control Delay (d), s/veh				34.7			26.9	21.1		8.9			3.1	4.9	
Level of Service (LOS)				C			C	C		A			A	A	
Approach Delay, s/veh / LOS				34.7	C		23.5	C		8.9	A		3.5	A	
Intersection Delay, s/veh / LOS				17.1						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.70	B		1.96	B		2.17	B		1.63	B	
Bicycle LOS Score / LOS				1.04	A		0.98	A		0.57	A		1.40	A	

EXHIBIT 12

OPTION 2 - 2041 PEAK PM HOUR TRAFFIC – Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary

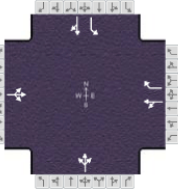
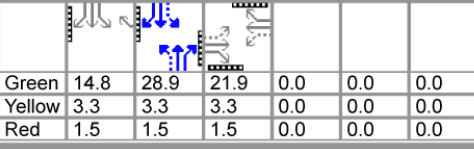
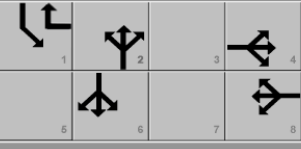
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak PM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Peter/Wilson			File Name	2041_PM_OPTION 2.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				73	171	8	24	262	564	5	76	23	547	82	52
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off	Green	14.8	28.9	21.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8		2	1	6				
Case Number					8.0		7.0		8.3	1.0	4.0				
Phase Duration, s					26.7		26.7		33.7	19.6	53.3				
Change Period, (Y+R _c), s					4.8		4.8		4.8	4.8	4.8				
Max Allow Headway (MAH), s					3.3		3.3		0.0	3.1	0.0				
Queue Clearance Time (g _s), s					13.5		21.8			13.9					
Green Extension Time (g _e), s					0.4		0.1		0.0	0.9	0.0				
Phase Call Probability					1.00		1.00			1.00					
Max Out Probability					0.01		1.00			0.10					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					274			311	504		113		595	124	
Adjusted Saturation Flow Rate (s), veh/h/ln					1616			1853	1610		1812		1810	1809	
Queue Service Time (g _s), s					0.1			0.0	19.8		0.0		11.9	2.3	
Cycle Queue Clearance Time (g _c), s					11.5			11.4	19.8		3.3		11.9	2.3	
Green Ratio (g/C)					0.27			0.27	0.46		0.36		0.70	0.61	
Capacity (c), veh/h					500			556	739		815		1037	1097	
Volume-to-Capacity Ratio (X)					0.548			0.559	0.683		0.139		0.573	0.113	
Back of Queue (Q), ft/ln (50 th percentile)					108.9			123.9	174.4		34.4		80.6	20.3	
Back of Queue (Q), veh/ln (50 th percentile)					4.4			5.0	7.0		1.4		3.2	0.8	
Queue Storage Ratio (RQ) (50 th percentile)					0.26			0.29	1.84		0.08		0.47	0.12	
Uniform Delay (d ₁), s/veh					25.0			25.2	17.1		15.7		5.8	6.7	
Incremental Delay (d ₂), s/veh					0.7			0.7	2.1		0.4		0.2	0.2	
Initial Queue Delay (d ₃), s/veh					0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (d), s/veh					25.7			26.0	19.2		16.1		6.0	6.9	
Level of Service (LOS)					C			C	B		B		A	A	
Approach Delay, s/veh / LOS				25.7	C		21.8	C		16.1	B		6.2		A
Intersection Delay, s/veh / LOS				16.1				B							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.69	B		1.95	B		2.05	B		1.65	B	
Bicycle LOS Score / LOS				0.94	A		1.83	B		0.67	A		1.67	B	

EXHIBIT 13

OPTION 2 - 2041 PEAK AM HOUR TRAFFIC – Foster/Gore

HCS7 Signalized Intersection Results Summary

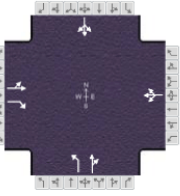
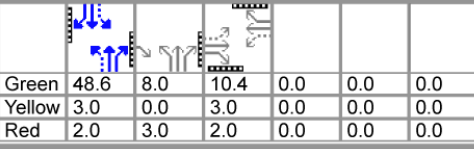
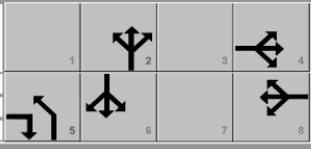
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Gore/Foster			File Name	2041_AM_OPTION 2.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				13	163	464	16	54	10	405	160	16	3	127	13
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	48.6	8.0	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					15.4		15.4	11.0	64.6		53.6				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.2		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					9.9		4.9	2.0							
Green Extension Time (g _e), s					0.5		0.1	0.4	0.0		0.0				
Phase Call Probability					1.00		0.82	1.00							
Max Out Probability					0.03		0.00	0.57							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				191	178		76			440	175			155	
Adjusted Saturation Flow Rate (s), veh/h/ln				1873	1610		1779			1810	1898			1864	
Queue Service Time (g _s), s				2.8	7.9		0.0			0.0	2.1			0.0	
Cycle Queue Clearance Time (g _c), s				7.9	7.9		2.9			0.0	2.1			2.8	
Green Ratio (g/C)				0.13	0.21		0.13			0.72	0.74			0.61	
Capacity (c), veh/h				292	330		287			1025	1413			1294	
Volume-to-Capacity Ratio (X)				0.655	0.539		0.265			0.429	0.124			0.120	
Back of Queue (Q), ft/ln (50 th percentile)				88.1	74		32.5			67.1	14.2			23.3	
Back of Queue (Q), veh/ln (50 th percentile)				3.5	3.0		1.3			2.7	0.6			0.9	
Queue Storage Ratio (RQ) (50 th percentile)				0.21	0.30		0.08			0.71	0.03			0.14	
Uniform Delay (d ₁), s/veh				33.7	28.4		31.5			6.1	2.9			5.7	
Incremental Delay (d ₂), s/veh				0.9	0.5		0.2			0.1	0.2			0.2	
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0			0.0	0.0			0.0	
Control Delay (d), s/veh				34.6	28.9		31.7			6.2	3.1			5.9	
Level of Service (LOS)				C	C		C			A	A			A	
Approach Delay, s/veh / LOS				31.9	C	31.7	C	5.3	A	5.9	A				
Intersection Delay, s/veh / LOS				15.1						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.96	B	1.71	B	1.62	B	2.37	B				
Bicycle LOS Score / LOS				1.10	A	0.61	A	1.50	B	0.74	A				

EXHIBIT 14

OPTION 2 - 2041 PEAK PM HOUR TRAFFIC – Foster/Gore

HCS7 Signalized Intersection Results Summary

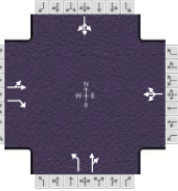
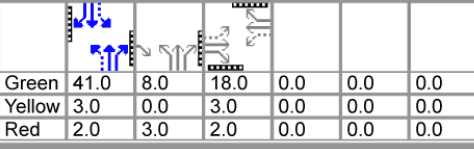
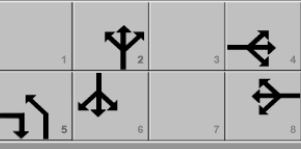
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018		Area Type	Other							
Jurisdiction				Time Period	Peak PM Hour		PHF	0.92							
Urban Street	West Annex			Analysis Year	2041		Analysis Period	1> 7:00							
Intersection	Gore/Foster			File Name	2041_PM_OPTION 2.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				14	102	646	19	163	14	655	167	26	3	145	29
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	41.0	8.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					23.0		23.0	11.0	57.0		46.0				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.3		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					19.1		9.4	2.0							
Green Extension Time (g _e), s					0.0		0.2	0.8	0.0		0.0				
Phase Call Probability					1.00		0.99	1.00							
Max Out Probability					1.00		0.00	0.70							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					126	376		202		712	193			192	
Adjusted Saturation Flow Rate (s), veh/h/ln					1847	1610		1849		1810	1879			1841	
Queue Service Time (g _s), s					0.0	17.1		0.0		0.0	3.2			0.0	
Cycle Queue Clearance Time (g _c), s					4.4	17.1		7.4		0.0	3.2			4.5	
Green Ratio (g/C)					0.22	0.30		0.22		0.62	0.65			0.51	
Capacity (c), veh/h					466	483		466		862	1221			1104	
Volume-to-Capacity Ratio (X)					0.271	0.779		0.434		0.826	0.158			0.174	
Back of Queue (Q), ft/ln (50 th percentile)					48.1	109.7		80.7		316.1	27.5			42.4	
Back of Queue (Q), veh/ln (50 th percentile)					1.9	4.4		3.2		12.6	1.1			1.7	
Queue Storage Ratio (RQ) (50 th percentile)					0.11	0.44		0.19		3.33	0.06			0.25	
Uniform Delay (d ₁), s/veh					25.7	25.6		26.9		17.1	5.5			9.4	
Incremental Delay (d ₂), s/veh					0.1	7.2		0.2		6.2	0.3			0.3	
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (d), s/veh					25.8	32.8		27.1		23.3	5.7			9.7	
Level of Service (LOS)					C	C		C		C	A			A	
Approach Delay, s/veh / LOS				31.1		C	27.1		C	19.5		B	9.7		A
Intersection Delay, s/veh / LOS				22.6						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.95		B	1.70		B	1.65		B	2.37		B
Bicycle LOS Score / LOS				1.32		A	0.82		A	1.98		B	0.81		A

EXHIBIT 15

OPTION 2 - 2041 PEAK AM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

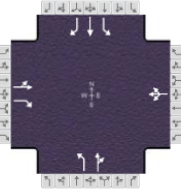
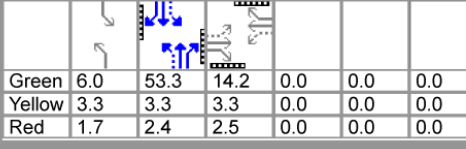

General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018		Area Type	Other							
Jurisdiction				Time Period	Peak AM Hour		PHF	0.92							
Urban Street	West Annex			Analysis Year	2041		Analysis Period	1 > 7:00							
Intersection	Wilson/Sunset			File Name	2041_AM_OPTION 2.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				205	11	127	8	50	11	124	438	5	7	562	177
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	6.0	53.3	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.7	2.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					7.0		8.0	1.1	4.0	1.1	3.0				
Phase Duration, s					20.0		20.0	11.0	59.0	11.0	59.0				
Change Period, (Y+Rc), s					5.8		5.8	5.0	5.7	5.0	5.7				
Max Allow Headway (MAH), s					3.2		3.1	3.1	0.0	3.1	0.0				
Queue Clearance Time (gs), s					16.2		5.0	3.5		2.1					
Green Extension Time (ge), s					0.0		0.1	0.1	0.0	0.0	0.0				
Phase Call Probability					1.00		0.83	1.00		1.00					
Max Out Probability					1.00		0.00	0.64		0.01					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				235	116		72			135	482		8	611	57
Adjusted Saturation Flow Rate (s), veh/h/ln				1380	1610		1845			1810	1896		1810	1900	1610
Queue Service Time (gs), s				11.2	5.9		0.0			1.5	12.5		0.1	17.4	1.3
Cycle Queue Clearance Time (gc), s				14.2	5.9		3.0			1.5	12.5		0.1	17.4	1.3
Green Ratio (g/C)				0.16	0.16		0.16			0.79	0.59		0.79	0.59	0.59
Capacity (c), veh/h				296	254		336			611	1123		773	1125	954
Volume-to-Capacity Ratio (X)				0.794	0.458		0.214			0.220	0.429		0.010	0.543	0.059
Back of Queue (Q), ft/ln (50 th percentile)				153.1	57		33.7			17.2	124		0.4	174.6	11.2
Back of Queue (Q), veh/ln (50 th percentile)				6.1	2.3		1.3			0.7	5.0		0.0	7.0	0.4
Queue Storage Ratio (RQ) (50 th percentile)				0.61	0.23		0.08			0.18	0.18		0.01	0.83	0.05
Uniform Delay (d1), s/veh				38.4	34.4		33.2			6.7	10.0		3.1	11.0	7.8
Incremental Delay (d2), s/veh				12.8	0.5		0.1			0.1	1.2		0.0	1.9	0.1
Initial Queue Delay (d3), s/veh				0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh				51.2	34.9		33.3			6.8	11.2		3.1	12.9	7.9
Level of Service (LOS)					D	C		C		A	B		A	B	A
Approach Delay, s/veh / LOS				45.8		D	33.3		C	10.3		B	12.4		B
Intersection Delay, s/veh / LOS				19.3						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.94		B	2.31		B	1.66		B	1.91		B
Bicycle LOS Score / LOS				1.07		A	0.61		A	1.50		B	1.60		B

EXHIBIT 16

OPTION 2 - 2041 PEAK PM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

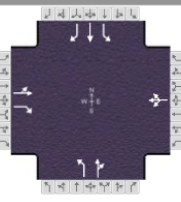
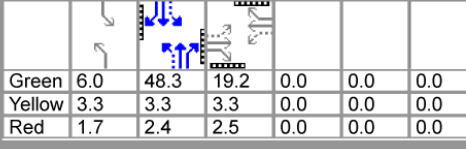

General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018		Area Type	Other							
Jurisdiction				Time Period	Peak PM Hour		PHF	0.92							
Urban Street	West Annex			Analysis Year	2041		Analysis Period	1 > 7:00							
Intersection	Wilson/Sunset			File Name	2041_PM_OPTION 2.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				260	37	156	8	32	30	133	794	1	13	758	292
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	6.0	48.3	19.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.7	2.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					7.0		8.0	1.1	4.0	1.1	3.0				
Phase Duration, s					25.0		25.0	11.0	54.0	11.0	54.0				
Change Period, (Y+R _c), s					5.8		5.8	5.0	5.7	5.0	5.7				
Max Allow Headway (MAH), s					3.2		3.2	3.1	0.0	3.1	0.0				
Queue Clearance Time (g _s), s					21.2		5.0	4.1		2.2					
Green Extension Time (g _e), s					0.0		0.1	0.0	0.0	0.0	0.0				
Phase Call Probability					1.00		0.84	1.00		1.00					
Max Out Probability					1.00		0.00	1.00		0.21					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				323	148		73			145	864		14	824	154
Adjusted Saturation Flow Rate (s), veh/h/ln				1409	1610		1794			1810	1900		1810	1900	1610
Queue Service Time (g _s), s				16.2	7.2		0.0			2.1	34.8		0.2	31.9	4.4
Cycle Queue Clearance Time (g _c), s				19.2	7.2		3.0			2.1	34.8		0.2	31.9	4.4
Green Ratio (g/C)				0.21	0.21		0.21			0.74	0.54		0.74	0.54	0.54
Capacity (c), veh/h				376	344		427			409	1019		435	1020	864
Volume-to-Capacity Ratio (X)				0.860	0.430		0.170			0.353	0.848		0.032	0.808	0.179
Back of Queue (Q), ft/ln (50 th percentile)				217.9	68.1		31.6			38.6	397.2		2.6	356.6	38.8
Back of Queue (Q), veh/ln (50 th percentile)				8.7	2.7		1.3			1.5	15.9		0.1	14.3	1.6
Queue Storage Ratio (RQ) (50 th percentile)				0.87	0.27		0.08			0.41	0.58		0.05	1.70	0.18
Uniform Delay (d ₁), s/veh				36.1	30.7		29.0			15.2	17.7		10.8	17.1	10.7
Incremental Delay (d ₂), s/veh				17.1	0.3		0.1			0.2	8.7		0.0	6.9	0.5
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh				53.2	31.0		29.1			15.4	26.4		10.8	23.9	11.1
Level of Service (LOS)					D	C		C		B	C		B	C	B
Approach Delay, s/veh / LOS				46.2		D	29.1		C	24.9		C	21.8		C
Intersection Delay, s/veh / LOS				27.7						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.93		B	2.34		B	1.67		B	1.92		B
Bicycle LOS Score / LOS				1.26		A	0.61		A	2.15		B	2.13		B

EXHIBIT 17

OPTION 2 - 2041 PEAK AM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

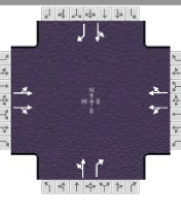
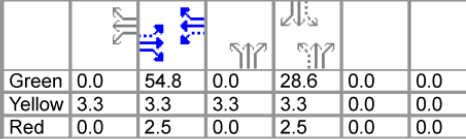
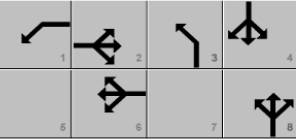
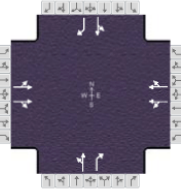
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak AM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 2			Analysis Year	2041										
				Analysis Period	1> 7:00										
				File Name	2041_AM_OPTION 2.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				77	537	297	178	579	26	188	220	140	29	152	39
Signal Information															
Cycle, s	95.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	54.8	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					60.6	0.0	60.6	0.0	34.4		34.4				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.2		3.2				
Queue Clearance Time (g _s), s									26.9		9.7				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	1.7		1.8				
Phase Call Probability									1.00		1.00				
Max Out Probability									0.00		0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				507		484	295		556		443	152		197	42
Adjusted Saturation Flow Rate (s), veh/h/ln				1297		1519	566		1687		1539	1585		1736	1610
Queue Service Time (g _s), s				12.3		18.8	6.0		19.7		6.0	7.1		0.0	1.8
Cycle Queue Clearance Time (g _c), s				32.1		18.8	27.9		19.7		24.9	7.1		7.7	1.8
Green Ratio (g/C)				0.58		0.58	0.58		0.58		0.30	0.30		0.30	0.30
Capacity (c), veh/h				792		877	389		973		518	477		566	484
Volume-to-Capacity Ratio (X)				0.639		0.552	0.759		0.571		0.855	0.319		0.347	0.088
Back of Queue (Q), ft/ln (50 th percentile)				216.5		158	180.2		183.1		252.5	66		84.7	16.8
Back of Queue (Q), veh/ln (50 th percentile)				8.7		6.3	7.2		7.3		10.1	2.6		3.4	0.7
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00		0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh				14.9		12.5	25.1		12.7		32.5	25.7		25.9	23.8
Incremental Delay (d ₂), s/veh				3.9		2.5	13.0		2.4		4.3	0.1		0.1	0.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0		0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh				18.9		15.0	38.2		15.1		36.7	25.8		26.0	23.9
Level of Service (LOS)				B		B	D		B		D	C		C	C
Approach Delay, s/veh / LOS				17.0		B	23.1		C		33.9	C		25.7	C
Intersection Delay, s/veh / LOS				23.5						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.88		B	1.88		B		2.11	B		2.11	B
Bicycle LOS Score / LOS				1.30		A	1.19		A		1.47	A		0.88	A

EXHIBIT 18

OPTION 2 - 2041 PEAK PM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information							
Agency				Duration, h	0.25						
Analyst				Analysis Date	4/24/2018						
Jurisdiction				Area Type	Other						
Urban Street	West Annex			Time Period	Peak PM Hour						
Intersection	Dufferin/Wilson			PHF	0.92						
Project Description	West Annex - OPTION 2			Analysis Year	2041			Analysis Period	1 > 7:00		
File Name	2041_PM_OPTION 2.xus										

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	82	686	262	217	779	21	312	312	227	31	285	69

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	0.0	64.2	0.0	44.2	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0		
				Red	0.0	2.5	0.0	2.5	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6	3	8		4
Case Number		8.3	0.0	14.0	0.0	13.0		7.3
Phase Duration, s		70.0	0.0	70.0	0.0	50.0		50.0
Change Period, (Y+R _c), s		5.8	3.3	5.8	3.3	5.8		5.8
Max Allow Headway (MAH), s		0.0	0.0	0.0	0.0	3.3		3.3
Queue Clearance Time (g _s), s						46.2		18.9
Green Extension Time (g _e), s		0.0	0.0	0.0	0.0	0.0		3.5
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	542		578	355		750		678	247		343	75
Adjusted Saturation Flow Rate (s), veh/h/ln	652		1563	384		1693		1162	1585		1788	1610
Queue Service Time (g _s), s	19.8		32.7	6.0		44.4		6.0	14.0		0.0	3.7
Cycle Queue Clearance Time (g _c), s	64.2		32.7	64.2		44.4		44.2	14.0		16.9	3.7
Green Ratio (g/C)	0.53		0.53	0.54		0.54		0.37	0.37		0.37	0.37
Capacity (c), veh/h	384		836	256		906		473	584		692	593
Volume-to-Capacity Ratio (X)	1.413		0.691	1.390		0.828		1.434	0.423		0.497	0.126
Back of Queue (Q), ft/ln (50 th percentile)	824.1		311	542.7		472.2		680.1	133.9		189.2	35.5
Back of Queue (Q), veh/ln (50 th percentile)	33.0		12.4	21.7		18.9		27.2	5.3		7.6	1.4
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00	0.00		0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh	35.9		20.6	44.1		23.3		42.3	28.4		29.2	25.1
Incremental Delay (d ₂), s/veh	200.7		4.7	197.7		8.6		207.0	0.2		0.2	0.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0	0.0		0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh	236.6		25.2	241.8		31.9		249.3	28.5		29.4	25.1
Level of Service (LOS)	F		C	F		C		F	C		C	C
Approach Delay, s/veh / LOS	127.5		F	99.3		F		190.4	F		28.7	C
Intersection Delay, s/veh / LOS	123.5						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.90	B	2.12	B	2.12	B
Bicycle LOS Score / LOS	1.41	A	1.40	A	2.01	B	1.18	A

EXHIBIT 19

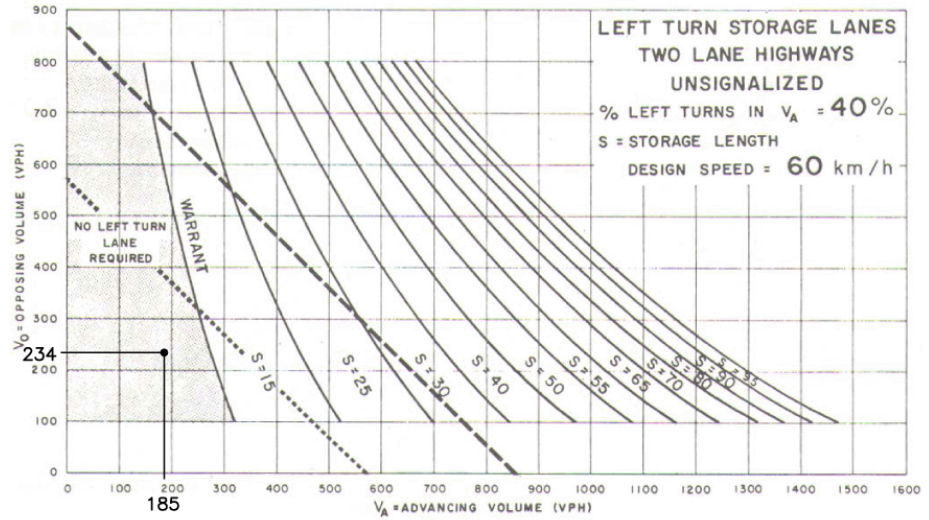
OPTION 2 - 2041 LEFT TURN LANE WARRANT – Sunset/Lanark County Office Access

TRAFFIC

$V_o = 234$ vph
 $V_A = 185$ vph
 $V_L = 81$ vph

$V_L/V_A = 43.8\%$

POSTED SPEED
50 km/h



WARRANT

NO LEFT TURN
LANE REQUIRED

**WESTBOUND LEFT
PEAK AM HOUR**

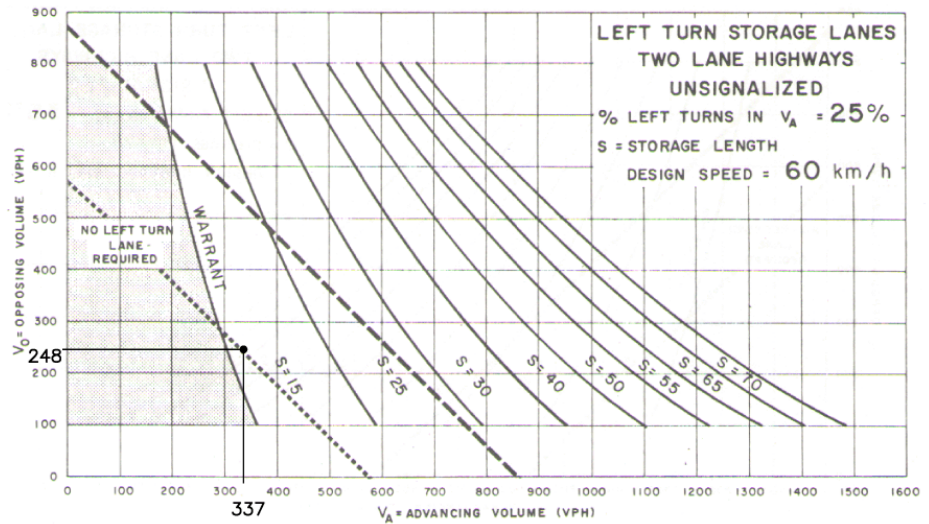
--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL
AREAS OR URBAN AREAS WITH RESTRICTED FLOW
..... TRAFFIC SIGNALS MAY BE WARRANTED IN
"FREE FLOW" URBAN AREAS

TRAFFIC

$V_o = 248$ vph
 $V_A = 337$ vph
 $V_L = 87$ vph

$V_L/V_A = 25.8\%$

POSTED SPEED
50 km/h



WARRANT

15m LEFT TURN
LANE REQUIRED

**WESTBOUND LEFT
PEAK PM HOUR**

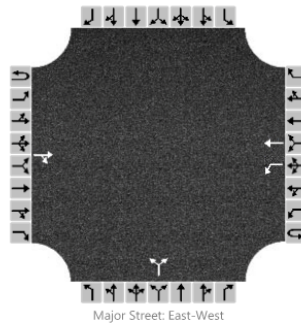
EXHIBIT 20

OPTION 2 - 2041 PEAK AM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak AM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 2		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T					LR				
Volume, V (veh/h)			214	20		81	104			35		94				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No			No					No			No			
Median Type/Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)					4.1					7.1		6.2				
Critical Headway (sec)					4.12					6.42		6.22				
Base Follow-Up Headway (sec)					2.2					3.5		3.3				
Follow-Up Headway (sec)					2.22					3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					88					140						
Capacity, c (veh/h)					1298					656						
v/c Ratio					0.07					0.21						
95% Queue Length, Q ₉₅ (veh)					0.2					0.8						
Control Delay (s/veh)					8.0					12.0						
Level of Service, LOS					A					B						
Approach Delay (s/veh)					3.5				12.0							
Approach LOS									B							

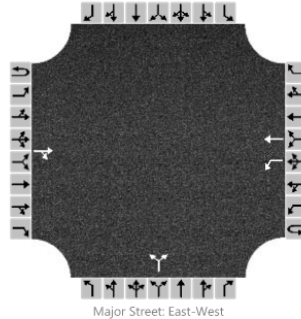
EXHIBIT 21

OPTION 2 - 2041 PEAK PM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak PM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 2		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			213	35		87	250			20		99				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)					4.1					7.1		6.2				
Critical Headway (sec)					4.12					6.42		6.22				
Base Follow-Up Headway (sec)					2.2					3.5		3.3				
Follow-Up Headway (sec)					2.22					3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					95					129						
Capacity, c (veh/h)					1281					647						
v/c Ratio					0.07					0.20						
95% Queue Length, Q ₉₅ (veh)					0.2					0.7						
Control Delay (s/veh)					8.0					11.9						
Level of Service, LOS					A					B						
Approach Delay (s/veh)					2.1				11.9							
Approach LOS									B							

EXHIBIT 22

OPTION 3 - 2041 PEAK AM HOUR TRAFFIC – Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary

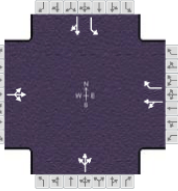
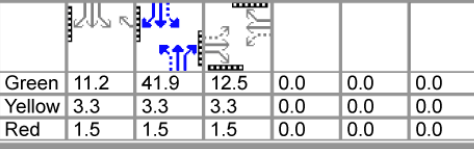
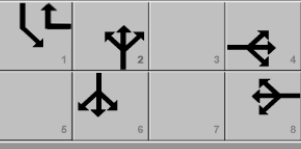
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Peter/Wilson			File Name	2041_AM_OPTION 3.xus										
Project Description	West Annex - OPTION 3														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				65	79	4	7	47	424	4	30	10	574	57	89
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	11.2	41.9	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8		2	1	6				
Case Number					8.0		7.0		8.3	1.0	4.0				
Phase Duration, s					17.3		17.3		46.7	16.0	62.7				
Change Period, (Y+R _c), s					4.8		4.8		4.8	4.8	4.8				
Max Allow Headway (MAH), s					3.1		3.3		0.0	3.1	0.0				
Queue Clearance Time (g _s), s					9.1		12.0			9.8					
Green Extension Time (g _e), s					0.2		0.5		0.0	1.3	0.0				
Phase Call Probability					0.97		1.00			1.00					
Max Out Probability					0.00		0.01			0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					161			59	243		48		624	137	
Adjusted Saturation Flow Rate (s), veh/h/ln					1664			1862	1610		1779		1810	1730	
Queue Service Time (g _s), s					4.9			0.0	10.0		0.0		7.8	1.9	
Cycle Queue Clearance Time (g _c), s					7.1			2.2	10.0		1.0		7.8	1.9	
Green Ratio (g/C)					0.16			0.16	0.30		0.52		0.81	0.72	
Capacity (c), veh/h					325			342	476		1093		1250	1252	
Volume-to-Capacity Ratio (X)					0.495			0.172	0.511		0.044		0.499	0.109	
Back of Queue (Q), ft/ln (50 th percentile)					70.4			23.8	90.9		9.1		24.4	12.9	
Back of Queue (Q), veh/ln (50 th percentile)					2.8			1.0	3.6		0.4		1.0	0.5	
Queue Storage Ratio (RQ) (50 th percentile)					0.17			0.06	0.96		0.02		0.14	0.08	
Uniform Delay (d ₁), s/veh					31.4			29.4	23.4		8.0		2.2	3.3	
Incremental Delay (d ₂), s/veh					0.4			0.1	0.3		0.1		0.1	0.2	
Initial Queue Delay (d ₃), s/veh					0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (d), s/veh					31.8			29.5	23.7		8.1		2.3	3.5	
Level of Service (LOS)					C			C	C		A		A	A	
Approach Delay, s/veh / LOS				31.8	C	24.8	C	8.1	A	2.5	A				
Intersection Delay, s/veh / LOS				11.7						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.71	B	1.96	B	2.17	B	1.62	B				
Bicycle LOS Score / LOS				0.75	A	0.99	A	0.57	A	1.74	B				

EXHIBIT 23

OPTION 3 - 2041 PEAK PM HOUR TRAFFIC – Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary

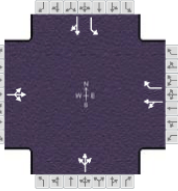
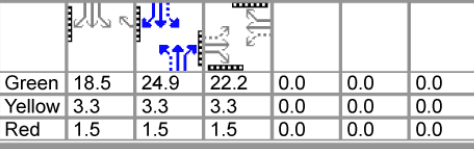
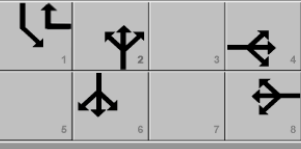
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak PM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Peter/Wilson			File Name	2041_PM_OPTION 3.xus										
Project Description	West Annex - OPTION 3														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				86	66	8	24	83	743	5	76	23	652	82	74
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off	Green	18.5	24.9	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8		2	1	6				
Case Number					8.0		7.0		8.3	1.0	4.0				
Phase Duration, s					27.0		27.0		29.7	23.3	53.0				
Change Period, ($Y+R_c$), s					4.8		4.8		4.8	4.8	4.8				
Max Allow Headway (MAH), s					3.2		3.3		0.0	3.1	0.0				
Queue Clearance Time (g_s), s					8.9		24.2			17.8					
Green Extension Time (g_e), s					0.2		0.0		0.0	0.7	0.0				
Phase Call Probability					0.98		1.00			1.00					
Max Out Probability					0.00		1.00			0.90					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					174			116	699		113		709	148	
Adjusted Saturation Flow Rate (s), veh/h/ln					1559			1785	1610		1810		1810	1773	
Queue Service Time (g_s), s					3.2			0.0	22.2		0.0		15.8	2.9	
Cycle Queue Clearance Time (g_c), s					6.9			3.8	22.2		3.6		15.8	2.9	
Green Ratio (g/C)					0.28			0.28	0.51		0.31		0.69	0.60	
Capacity (c), veh/h					502			550	820		723		1052	1068	
Volume-to-Capacity Ratio (X)					0.347			0.211	0.853		0.156		0.674	0.138	
Back of Queue (Q), ft/ln (50 th percentile)					63.6			40.4	287.4		38.2		115.8	25.1	
Back of Queue (Q), veh/ln (50 th percentile)					2.5			1.6	11.5		1.5		4.6	1.0	
Queue Storage Ratio (RQ) (50 th percentile)					0.15			0.10	3.03		0.09		0.68	0.15	
Uniform Delay (d_1), s/veh					23.3			22.2	17.0		18.4		6.6	6.9	
Incremental Delay (d_2), s/veh					0.2			0.1	8.2		0.5		1.2	0.3	
Initial Queue Delay (d_3), s/veh					0.0			0.0	0.0		0.0		0.0	0.0	
Control Delay (d), s/veh					23.4			22.3	25.3		18.9		7.8	7.2	
Level of Service (LOS)					C			C	C		B		A	A	
Approach Delay, s/veh / LOS				23.4	C		24.8	C		18.9	B		7.7		A
Intersection Delay, s/veh / LOS				16.9				B							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.69	B		1.95	B		2.06	B		1.65	B	
Bicycle LOS Score / LOS				0.77	A		1.83	B		0.67	A		1.90	B	

EXHIBIT 24

OPTION 3 - 2041 PEAK AM HOUR TRAFFIC – Foster/Gore

HCS7 Signalized Intersection Results Summary

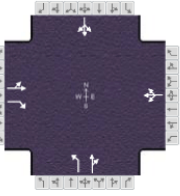
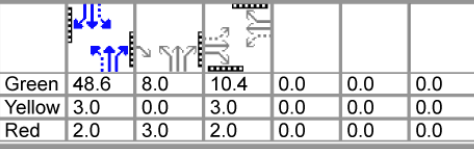
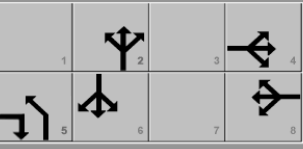
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Gore/Foster			File Name	2041_AM_OPTION 3.xus										
Project Description	West Annex - OPTION 3														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				13	163	464	16	54	10	405	160	16	3	127	13
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	48.6	8.0	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					15.4		15.4	11.0	64.6		53.6				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.2		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					9.9		4.9	2.0							
Green Extension Time (g _e), s					0.5		0.1	0.4	0.0		0.0				
Phase Call Probability					1.00		0.82	1.00							
Max Out Probability					0.03		0.00	0.57							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				191	178		76			440	175			155	
Adjusted Saturation Flow Rate (s), veh/h/ln				1873	1610		1779			1810	1898			1864	
Queue Service Time (g _s), s				2.8	7.9		0.0			0.0	2.1			0.0	
Cycle Queue Clearance Time (g _c), s				7.9	7.9		2.9			0.0	2.1			2.8	
Green Ratio (g/C)				0.13	0.21		0.13			0.72	0.74			0.61	
Capacity (c), veh/h				292	330		287			1025	1413			1294	
Volume-to-Capacity Ratio (X)				0.655	0.539		0.265			0.429	0.124			0.120	
Back of Queue (Q), ft/ln (50 th percentile)				88.1	74		32.5			67.1	14.2			23.3	
Back of Queue (Q), veh/ln (50 th percentile)				3.5	3.0		1.3			2.7	0.6			0.9	
Queue Storage Ratio (RQ) (50 th percentile)				0.21	0.30		0.08			0.71	0.03			0.14	
Uniform Delay (d ₁), s/veh				33.7	28.4		31.5			6.1	2.9			5.7	
Incremental Delay (d ₂), s/veh				0.9	0.5		0.2			0.1	0.2			0.2	
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0			0.0	0.0			0.0	
Control Delay (d), s/veh				34.6	28.9		31.7			6.2	3.1			5.9	
Level of Service (LOS)				C	C		C			A	A			A	
Approach Delay, s/veh / LOS				31.9	C	31.7	C	5.3	A	5.9	A				
Intersection Delay, s/veh / LOS				15.1						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.96	B	1.71	B	1.62	B	2.37	B				
Bicycle LOS Score / LOS				1.10	A	0.61	A	1.50	B	0.74	A				

EXHIBIT 25

OPTION 3 - 2041 PEAK PM HOUR TRAFFIC – Foster/Gore

HCS7 Signalized Intersection Results Summary

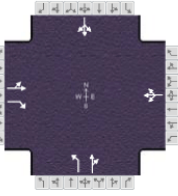
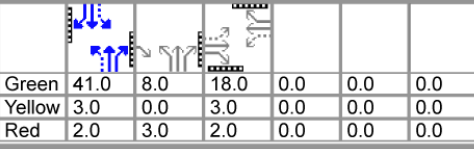
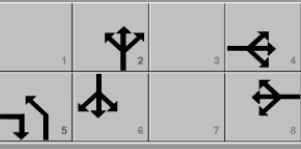
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak PM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Gore/Foster			File Name	2041_PM_OPTION 3.xus										
Project Description	West Annex - OPTION 2														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				14	102	646	19	163	14	655	167	26	3	145	29
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	41.0	8.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					23.0		23.0	11.0	57.0		46.0				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.3		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					19.1		9.4	2.0							
Green Extension Time (g _e), s					0.0		0.2	0.8	0.0		0.0				
Phase Call Probability					1.00		0.99	1.00							
Max Out Probability					1.00		0.00	0.70							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					126	376		202		712	193			192	
Adjusted Saturation Flow Rate (s), veh/h/ln					1847	1610		1849		1810	1879			1841	
Queue Service Time (g _s), s					0.0	17.1		0.0		0.0	3.2			0.0	
Cycle Queue Clearance Time (g _c), s					4.4	17.1		7.4		0.0	3.2			4.5	
Green Ratio (g/C)					0.22	0.30		0.22		0.62	0.65			0.51	
Capacity (c), veh/h					466	483		466		862	1221			1104	
Volume-to-Capacity Ratio (X)					0.271	0.779		0.434		0.826	0.158			0.174	
Back of Queue (Q), ft/ln (50 th percentile)					48.1	109.7		80.7		316.1	27.5			42.4	
Back of Queue (Q), veh/ln (50 th percentile)					1.9	4.4		3.2		12.6	1.1			1.7	
Queue Storage Ratio (RQ) (50 th percentile)					0.11	0.44		0.19		3.33	0.06			0.25	
Uniform Delay (d ₁), s/veh					25.7	25.6		26.9		17.1	5.5			9.4	
Incremental Delay (d ₂), s/veh					0.1	7.2		0.2		6.2	0.3			0.3	
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (d), s/veh					25.8	32.8		27.1		23.3	5.7			9.7	
Level of Service (LOS)					C	C		C		C	A			A	
Approach Delay, s/veh / LOS				31.1	C	27.1	C	19.5	B	9.7	A				
Intersection Delay, s/veh / LOS				22.6						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.95	B	1.70	B	1.65	B	2.37	B				
Bicycle LOS Score / LOS				1.32	A	0.82	A	1.98	B	0.81	A				

EXHIBIT 26

OPTION 3 - 2041 PEAK AM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

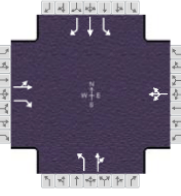
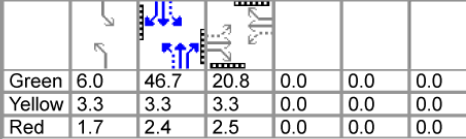
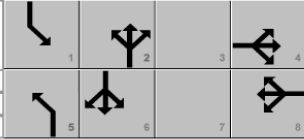
General Information				Intersection Information															
Agency				Duration, h	0.25														
Analyst				Analysis Date	2/27/2018														
Jurisdiction				Time Period	Peak AM Hour														
Urban Street	West Annex			Analysis Year	2041														
Intersection	Wilson/Sunset			File Name	2041_AM_OPTION 3.xus														
Project Description	West Annex - OPTION 3																		
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				189	11	314	8	50	11	193	454	5	7	535	147				
Signal Information																			
Cycle, s	90.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	Off																
Force Mode	Fixed	Simult. Gap N/S	Off																
Green	6.0	46.7	20.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Red	1.7	2.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase				4		8		5		2		1		6					
Case Number				7.0		8.0		1.1		4.0		1.1		3.0					
Phase Duration, s				26.6		26.6		11.0		52.4		11.0		52.4					
Change Period, (Y+Rc), s				5.8		5.8		5.0		5.7		5.0		5.7					
Max Allow Headway (MAH), s				3.3		3.1		3.1		0.0		3.1		0.0					
Queue Clearance Time (gs), s				19.9		4.8		5.3				2.1							
Green Extension Time (ge), s				0.9		0.1		0.3		0.0		0.0		0.0					
Phase Call Probability				1.00		0.83		1.00				1.00							
Max Out Probability				0.04		0.00		0.00				0.00							
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate (v), veh/h				217	330		72			210	499		8	582	51				
Adjusted Saturation Flow Rate (s), veh/h/ln				1382	1610		1829			1810	1896		1810	1900	1610				
Queue Service Time (gs), s				10.1	17.9		0.0			3.3	15.5		0.1	19.1	1.4				
Cycle Queue Clearance Time (gc), s				12.9	17.9		2.8			3.3	15.5		0.1	19.1	1.4				
Green Ratio (g/C)				0.23	0.23		0.23			0.72	0.52		0.72	0.52	0.52				
Capacity (c), veh/h				397	372		468			608	984		598	986	835				
Volume-to-Capacity Ratio (X)				0.547	0.888		0.153			0.345	0.507		0.013	0.590	0.061				
Back of Queue (Q), ft/ln (50 th percentile)				105.1	193.9		30.2			23.5	163.8		0.8	205.1	12.6				
Back of Queue (Q), veh/ln (50 th percentile)				4.2	7.8		1.2			0.9	6.6		0.0	8.2	0.5				
Queue Storage Ratio (RQ) (50 th percentile)				0.42	0.78		0.08			0.25	0.24		0.02	0.98	0.06				
Uniform Delay (d1), s/veh				31.6	33.5		27.7			7.3	14.1		6.9	15.0	10.8				
Incremental Delay (d2), s/veh				0.4	10.3		0.1			0.1	1.9		0.0	2.6	0.1				
Initial Queue Delay (d3), s/veh				0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0				
Control Delay (d), s/veh				32.0	43.8		27.7			7.4	16.0		6.9	17.6	10.9				
Level of Service (LOS)				C		D		C		A		B		A		B			
Approach Delay, s/veh / LOS				39.1		D	27.7		C	13.5		B	16.9		B				
Intersection Delay, s/veh / LOS				22.3						C									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				1.93		B	2.26		B	1.67		B	1.91		B				
Bicycle LOS Score / LOS				1.39		A	0.61		A	1.66		B	1.54		B				

EXHIBIT 27

OPTION 3 - 2041 PEAK PM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

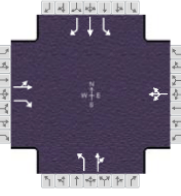
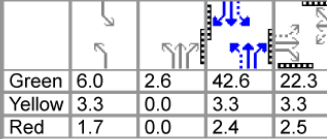
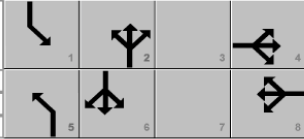
General Information				Intersection Information																				
Agency				Duration, h	0.25																			
Analyst				Analysis Date	2/27/2018																			
Jurisdiction				Time Period	Peak PM Hour																			
Urban Street	West Annex			Analysis Year	2041																			
Intersection	Wilson/Sunset			File Name	2041_PM_OPTION 3.xus																			
Project Description	West Annex - OPTION 3																							
Demand Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				251	37	267	8	32	30	316	803	1	13	702	191									
Signal Information																								
Cycle, s	90.0	Reference Phase	2																					
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	Off																					
Force Mode	Fixed	Simult. Gap N/S	Off	Green	6.0	2.6	42.6	22.3	0.0	0.0	Yellow	3.3	0.0	3.3	3.3	0.0	0.0	Red	1.7	0.0	2.4	2.5	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Assigned Phase					4		8	5	2	1	6													
Case Number					7.0		8.0	1.1	4.0	1.1	3.0													
Phase Duration, s					28.1		28.1	13.6	50.9	11.0	48.3													
Change Period, (Y+Rc), s					5.8		5.8	5.0	5.7	5.0	5.7													
Max Allow Headway (MAH), s					3.3		3.2	3.1	0.0	3.1	0.0													
Queue Clearance Time (gs), s					21.3		4.9	8.3		2.2														
Green Extension Time (ge), s					0.9		0.1	0.4	0.0	0.0	0.0													
Phase Call Probability					1.00		0.84	1.00		1.00														
Max Out Probability					0.10		0.00	0.15		0.00														
Movement Group Results				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16									
Adjusted Flow Rate (v), veh/h				313	279		73			343	874		14	763	72									
Adjusted Saturation Flow Rate (s), veh/h/ln				1410	1610		1780			1810	1900		1810	1900	1610									
Queue Service Time (gs), s				16.4	14.2		0.0			6.3	38.1		0.2	31.8	2.2									
Cycle Queue Clearance Time (gc), s				19.3	14.2		2.9			6.3	38.1		0.2	31.8	2.2									
Green Ratio (g/C)				0.25	0.25		0.25			0.70	0.50		0.65	0.47	0.47									
Capacity (c), veh/h				424	398		485			480	955		338	899	762									
Volume-to-Capacity Ratio (X)				0.739	0.702		0.150			0.716	0.915		0.042	0.848	0.094									
Back of Queue (Q), ft/ln (50 th percentile)				166.4	136.8		30			99.2	474.8		3.2	381.2	20.1									
Back of Queue (Q), veh/ln (50 th percentile)				6.7	5.5		1.2			4.0	19.0		0.1	15.2	0.8									
Queue Storage Ratio (RQ) (50 th percentile)				0.67	0.55		0.08			1.04	0.70		0.06	1.82	0.10									
Uniform Delay (d1), s/veh				32.8	30.8		26.6			15.7	20.6		15.8	20.9	13.1									
Incremental Delay (d2), s/veh				2.8	1.5		0.1			2.2	14.7		0.0	9.8	0.2									
Initial Queue Delay (d3), s/veh				0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0									
Control Delay (d), s/veh				35.6	32.4		26.6			17.9	35.3		15.8	30.6	13.3									
Level of Service (LOS)					D	C		C		B	D		B	C	B									
Approach Delay, s/veh / LOS				34.1		C	26.6		C	30.4		C	28.9		C									
Intersection Delay, s/veh / LOS				30.6						C														
Multimodal Results				EB			WB			NB			SB											
Pedestrian LOS Score / LOS				1.93		B	2.30		B	1.67		B	1.91		B									
Bicycle LOS Score / LOS				1.47		A	0.61		A	2.50		B	1.89		B									

EXHIBIT 28

OPTION 3 - 2041 PEAK AM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

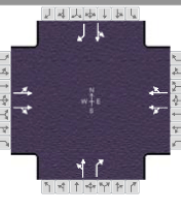
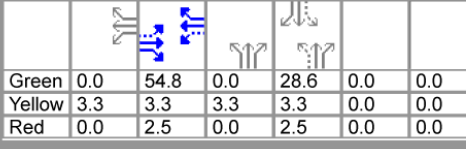
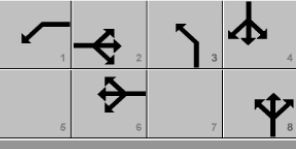
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak AM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 3			Analysis Year	2041										
				Analysis Period	1 > 7:00										
				File Name	2041_AM_OPTION 3.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				77	537	297	178	579	26	188	220	140	29	152	39
Signal Information															
Cycle, s	95.0	Reference Phase	2	Green	0.0	54.8	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On												
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					60.6	0.0	60.6	0.0	34.4		34.4				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.2		3.2				
Queue Clearance Time (g _s), s									26.9		9.7				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	1.7		1.8				
Phase Call Probability									1.00		1.00				
Max Out Probability									0.00		0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				507		484	295		556		443	152		197	42
Adjusted Saturation Flow Rate (s), veh/h/ln				1297		1519	566		1687		1539	1585		1736	1610
Queue Service Time (g _s), s				12.3		18.8	6.0		19.7		6.0	7.1		0.0	1.8
Cycle Queue Clearance Time (g _c), s				32.1		18.8	27.9		19.7		24.9	7.1		7.7	1.8
Green Ratio (g/C)				0.58		0.58	0.58		0.58		0.30	0.30		0.30	0.30
Capacity (c), veh/h				792		877	389		973		518	477		566	484
Volume-to-Capacity Ratio (X)				0.639		0.552	0.759		0.571		0.855	0.319		0.347	0.088
Back of Queue (Q), ft/ln (50 th percentile)				216.5		158	180.2		183.1		252.5	66		84.7	16.8
Back of Queue (Q), veh/ln (50 th percentile)				8.7		6.3	7.2		7.3		10.1	2.6		3.4	0.7
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00		0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh				14.9		12.5	25.1		12.7		32.5	25.7		25.9	23.8
Incremental Delay (d ₂), s/veh				3.9		2.5	13.0		2.4		4.3	0.1		0.1	0.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0		0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh				18.9		15.0	38.2		15.1		36.7	25.8		26.0	23.9
Level of Service (LOS)				B		B	D		B		D	C		C	C
Approach Delay, s/veh / LOS				17.0		B	23.1		C		33.9	C		25.7	C
Intersection Delay, s/veh / LOS				23.5						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.88		B	1.88		B		2.11	B		2.11	B
Bicycle LOS Score / LOS				1.30		A	1.19		A		1.47	A		0.88	A

EXHIBIT 29

OPTION 3 - 2041 PEAK PM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

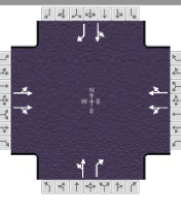


General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak PM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 3			Analysis Year	2041										
				Analysis Period	1 > 7:00										
				File Name	2041_PM_OPTION 3.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				82	686	262	217	779	21	312	312	227	31	285	69
Signal Information															
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	64.2	0.0	44.2	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					70.0	0.0	70.0	0.0	50.0		50.0				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.3		3.3				
Queue Clearance Time (g _s), s									46.2		18.9				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.0		3.5				
Phase Call Probability									1.00		1.00				
Max Out Probability									1.00		0.01				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				542		578	355		750	678	247		343	75	
Adjusted Saturation Flow Rate (s), veh/h/ln				652		1563	384		1693	1162	1585		1788	1610	
Queue Service Time (g _s), s				19.8		32.7	6.0		44.4	6.0	14.0		0.0	3.7	
Cycle Queue Clearance Time (g _c), s				64.2		32.7	64.2		44.4	44.2	14.0		16.9	3.7	
Green Ratio (g/C)				0.53		0.53	0.54		0.54	0.37	0.37		0.37	0.37	
Capacity (c), veh/h				384		836	256		906	473	584		692	593	
Volume-to-Capacity Ratio (X)				1.413		0.691	1.390		0.828	1.434	0.423		0.497	0.126	
Back of Queue (Q), ft/ln (50 th percentile)				824.1		311	542.7		472.2	680.1	133.9		189.2	35.5	
Back of Queue (Q), veh/ln (50 th percentile)				33.0		12.4	21.7		18.9	27.2	5.3		7.6	1.4	
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00		0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh				35.9		20.6	44.1		23.3	42.3	28.4		29.2	25.1	
Incremental Delay (d ₂), s/veh				200.7		4.7	197.7		8.6	207.0	0.2		0.2	0.0	
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				236.6		25.2	241.8		31.9	249.3	28.5		29.4	25.1	
Level of Service (LOS)				F		C	F		C	F	C		C	C	
Approach Delay, s/veh / LOS				127.5		F	99.3		F	190.4	F		28.7	C	
Intersection Delay, s/veh / LOS				123.5						F					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.90		B	1.90		B	2.12		B	2.12		B
Bicycle LOS Score / LOS				1.41		A	1.40		A	2.01		B	1.18		A

EXHIBIT 30

OPTION 3 - 2041 TRAFFIC SIGNAL WARRANT – Sunset/Lanark County Office Access

**MINIMUM WARRANTS FOR INSTALLATION OF TRAFFIC SIGNAL
USING PROJECTED VOLUME**

Location .. Sunset Boulevard and County Offices .. **of** ..
(Roadway) .. **(Intersecting Road)**

Municipality .. Town of Perth .. **Projected Volume** .. Year 2041 ..

WARRANT	DESCRIPTION	MINIMUM REQUIREMENT FOR 2 LANE HIGHWAYS		COMPLIANCE		
		2. FREE FLOW	3. RESTRICT. FLOW	SECTIONAL		4. ENTIRE %
				NUMBER	%	
1. VEHICULAR VOLUME	1. A. Vehicle volume all approaches (Average hour)	480	(720)	434	60	(50%)
	B. Vehicle volume, along minor roads, (Average hour)	120	(255) 170	127	50	
2. DELAY TO CROSS TRAFFIC	1. A. Vehicle volume, along artery (Average hour)	480	(720)	307	43	17%
	B. Combined vehicle and pedestrian volume crossing artery from minor roads, (Average hour)	50	(75)	13	17	

Projected Average Hour - Use the sum of the AM and PM Peak volumes divided by 4

NOTES:

1. Vehicle volume warrants (1A) and (2A) for intersections of roadways having two or more moving lanes in one direction, should be 25% higher than the values given above.
2. Warrant values for free flow apply when the 85 percentile speed of artery traffic equals or exceeds 70 Km/h or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000.
3. Warrant values for restricted flow apply to large urban communities when the 85 percentile speed of artery traffic does not exceed 70 Km/h.
4. The lowest sectional percentage governs the entire Warrant.
5. For "T" intersections the warrant values for minor road should be increased by 50 % (Warrant 1B only).
6. The crossing volumes are defined as:
 - (a) Left turns from both minor road approaches
 - (b) The heaviest through volume from the minor road
 - (c) 50% of the heavier left turn movement from major road when both of the following are met:
 - (i) the left turn volume > 120 vph.
 - (ii) the left turn volume plus the opposing volume > 720 vph.
 - (d) Pedestrians crossing the major road.

EXHIBIT 31

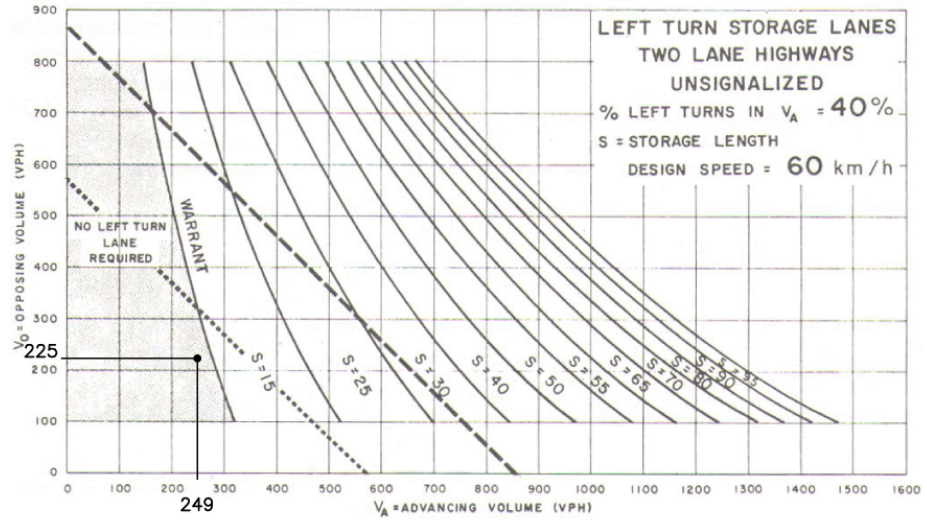
OPTION 3 - 2041 LEFT TURN LANE WARRANT – Sunset/Lanark County Office Access

TRAFFIC

$V_o = 225$ vph
 $V_A = 249$ vph
 $V_L = 138$ vph

$V_L/V_A = 55.4\%$

POSTED SPEED
 50 km/h



WARRANT

NO LEFT TURN
 LANE REQUIRED

**WESTBOUND LEFT
 PEAK AM HOUR**

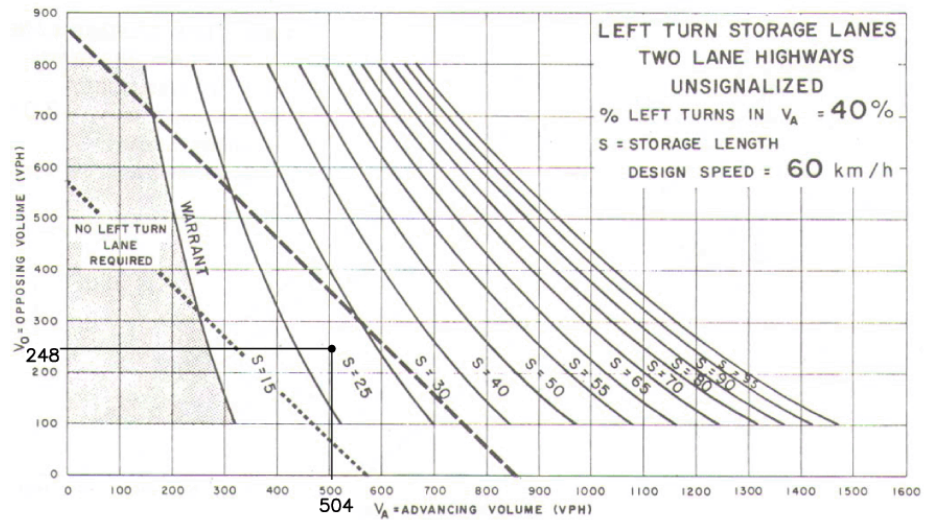
--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL
 AREAS OR URBAN AREAS WITH RESTRICTED FLOW
 TRAFFIC SIGNALS MAY BE WARRANTED IN
 "FREE FLOW" URBAN AREAS

TRAFFIC

$V_o = 248$ vph
 $V_A = 504$ vph
 $V_L = 250$ vph

$V_L/V_A = 49.6\%$

POSTED SPEED
 50 km/h



WARRANT

25m LEFT TURN
 LANE REQUIRED

**WESTBOUND LEFT
 PEAK PM HOUR**

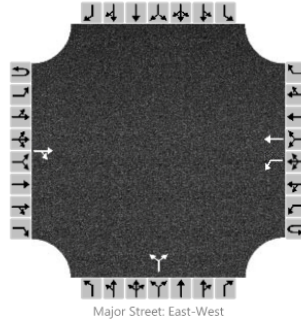
EXHIBIT 32

OPTION 3 - 2041 PEAK AM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak AM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 3		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume, V (veh/h)			216	9		138	111			28		263				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No			No					No			No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						150						316				
Capacity, c (veh/h)						1308						706				
v/c Ratio						0.11						0.45				
95% Queue Length, Q ₉₅ (veh)						0.4						2.3				
Control Delay (s/veh)						8.1						14.2				
Level of Service, LOS						A						B				
Approach Delay (s/veh)						4.5						14.2				
Approach LOS						A						B				

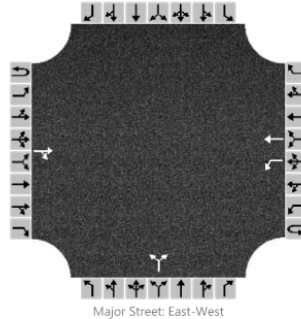
EXHIBIT 33

OPTION 3 - 2041 PEAK PM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak PM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 3		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T					LR				
Volume, V (veh/h)			219	29		250	254			23		195				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)					4.1					7.1		6.2				
Critical Headway (sec)					4.12					6.42		6.22				
Base Follow-Up Headway (sec)					2.2					3.5		3.3				
Follow-Up Headway (sec)					2.22					3.52		3.32				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					272					237						
Capacity, c (veh/h)					1281					578						
v/c Ratio					0.21					0.41						
95% Queue Length, Q ₉₅ (veh)					0.8					2.0						
Control Delay (s/veh)					8.6					15.5						
Level of Service, LOS					A					C						
Approach Delay (s/veh)					4.2				15.5							
Approach LOS									C							

EXHIBIT 34

OPTION 4 - 2041 PEAK AM HOUR TRAFFIC – Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary

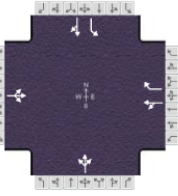
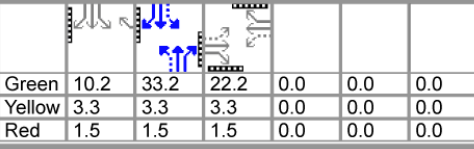
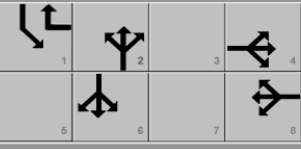
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Peter/Wilson			File Name	2041_AM_OPTION 4.xus										
Project Description	West Annex - OPTION 4														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				164	264	4	7	33	437	4	30	10	389	57	82
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off	Green	10.2	33.2	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8		2	1	6				
Case Number					8.0		7.0		8.3	1.0	4.0				
Phase Duration, s					27.0		27.0		38.0	15.0	53.0				
Change Period, (Y+R _c), s					4.8		4.8		4.8	4.8	4.8				
Max Allow Headway (MAH), s					3.1		3.3		0.0	3.1	0.0				
Queue Clearance Time (g _s), s					24.2		11.1			9.5					
Green Extension Time (g _e), s					0.0		0.5		0.0	0.7	0.0				
Phase Call Probability					1.00		1.00			1.00					
Max Out Probability					1.00		0.00			0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				470			43	258		48			423	129	
Adjusted Saturation Flow Rate (s), veh/h/ln				1677			1691	1610		1784			1810	1737	
Queue Service Time (g _s), s				20.8			0.0	9.1		0.0			7.5	2.6	
Cycle Queue Clearance Time (g _c), s				22.2			1.4	9.1		1.2			7.5	2.6	
Green Ratio (g/C)				0.28			0.28	0.41		0.41			0.69	0.60	
Capacity (c), veh/h				527			522	652		901			1073	1047	
Volume-to-Capacity Ratio (X)				0.890			0.083	0.395		0.053			0.394	0.124	
Back of Queue (Q), ft/ln (50 th percentile)				272			14.5	78.1		12.3			51.4	21.8	
Back of Queue (Q), veh/ln (50 th percentile)				10.9			0.6	3.1		0.5			2.1	0.9	
Queue Storage Ratio (RQ) (50 th percentile)				0.64			0.03	0.82		0.03			0.30	0.13	
Uniform Delay (d ₁), s/veh				28.9			21.4	16.9		12.5			5.0	6.8	
Incremental Delay (d ₂), s/veh				16.6			0.0	0.1		0.1			0.1	0.2	
Initial Queue Delay (d ₃), s/veh				0.0			0.0	0.0		0.0			0.0	0.0	
Control Delay (d), s/veh				45.5			21.4	17.0		12.6			5.1	7.1	
Level of Service (LOS)				D			C	B		B			A	A	
Approach Delay, s/veh / LOS				45.5	D	17.6	B		12.6	B		5.6		A	
Intersection Delay, s/veh / LOS				22.2				C							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.69	B	1.95	B	2.19	B	1.65	B				
Bicycle LOS Score / LOS				1.26	A	0.98	A	0.57	A	1.40	A				

EXHIBIT 35

OPTION 4 - 2041 PEAK PM HOUR TRAFFIC – Peter (Foster)/Wilson

HCS7 Signalized Intersection Results Summary

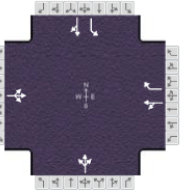
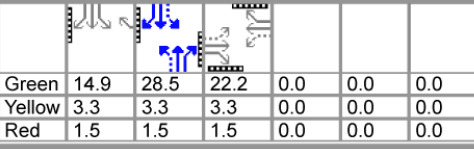
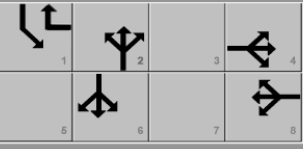
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak PM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Peter/Wilson			File Name	2041_PM_OPTION 4.xus										
Project Description	West Annex - OPTION 4														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				143	171	8	24	42	784	4	76	23	547	82	32
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off	Green	14.9	28.5	22.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.5	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8		2	1	6				
Case Number					8.0		7.0		8.3	1.0	4.0				
Phase Duration, s					27.0		27.0		33.3	19.7	53.0				
Change Period, (Y+R _c), s					4.8		4.8		4.8	4.8	4.8				
Max Allow Headway (MAH), s					3.1		3.4		0.0	3.1	0.0				
Queue Clearance Time (g _s), s					17.6		24.2			14.0					
Green Extension Time (g _e), s					0.3		0.0		0.0	0.9	0.0				
Phase Call Probability					1.00		1.00			1.00					
Max Out Probability					0.32		1.00			0.13					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				350			72	743		112			595	102	
Adjusted Saturation Flow Rate (s), veh/h/ln				1640			1538	1610		1816			1810	1857	
Queue Service Time (g _s), s				13.3			0.0	22.2		0.0			12.0	1.9	
Cycle Queue Clearance Time (g _c), s				15.6			2.3	22.2		3.3			12.0	1.9	
Green Ratio (g/C)				0.28			0.28	0.46		0.36			0.69	0.60	
Capacity (c), veh/h				520			488	747		806			1033	1119	
Volume-to-Capacity Ratio (X)				0.673			0.147	0.995		0.139			0.576	0.091	
Back of Queue (Q), ft/ln (50 th percentile)				154			24.3	467.2		34.5			83.3	16.8	
Back of Queue (Q), veh/ln (50 th percentile)				6.2			1.0	18.7		1.4			3.3	0.7	
Queue Storage Ratio (RQ) (50 th percentile)				0.36			0.06	4.92		0.08			0.49	0.10	
Uniform Delay (d ₁), s/veh				26.4			21.7	21.3		16.0			6.0	6.7	
Incremental Delay (d ₂), s/veh				2.8			0.1	31.6		0.4			0.2	0.2	
Initial Queue Delay (d ₃), s/veh				0.0			0.0	0.0		0.0			0.0	0.0	
Control Delay (d), s/veh				29.2			21.8	52.9		16.4			6.2	6.8	
Level of Service (LOS)				C			C	D		B			A	A	
Approach Delay, s/veh / LOS				29.2	C	50.2	D	16.4	B	6.3	A				
Intersection Delay, s/veh / LOS				29.0						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.69	B	1.95	B	2.05	B	1.65	B				
Bicycle LOS Score / LOS				1.07	A	1.83	B	0.67	A	1.64	B				

EXHIBIT 36

OPTION 4 - 2041 PEAK AM HOUR TRAFFIC – Foster/Gore

HCS7 Signalized Intersection Results Summary

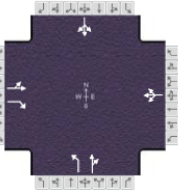
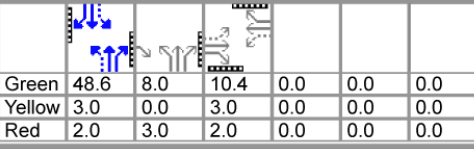
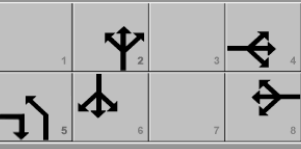
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018		Area Type	Other							
Jurisdiction				Time Period	Peak AM Hour		PHF	0.92							
Urban Street	West Annex			Analysis Year	2041		Analysis Period	1> 7:00							
Intersection	Gore/Foster			File Name	2041_AM_OPTION 4.xus										
Project Description	West Annex - OPTION 4														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				13	163	464	16	54	10	405	160	16	3	127	13
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	48.6	8.0	10.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					15.4		15.4	11.0	64.6		53.6				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.2		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					9.9		4.9	2.0							
Green Extension Time (g _e), s					0.5		0.1	0.4	0.0		0.0				
Phase Call Probability					1.00		0.82	1.00							
Max Out Probability					0.03		0.00	0.57							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					191	178		76		440	175			155	
Adjusted Saturation Flow Rate (s), veh/h/ln					1873	1610		1779		1810	1898			1864	
Queue Service Time (g _s), s					2.8	7.9		0.0		0.0	2.1			0.0	
Cycle Queue Clearance Time (g _c), s					7.9	7.9		2.9		0.0	2.1			2.8	
Green Ratio (g/C)					0.13	0.21		0.13		0.72	0.74			0.61	
Capacity (c), veh/h					292	330		287		1025	1413			1294	
Volume-to-Capacity Ratio (X)					0.655	0.539		0.265		0.429	0.124			0.120	
Back of Queue (Q), ft/ln (50 th percentile)					88.1	74		32.5		67.1	14.2			23.3	
Back of Queue (Q), veh/ln (50 th percentile)					3.5	3.0		1.3		2.7	0.6			0.9	
Queue Storage Ratio (RQ) (50 th percentile)					0.21	0.30		0.08		0.71	0.03			0.14	
Uniform Delay (d ₁), s/veh					33.7	28.4		31.5		6.1	2.9			5.7	
Incremental Delay (d ₂), s/veh					0.9	0.5		0.2		0.1	0.2			0.2	
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (d), s/veh					34.6	28.9		31.7		6.2	3.1			5.9	
Level of Service (LOS)					C	C		C		A	A			A	
Approach Delay, s/veh / LOS				31.9	C		31.7	C		5.3	A		5.9	A	
Intersection Delay, s/veh / LOS				15.1						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.96	B		1.71	B		1.62	B		2.37	B	
Bicycle LOS Score / LOS				1.10	A		0.61	A		1.50	B		0.74	A	

EXHIBIT 37

OPTION 4 - 2041 PEAK PM HOUR TRAFFIC – Foster/Gore

HCS7 Signalized Intersection Results Summary

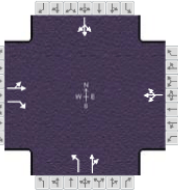
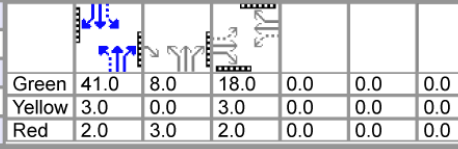
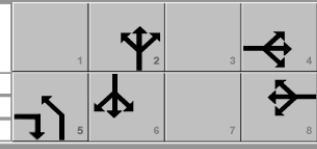
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak PM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Gore/Foster			File Name	2041_PM_OPTION 4.xus										
Project Description	West Annex - OPTION 4														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				14	102	646	19	163	14	655	167	26	3	145	29
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	41.0	8.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2		6				
Case Number					7.0		8.0	1.0	4.0		8.3				
Phase Duration, s					23.0		23.0	11.0	57.0		46.0				
Change Period, (Y+R _c), s					5.0		5.0	5.0	5.0		5.0				
Max Allow Headway (MAH), s					3.3		3.1	3.1	0.0		0.0				
Queue Clearance Time (g _s), s					19.1		9.4	2.0							
Green Extension Time (g _e), s					0.0		0.2	0.8	0.0		0.0				
Phase Call Probability					1.00		0.99	1.00							
Max Out Probability					1.00		0.00	0.70							
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					126	376		202		712	193			192	
Adjusted Saturation Flow Rate (s), veh/h/ln					1847	1610		1849		1810	1879			1841	
Queue Service Time (g _s), s					0.0	17.1		0.0		0.0	3.2			0.0	
Cycle Queue Clearance Time (g _c), s					4.4	17.1		7.4		0.0	3.2			4.5	
Green Ratio (g/C)					0.22	0.30		0.22		0.62	0.65			0.51	
Capacity (c), veh/h					466	483		466		862	1221			1104	
Volume-to-Capacity Ratio (X)					0.271	0.779		0.434		0.826	0.158			0.174	
Back of Queue (Q), ft/ln (50 th percentile)					48.1	109.7		80.7		316.1	27.5			42.4	
Back of Queue (Q), veh/ln (50 th percentile)					1.9	4.4		3.2		12.6	1.1			1.7	
Queue Storage Ratio (RQ) (50 th percentile)					0.11	0.44		0.19		3.33	0.06			0.25	
Uniform Delay (d ₁), s/veh					25.7	25.6		26.9		17.1	5.5			9.4	
Incremental Delay (d ₂), s/veh					0.1	7.2		0.2		6.2	0.3			0.3	
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0		0.0	0.0			0.0	
Control Delay (d), s/veh					25.8	32.8		27.1		23.3	5.7			9.7	
Level of Service (LOS)					C	C		C		C	A			A	
Approach Delay, s/veh / LOS				31.1	C	27.1	C	19.5	B	9.7	A				
Intersection Delay, s/veh / LOS				22.6						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.95	B	1.70	B	1.65	B	2.37	B				
Bicycle LOS Score / LOS				1.32	A	0.82	A	1.98	B	0.81	A				

EXHIBIT 38

OPTION 4 - 2041 TRAFFIC SIGNAL WARRANT – North/Wilson

**MINIMUM WARRANTS FOR INSTALLATION OF TRAFFIC SIGNAL
USING PROJECTED VOLUME**

Location .. Wilson Street and North Street **of**
(Roadway) **(Intersecting Road)**

Municipality .. Town of Perth **Projected Volume** .. Year 2041

WARRANT	DESCRIPTION	MINIMUM REQUIREMENT FOR 2 LANE HIGHWAYS		COMPLIANCE		
		2. FREE FLOW	3. RESTRICT. FLOW	SECTIONAL		4. ENTIRE %
				NUMBER	%	
1. VEHICULAR VOLUME	1. A. Vehicle volume all approaches (Average hour)	480	(720)	859	100	(31%)
	B. Vehicle volume, along minor roads, (Average hour)	120	(170)	53	31	
2. DELAY TO CROSS TRAFFIC	1. A. Vehicle volume, along artery (Average hour)	480	(720)	806	100	11%
	B. Combined vehicle and pedestrian volume crossing artery from minor roads, (Average hour)	50	(75)	8	11	

Projected Average Hour - Use the sum of the AM and PM Peak volumes divided by 4

NOTES:

1. Vehicle volume warrants (1A) and (2A) for intersections of roadways having two or more moving lanes in one direction, should be 25% higher than the values given above.
2. Warrant values for free flow apply when the 85 percentile speed of artery traffic equals or exceeds 70 Km/h or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000.
3. Warrant values for restricted flow apply to large urban communities when the 85 percentile speed of artery traffic does not exceed 70 Km/h.
4. The lowest sectional percentage governs the entire Warrant.
5. For "T" intersections the warrant values for minor road should be increased by 50 % (Warrant 1B only).
6. The crossing volumes are defined as:
 - (a) Left turns from both minor road approaches
 - (b) The heaviest through volume from the minor road
 - (c) 50% of the heavier left turn movement from major road when both of the following are met:
 - (i) the left turn volume > 120 vph.
 - (ii) the left turn volume plus the opposing volume > 720 vph.
 - (d) Pedestrians crossing the major road.

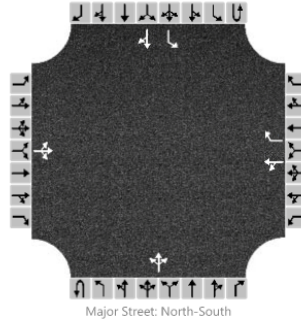
EXHIBIT 39

OPTION 4 - 2041 PEAK AM HOUR TRAFFIC – North/Wilson

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Wilson/North
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	North Street
Analysis Year	2041	North/South Street	Wilson Street
Time Analyzed	Peak AM Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 4		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	1	0	0	1	0	0	1	1	0	
Configuration			LTR			LT		R			LTR			L		TR	
Volume, V (veh/h)		5	4	11		7	3	50		82	598	17		83	519	60	
Percent Heavy Vehicles (%)		2	2	2		2	2	3		2				3			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized		No				No					No						
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1					4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.23		4.12					4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2					2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.33		2.22					2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			22			11		54		89					90		
Capacity, c (veh/h)			123			67		462		953					916		
v/c Ratio			0.18			0.16		0.12		0.09					0.10		
95% Queue Length, Q ₉₅ (veh)			0.6			0.5		0.4		0.3					0.3		
Control Delay (s/veh)			40.3			69.2		13.8		9.2					9.4		
Level of Service, LOS			E			F		B		A					A		
Approach Delay (s/veh)		40.3				23.1				2.3				1.2			
Approach LOS		E				C											

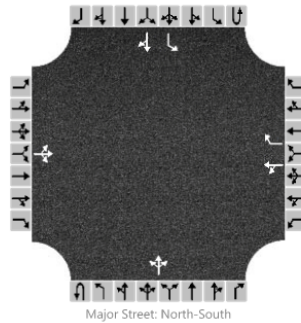
EXHIBIT 40

OPTION 4 - 2041 PEAK PM HOUR TRAFFIC – North/Wilson

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Wilson/North
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	North Street
Analysis Year	2041	North/South Street	Wilson Street
Time Analyzed	Peak PM Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 4		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	1		0	1	0		0	1	1	0
Configuration			LTR			LT		R			LTR			L		TR	
Volume, V (veh/h)		5	3	20		5	6	93		233	723	18		71	686	134	
Percent Heavy Vehicles (%)		2	2	2		2	2	3		2				3			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized		No				No					No						
Median Type/Storage		Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.12	6.52	6.22		7.12	6.52	6.23		4.12				4.13		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.52	4.02	3.32		3.52	4.02	3.33		2.22				2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			30			12		101		253				77			
Capacity, c (veh/h)			25			12		385		760				814			
v/c Ratio			1.20			1.01		0.26		0.33				0.09			
95% Queue Length, Q ₉₅ (veh)			3.7			2.1		1.0		1.5				0.3			
Control Delay (s/veh)			473.3			686.5		17.6		12.1				9.9			
Level of Service, LOS			F			F		C		B				A			
Approach Delay (s/veh)		473.3				88.4				8.5				0.8			
Approach LOS		F				F											

EXHIBIT 41 OPTION 4 - 2041 PEAK AM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

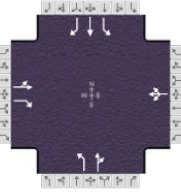
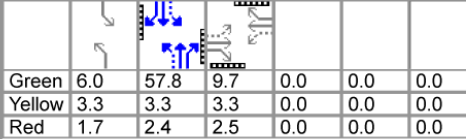
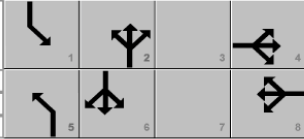
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	2/27/2018										
Jurisdiction				Time Period	Peak AM Hour										
Urban Street	West Annex			Analysis Year	2041										
Intersection	Wilson/Sunset			File Name	2041_AM_OPTION 4.xus										
Project Description	West Annex - OPTION 1														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				101	11	82	8	50	11	159	525	5	7	591	148
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	Off												
Force Mode	Fixed	Simult. Gap N/S	Off												
Green	6.0	57.8	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.7	2.4	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					7.0		8.0	1.1	4.0	1.1	3.0				
Phase Duration, s					15.5		15.5	11.0	63.5	11.0	63.5				
Change Period, (Y+R _c), s					5.8		5.8	5.0	5.7	5.0	5.7				
Max Allow Headway (MAH), s					3.2		3.1	3.1	0.0	3.1	0.0				
Queue Clearance Time (g _s), s					9.6		5.2	3.5		2.1					
Green Extension Time (g _e), s					0.2		0.1	0.2	0.0	0.0	0.0				
Phase Call Probability					0.99		0.83	1.00		1.00					
Max Out Probability					0.28		0.00	0.01		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				122	78		72			173	576		8	642	52
Adjusted Saturation Flow Rate (s), veh/h/ln				1399	1610		1835			1810	1897		1810	1900	1610
Queue Service Time (g _s), s				4.4	4.1		0.0			1.5	14.1		0.1	16.5	1.1
Cycle Queue Clearance Time (g _c), s				7.6	4.1		3.2			1.5	14.1		0.1	16.5	1.1
Green Ratio (g/C)				0.11	0.11		0.11			0.84	0.64		0.84	0.64	0.64
Capacity (c), veh/h				227	174		243			650	1217		761	1219	1033
Volume-to-Capacity Ratio (X)				0.535	0.449		0.295			0.266	0.473		0.010	0.527	0.050
Back of Queue (Q), ft/ln (50 th percentile)				65.1	40.2		36.2			22.2	132.4		0.3	155.7	8.6
Back of Queue (Q), veh/ln (50 th percentile)				2.6	1.6		1.4			0.9	5.3		0.0	6.2	0.3
Queue Storage Ratio (RQ) (50 th percentile)				0.26	0.16		0.09			0.23	0.19		0.01	0.74	0.04
Uniform Delay (d ₁), s/veh				39.2	37.6		37.2			5.8	8.3		2.6	8.7	6.0
Incremental Delay (d ₂), s/veh				0.7	0.7		0.2			0.1	1.3		0.0	1.6	0.1
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh				39.9	38.3		37.5			5.9	9.6		2.6	10.4	6.1
Level of Service (LOS)					D	D		D		A	A		A	B	A
Approach Delay, s/veh / LOS				39.3		D	37.5		D	8.8		A	10.0		A
Intersection Delay, s/veh / LOS				14.0						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.94		B	2.27		B	1.65		B	1.88		B
Bicycle LOS Score / LOS				0.82		A	0.61		A	1.72		B	1.65		B

EXHIBIT 42

OPTION 4 - 2041 PEAK PM HOUR TRAFFIC – Sunset (Harris)/Wilson

HCS7 Signalized Intersection Results Summary

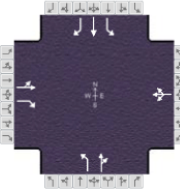
General Information				Intersection Information															
Agency				Duration, h	0.25														
Analyst				Analysis Date	2/27/2018														
Jurisdiction				Time Period	Peak PM Hour														
Urban Street	West Annex			Analysis Year	2041														
Intersection	Wilson/Sunset			File Name	2041_PM_OPTION 4.xus														
Project Description	West Annex - OPTION 4																		
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				198	37	127	8	32	30	153	844	1	13	843	207				
Signal Information																			
Cycle, s	90.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	Off	Green	6.0	52.3	15.2	0.0	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.3	3.3	3.3	0.0	0.0	0.0									
				Red	1.7	2.4	2.5	0.0	0.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4		8		5		2		1		6			
Case Number						7.0		8.0		1.1		4.0		1.1		3.0			
Phase Duration, s						21.0		21.0		11.0		58.0		11.0		58.0			
Change Period, (Y+R _c), s						5.8		5.8		5.0		5.7		5.0		5.7			
Max Allow Headway (MAH), s						3.2		3.2		3.1		0.0		3.1		0.0			
Queue Clearance Time (g _s), s						17.2		5.2		4.0				2.2					
Green Extension Time (g _e), s						0.0		0.1		0.1		0.0		0.0		0.0			
Phase Call Probability						1.00		0.84		1.00				1.00					
Max Out Probability						1.00		0.00		1.00				0.19					
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate (v), veh/h				255 127			73			166 918			14 916 89						
Adjusted Saturation Flow Rate (s), veh/h/ln				1423 1610			1791			1810 1900			1810 1900 1610						
Queue Service Time (g _s), s				12.0 6.4			0.0			2.0 35.3			0.2 35.1 2.2						
Cycle Queue Clearance Time (g _c), s				15.2 6.4			3.2			2.0 35.3			0.2 35.1 2.2						
Green Ratio (g/C)				0.17 0.17			0.17			0.78 0.58			0.78 0.58 0.58						
Capacity (c), veh/h				314 272			347			406 1104			452 1104 936						
Volume-to-Capacity Ratio (X)				0.814 0.468			0.210			0.410 0.832			0.031 0.830 0.095						
Back of Queue (Q), ft/ln (50 th percentile)				168.2 61.7			33.8			52.8 383.6			2.7 380.9 18.6						
Back of Queue (Q), veh/ln (50 th percentile)				6.7 2.5			1.4			2.1 15.3			0.1 15.2 0.7						
Queue Storage Ratio (RQ) (50 th percentile)				0.67 0.25			0.08			0.56 0.56			0.05 1.81 0.09						
Uniform Delay (d ₁), s/veh				37.9 33.7			32.4			17.1 15.3			10.1 15.3 8.4						
Incremental Delay (d ₂), s/veh				14.1 0.5			0.1			0.2 7.4			0.0 7.3 0.2						
Initial Queue Delay (d ₃), s/veh				0.0 0.0			0.0			0.0 0.0			0.0 0.0 0.0						
Control Delay (d), s/veh				51.9 34.2			32.5			17.4 22.6			10.1 22.5 8.6						
Level of Service (LOS)				D C			C			B C			B C A						
Approach Delay, s/veh / LOS				46.0 D			32.5 C			21.8 C			21.1 C						
Intersection Delay, s/veh / LOS				25.5						C									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				1.94 B			2.30 B			1.66 B			1.89 B						
Bicycle LOS Score / LOS				1.12 A			0.61 A			2.28 B			2.17 B						

EXHIBIT 43

OPTION 4 - 2041 PEAK AM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

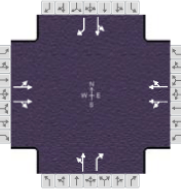
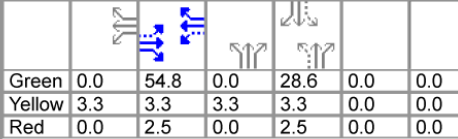
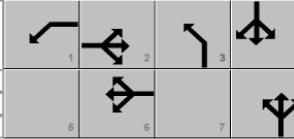
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak AM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 4			Analysis Year	2041										
				Analysis Period	1> 7:00										
				File Name	2041_AM_OPTION 4.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				77	537	297	178	579	26	188	220	140	29	152	39
Signal Information															
Cycle, s	95.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	54.8	0.0	28.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					60.6	0.0	60.6	0.0	34.4		34.4				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.2		3.2				
Queue Clearance Time (g _s), s									26.9		9.7				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	1.7		1.8				
Phase Call Probability									1.00		1.00				
Max Out Probability									0.00		0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				507		484	295		556		443	152		197	42
Adjusted Saturation Flow Rate (s), veh/h/ln				1297		1519	566		1687		1539	1585		1736	1610
Queue Service Time (g _s), s				12.3		18.8	6.0		19.7		6.0	7.1		0.0	1.8
Cycle Queue Clearance Time (g _c), s				32.1		18.8	27.9		19.7		24.9	7.1		7.7	1.8
Green Ratio (g/C)				0.58		0.58	0.58		0.58		0.30	0.30		0.30	0.30
Capacity (c), veh/h				792		877	389		973		518	477		566	484
Volume-to-Capacity Ratio (X)				0.639		0.552	0.759		0.571		0.855	0.319		0.347	0.088
Back of Queue (Q), ft/ln (50 th percentile)				216.5		158	180.2		183.1		252.5	66		84.7	16.8
Back of Queue (Q), veh/ln (50 th percentile)				8.7		6.3	7.2		7.3		10.1	2.6		3.4	0.7
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00		0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh				14.9		12.5	25.1		12.7		32.5	25.7		25.9	23.8
Incremental Delay (d ₂), s/veh				3.9		2.5	13.0		2.4		4.3	0.1		0.1	0.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0		0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh				18.9		15.0	38.2		15.1		36.7	25.8		26.0	23.9
Level of Service (LOS)				B		B	D		B		D	C		C	C
Approach Delay, s/veh / LOS				17.0		B	23.1		C		33.9	C		25.7	C
Intersection Delay, s/veh / LOS				23.5						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.88		B	1.88		B	2.11		B	2.11		B
Bicycle LOS Score / LOS				1.30		A	1.19		A	1.47		A	0.88		A

EXHIBIT 44

OPTION 4 - 2041 PEAK PM HOUR TRAFFIC – Dufferin (Highway 7)/Wilson

HCS7 Signalized Intersection Results Summary

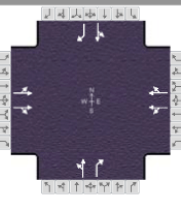
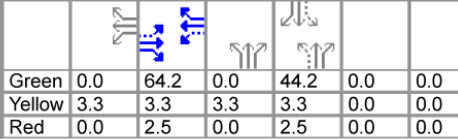
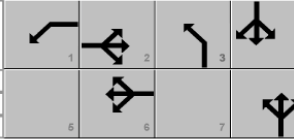
General Information				Intersection Information											
Agency				Duration, h	0.25										
Analyst				Analysis Date	4/24/2018										
Jurisdiction				Area Type	Other										
Urban Street	West Annex			Time Period	Peak PM Hour										
Intersection	Dufferin/Wilson			PHF	0.92										
Project Description	West Annex - OPTION 4			Analysis Year	2041										
				Analysis Period	1 > 7:00										
				File Name	2041_PM_OPTION 4.xus										
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				82	686	262	217	779	21	312	312	227	31	285	69
Signal Information															
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	64.2	0.0	44.2	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2	1	6	3	8		4				
Case Number					8.3	0.0	14.0	0.0	13.0		7.3				
Phase Duration, s					70.0	0.0	70.0	0.0	50.0		50.0				
Change Period, (Y+R _c), s					5.8	3.3	5.8	3.3	5.8		5.8				
Max Allow Headway (MAH), s					0.0	0.0	0.0	0.0	3.3		3.3				
Queue Clearance Time (g _s), s									46.2		18.9				
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.0		3.5				
Phase Call Probability									1.00		1.00				
Max Out Probability									1.00		0.01				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				542		578	355		750	678	247		343	75	
Adjusted Saturation Flow Rate (s), veh/h/ln				652		1563	384		1693	1162	1585		1788	1610	
Queue Service Time (g _s), s				19.8		32.7	6.0		44.4	6.0	14.0		0.0	3.7	
Cycle Queue Clearance Time (g _c), s				64.2		32.7	64.2		44.4	44.2	14.0		16.9	3.7	
Green Ratio (g/C)				0.53		0.53	0.54		0.54	0.37	0.37		0.37	0.37	
Capacity (c), veh/h				384		836	256		906	473	584		692	593	
Volume-to-Capacity Ratio (X)				1.413		0.691	1.390		0.828	1.434	0.423		0.497	0.126	
Back of Queue (Q), ft/ln (50 th percentile)				824.1		311	542.7		472.2	680.1	133.9		189.2	35.5	
Back of Queue (Q), veh/ln (50 th percentile)				33.0		12.4	21.7		18.9	27.2	5.3		7.6	1.4	
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00		0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh				35.9		20.6	44.1		23.3	42.3	28.4		29.2	25.1	
Incremental Delay (d ₂), s/veh				200.7		4.7	197.7		8.6	207.0	0.2		0.2	0.0	
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				236.6		25.2	241.8		31.9	249.3	28.5		29.4	25.1	
Level of Service (LOS)				F		C	F		C	F	C		C	C	
Approach Delay, s/veh / LOS				127.5		F	99.3		F	190.4	F		28.7	C	
Intersection Delay, s/veh / LOS				123.5						F					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.90		B	1.90		B	2.12		B	2.12		B
Bicycle LOS Score / LOS				1.41		A	1.40		A	2.01		B	1.18		A

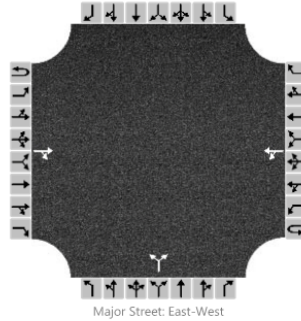
EXHIBIT 45

OPTION 4 - 2041 PEAK AM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak AM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 4		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			226	0		52	139			0		7				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						57					8					
Capacity, c (veh/h)						1307					775					
v/c Ratio						0.04					0.01					
95% Queue Length, Q ₉₅ (veh)						0.1					0.0					
Control Delay (s/veh)						7.9					9.7					
Level of Service, LOS						A					A					
Approach Delay (s/veh)					2.4				9.7							
Approach LOS									A							

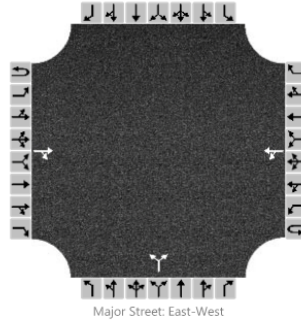
EXHIBIT 46

OPTION 4 - 2041 PEAK PM HOUR TRAFFIC – Sunset/Lanark County Office Access

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Sunset/County Offices
Agency/Co.		Jurisdiction	
Date Performed	2/27/2018	East/West Street	Sunset Boulevard
Analysis Year	2041	North/South Street	Lanark County Offices Acc
Time Analyzed	Peak PM Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	West Annex - OPTION 4		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			247	1		2	270			7		49				
Percent Heavy Vehicles (%)						2				2		2				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized		No			No					No			No			
Median Type/Storage		Undivided														

Critical and Follow-up Headways

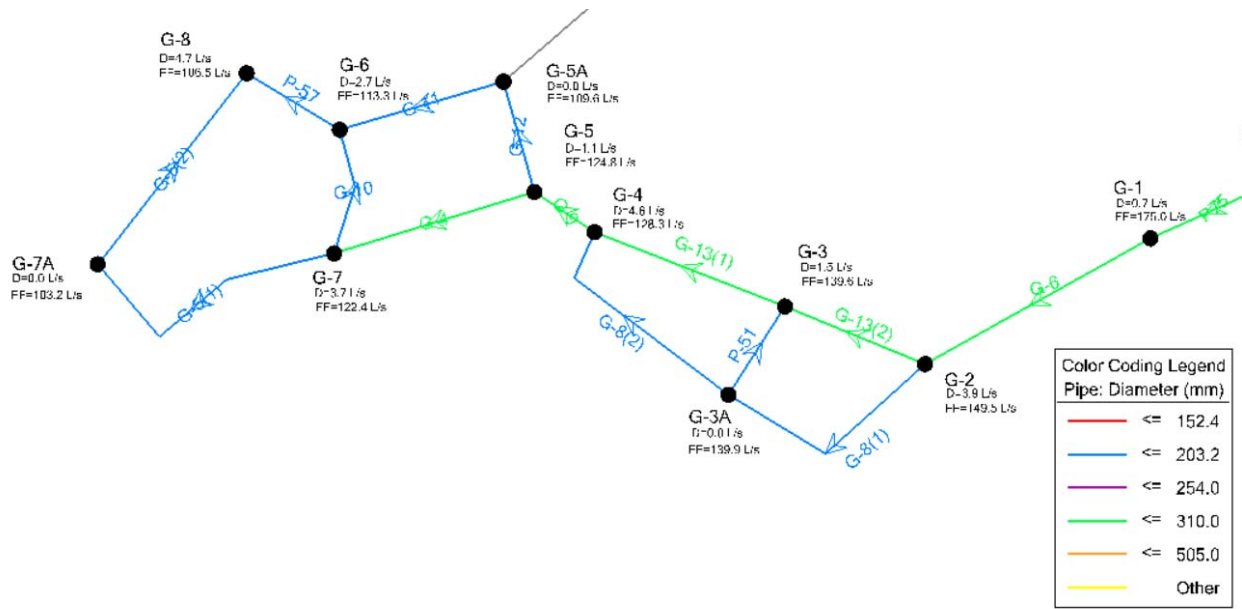
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						2						61				
Capacity, c (veh/h)						1281						701				
v/c Ratio						0.00						0.09				
95% Queue Length, Q ₉₅ (veh)						0.0						0.3				
Control Delay (s/veh)						7.8						10.6				
Level of Service, LOS						A						B				
Approach Delay (s/veh)						0.1					10.6					
Approach LOS											B					

Appendix F

Water Network Analysis

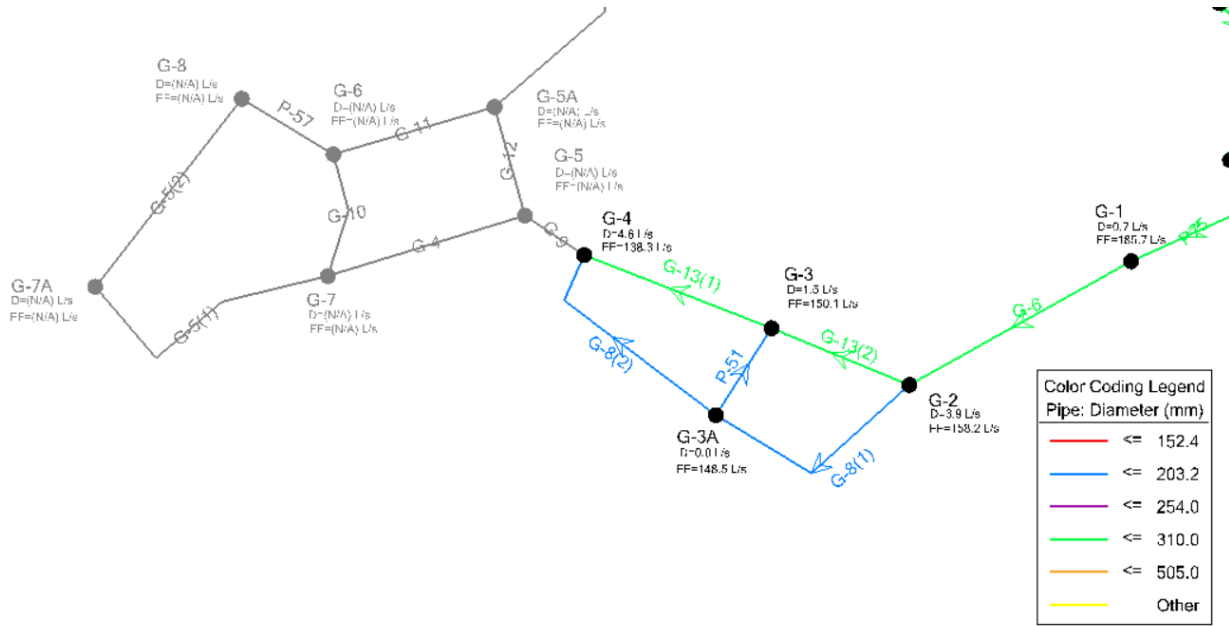


FIRE FLOW RESULTS

OPTION 1 – b) Scenario at Ultimate Build-out

Phase 1 & 2 - Western Annex (excluding North of Highway 7 development) with connection on North Street

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Demand (Maximum) (L/s)	Fire Flow (Available) (L/s)
G-1	134.00	0.7	176.49	60	0.7	175.0
G-2	137.50	3.9	176.36	55	3.9	149.5
G-3	135.50	1.5	176.30	58	1.5	139.6
G-3A	134.00	0.0	176.30	60	0.0	139.9
G-4	136.50	4.6	176.24	56	4.6	128.3
G-5	135.50	1.1	176.23	58	1.1	124.8
G-5A	137.00	0.0	176.22	56	0.0	109.6
G-6	136.00	2.7	176.20	57	2.7	113.3
G-7	135.00	3.7	176.21	58	3.7	122.4
G-7A	135.55	0.0	176.20	58	0.0	103.2
G-8	136.00	4.7	176.19	57	4.7	106.5

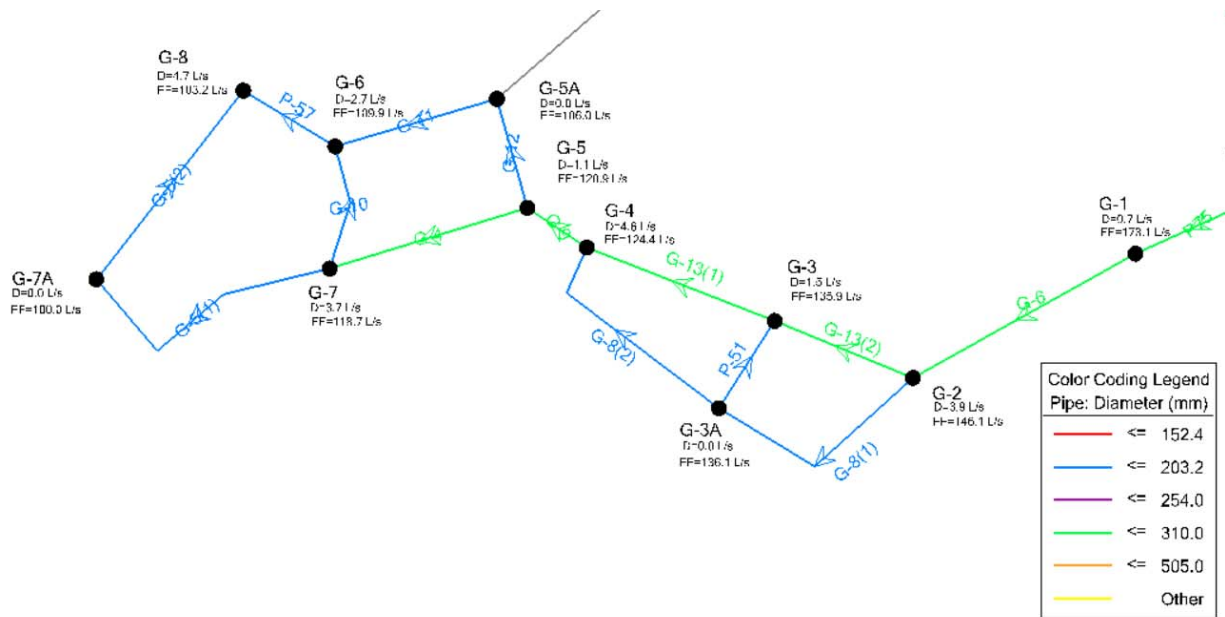


FIRE FLOW RESULTS

OPTION 1 – c) Scenario at Phase 1

Phase 1 - Western Annex (including North of Highway 7 development) with connection on North Street

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Demand (Maximum) (L/s)	Fire Flow (Available) (L/s)
G-1	134.00	0.7	174.94	58	0.7	185.7
G-2	137.50	3.9	174.91	53	3.9	158.2
G-3	135.50	1.5	174.91	56	1.5	150.1
G-3A	134.00	0.0	174.91	58	0.0	148.5
G-4	136.50	4.6	174.90	54	4.6	138.3

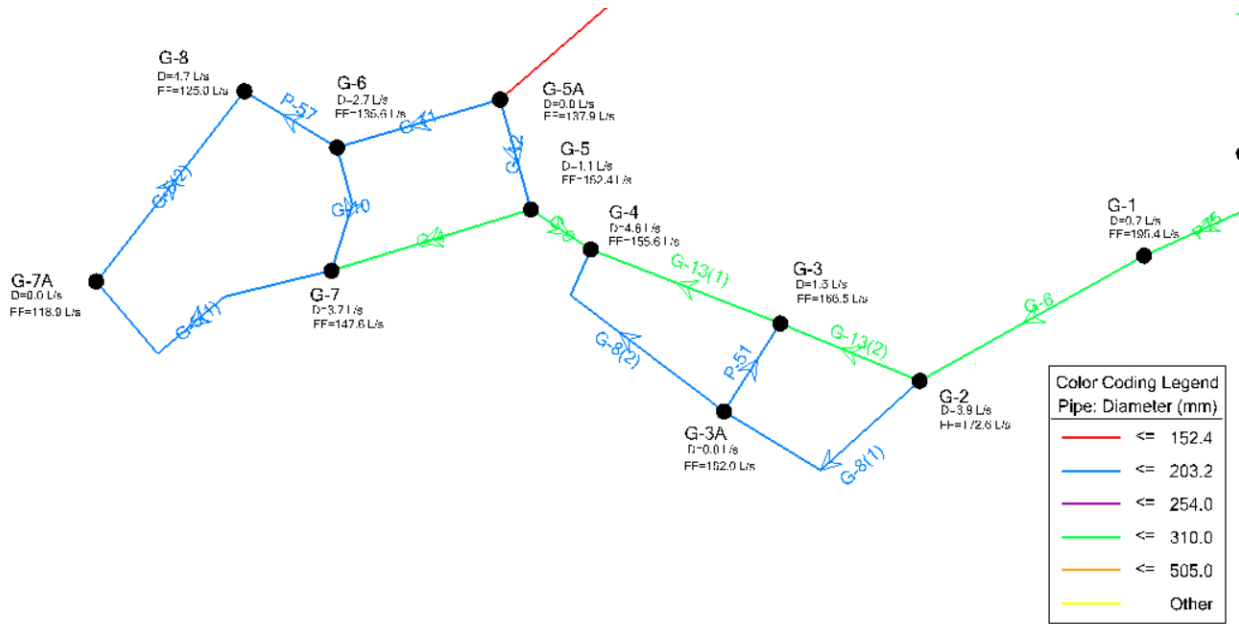


FIRE FLOW RESULTS

OPTION 1 – d) Scenario at Ultimate Build-out

Phase 1 & 2 - Western Annex (including North of Highway 7 development) with connection on North Street

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Demand (Maximum) (L/s)	Fire Flow (Available) (L/s)
G-1	134.00	0.7	174.23	57	0.7	173.1
G-2	137.50	3.9	174.10	52	3.9	146.1
G-3	135.50	1.5	174.04	55	1.5	135.9
G-3A	134.00	0.0	174.04	57	0.0	136.1
G-4	136.50	4.6	173.98	53	4.6	124.4
G-5	135.50	1.1	173.97	55	1.1	120.9
G-5A	137.00	0.0	173.96	52	0.0	106.0
G-6	136.00	2.7	173.94	54	2.7	109.9
G-7	135.00	3.7	173.95	55	3.7	118.7
G-7A	135.55	0.0	173.94	54	0.0	100.0
G-8	136.00	4.7	173.93	54	4.7	103.2

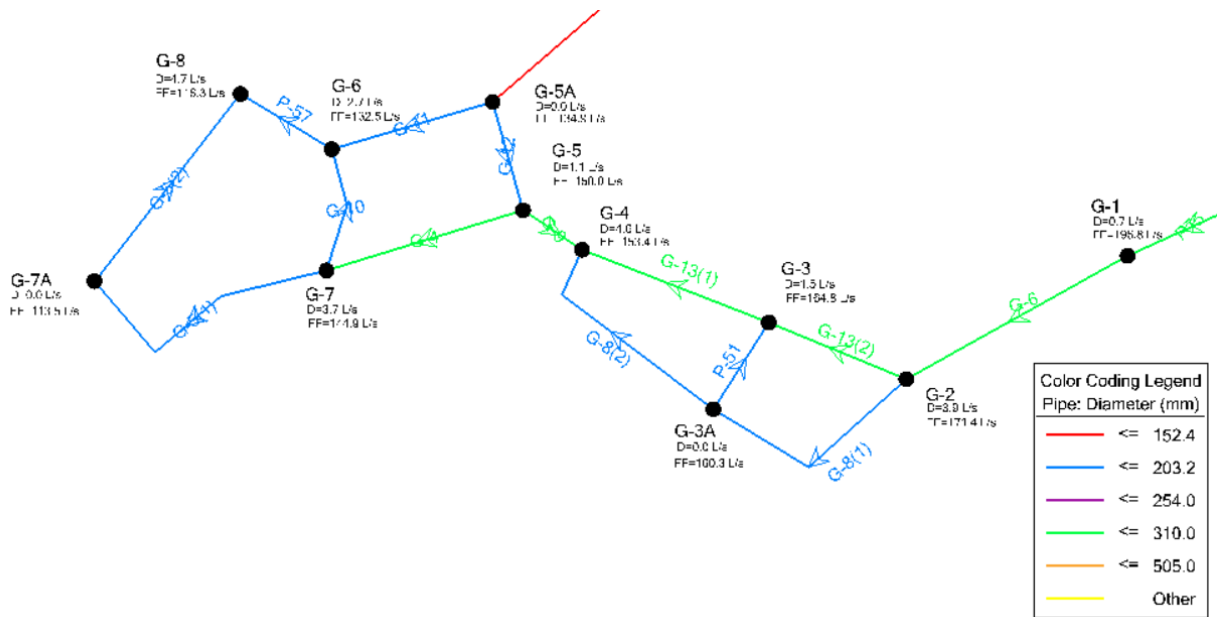


FIRE FLOW RESULTS

OPTION 2 – a) Scenario at Ultimate Build-out

Phase 1 & 2 - Western Annex (excluding North of Highway 7 development) with connection on North Street and Inverness Avenue

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Demand (Maximum) (L/s)	Fire Flow (Available) (L/s)
G-1	134.00	0.7	178.14	63	0.7	192.3
G-2	137.50	3.9	178.13	58	3.9	166.3
G-3	135.50	1.5	178.13	60	1.5	161.2
G-3A	134.00	0.0	178.13	63	0.0	148.1

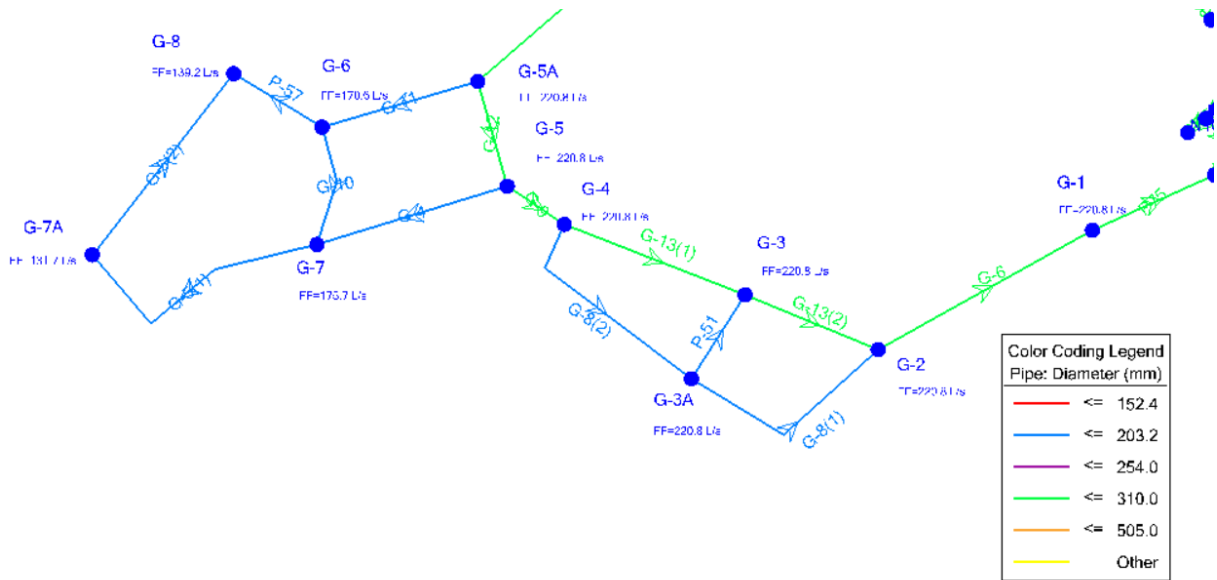


FIRE FLOW RESULTS

OPTION 2 – b) Scenario at Ultimate Build-out

Phase 1 & 2 - Western Annex (including North of Highway 7 development) with connection on North Street and Inverness Avenue

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Demand (Maximum) (L/s)	Fire Flow (Available) (L/s)
G-1	134.00	0.7	174.66	58	0.7	196.8
G-2	137.50	3.9	174.64	53	3.9	171.4
G-3	135.50	1.5	174.63	56	1.5	164.8
G-3A	134.00	0.0	174.63	58	0.0	160.3
G-4	136.50	4.6	174.63	54	4.6	153.4
G-5	135.50	1.1	174.63	56	1.1	150.0
G-5A	137.00	0.0	174.69	53	0.0	134.9
G-6	136.00	2.7	174.62	55	2.7	132.5
G-7	135.00	3.7	174.62	56	3.7	144.9
G-7A	135.55	0.0	174.61	55	0.0	113.5
G-8	136.00	4.7	174.61	55	4.7	116.3



FIRE FLOW RESULTS

OPTION 3

Phase 1 & 2 - Western Annex (including North of Highway 7 development) with connection on North Street and Inverness Avenue – includes the upgrade of Inverness Avenue watermain to Sunset Boulevard

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (psi)	Demand (Maximum) (L/s)	Fire Flow (Available) (L/s)
G-1	134.00	0.7	175.63	59	0.7	220.8
G-2	137.50	3.9	175.79	54	3.9	220.8
G-3	135.50	1.5	175.91	57	1.5	220.8
G-3A	134.00	0.0	175.91	59	0.0	220.8
G-4	136.50	4.6	176.08	56	4.6	220.8
G-5	135.50	1.1	176.16	58	1.1	220.8
G-5A	137.00	0.0	176.35	56	0.0	220.8
G-6	136.00	2.7	176.17	57	2.7	170.6
G-7	135.00	3.7	176.16	58	3.7	175.7
G-7A	135.55	0.0	176.15	58	0.0	131.7
G-8	136.00	4.7	176.15	57	4.7	139.2

North of Highway 7

Water Consumption Demands

Residential Design Parameters

Base Flow	350	L/pers/d
Low Density pers/residence ratio	3.4	pers/residence
Mid Density pers/residence ratio	2.7	pers/residence
High Density pers/residence ratio	2.7	
Daily peak flow factor	2	(2.5)
Hourly peak flow factor	3	(2.2)
Hourly minimum factor	0.5	

Commercial Design Parameters:

Base Flow	2500	L/1000m ² +d
Daily peak flow factor	1.5	
Hourly peak flow factor	1.8	
Hourly minimum factor	0.5	

Node	Residential		Residential Demand (L/s)	Commercial/Institutional Total area m ²	Commercial Demand (L/s)	Average Daily (L/s)	Daily Peak (L/s)	Hourly Peak Flow (L/s)	Hourly minimum Flow (L/s)
	# Low units	# Med/High units							
N1				29,800	0.86	0.86	1.3	1.6	0.4
N2	19	42	0.72			0.72	1.4	2.2	0.4
N3	29	19	0.61			0.61	1.2	1.8	0.3
N4		60	0.66			0.66	1.3	2.0	0.3
N5	133	62	2.51			2.51	5.0	7.5	1.3
N6				50,000	1.45	1.45	2.2	2.6	0.7
N7		56	0.61			0.61	1.2	1.8	0.3
N8				79,300	2.29	2.29	3.4	4.1	1.1
N9	105	88	2.41			2.41	4.8	7.2	1.2
N10				102,300	2.96	2.96	4.4	5.3	1.5
N11				77,300	2.24	2.2	3.4	4.0	1.1
N12				35,900	1.04	1.0	1.6	1.9	0.5
N13				25,100	0.73	0.7	1.1	1.3	0.4

Notes:

Residential density and mix of unit types provided from Dillon report "Infrastructure Master Plan for Area North of Highway 7" - October 2013

Perth Annex

Tay River



Water Consumption Demands

Residential Design Parameters:

Base Flow	350	L/pers/d
Low Density pers/residence ratio	3.4	pers/residence
Mid Density pers/residence ratio	2.7	pers/residence
High Density pers/residence ratio	2.7	pers/residence
Condominiums	1.8	pers/residence
Daily peak flow factor	2	(2.5)
Hourly peak flow factor	3	(2.2)
Hourly minimum factor	0.5	

Commercial Design Parameters:

Base Flow	2500	L/1000m ² ·d	m ² of commercial floor area
Daily peak flow factor	1.5		
Hourly peak flow factor	1.8		
Hourly minimum factor	0.5		

Node	Residential				Total population persons	Residential Demand (L/s)	Commercial/Institutional		Commercial Demand (L/s)	Average Daily (L/s)	Daily Peak (L/s)	Hourly Peak Flow (L/s)	Hourly minimum Flow (L/s)
	# Low units	# Med/High units	#Condos	# Seniors			Total area m ²	Floor area * m ²					
T1			60	120	228	0.92				0.92	1.8	2.8	0.5
T2	18				61	0.25				0.25	0.5	0.7	0.1
T3	12				41	0.17				0.17	0.3	0.5	0.1
T4	6	16			64	0.26	3,400	1,360	0.04	0.30	0.6	0.8	0.1
T5	21				71	0.29				0.29	0.6	0.9	0.1
					465					1.92	3.83	5.72	0.96

Notes:

Floor space estimated at 40% coverage for commercial developments - 30% for institutional development

Residential density and mix of unit types provided from Dillon report "Infrastructure Master Plan for Area North of Highway 7" - October 2013

* - Seniors residence assumes - 1 person per senior unit

Perth Annex



Western Annex

Water Consumption Demands

Residential Design Parameters:

Base Flow	350	L/pers/d
Low Density pers/residence ratio	3.4	pers/residence
Mid Density pers/residence ratio	2.7	pers/residence
High Density pers/residence ratio	2.7	pers/residence
Condominiums	1.8	pers/residence
Daily peak flow factor	2	
Hourly peak flow factor	3	
Hourly minimum factor	0.5	

Commercial Design Parameters:

Base Flow	2500	L/1000m ² ·d	m ² of commercial floor area
Daily peak flow factor	1.5		
Hourly peak flow factor	1.8		
Hourly minimum factor	0.5		

Node	Residential Single/Multi		Residential High Density Blocks		Total population	Residential Demand	Commercial/Institutional		Commercial Demand	Average Daily	Daily Peak	Hourly Peak Flow	Hourly minimum Flow
	# Low units	# Med/High units	Block area	Eq. population			Total area	Floor area *					
			m ²		persons	(L/s)	m ²	m ²	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)
G1			6,000	36	36	0.15		550	0.02	0.16	0.32	0.47	0.08
G2	32	64	6,175	37	319	1.29				1.29	2.59	3.88	0.65
G3	12	9	9,025	54	121	0.49				0.49	0.98	1.47	0.24
G4	31	34	30,548	183	380	1.54				1.54	3.08	4.62	0.77
G5	25				85	0.34	3,400	1,360	0.04	0.38	0.75	1.11	0.19
G6	9	42	12,750	77	219	0.89				0.89	1.77	2.66	0.44
G7	49	51			304	1.23				1.23	2.46	3.69	0.62
G8	67	22	16,556	99	385	1.56				1.56	3.12	4.68	0.78
Total:	225	222		486	1850					7.55	15.07	22.58	3.77

equivalent units 270
Total units 717

Notes:

- Floor space estimated at 40% coverage for commercial developments - 30% for institutional development
- Residential density and mix of unit types provided from Dillon report "Infrastructure Master Plan for Area North of Highway 7" - October 2013
- High Density blocks population estimates 60 pers / gross ha in absence of specific information per City of Ottawa Guidelines
- Number of units estimated based on average 10.5 m frontage

Appendix G
Draft Hydrologic Impact Study criteria

Appendix G

The hydrologic function of a wetland relates specifically to the hydrologic cycle in and around a wetland, as illustrated in this figure from the U.S. Geological Survey Water-Supply Paper 2425 "National Water Summary on Wetland Resources":

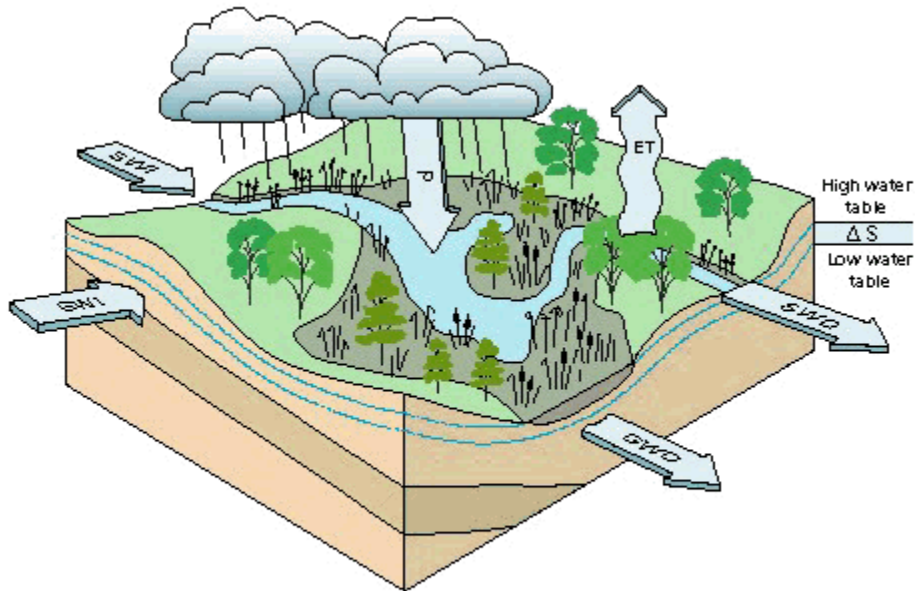


Figure 18. Components of the wetland water budget. ($P + SWI + GWI = ET + SWO + GWO + \Delta S$, where P is precipitation, SWI is surface-water inflow, SWO is surface-water outflow, GWI is ground-water inflow, GWO is ground-water outflow, ET is evapotranspiration, and ΔS is change in storage.)

The hydrologic function of a wetland would not be negatively impacted if any of these conditions can be demonstrated:

1. There is no change in the quality or quantity of water that is entering or leaving the wetland by surface or groundwater.
 - Note that in the water budget, P, ET, and ΔS are not directly affected by development in the adjacent lands, and do not have to be assessed if all of SWI, GWI, SWO and GWO can be shown to be unchanged, in both quantity and quality. Guidance may be found in the MECP Stormwater Management Planning and Design Manual, Chapter 3.2
2. There is no change in the storage of water or water chemistry within the wetland
 - If any of SWI, SWO, GWI or GWO change as a result of this development, it must be balanced against a different component of the hydrologic cycle, so it can be shown that ΔS does not change.
3. There is no significant change in the landuse of the catchment of the watershed.
 - It has been shown that any more than a limited amount of urbanization within a catchment of a wetland will produce an observable impact on the wetland species. In 'How Much Habitat is Enough', 4% imperviousness will not be expected to produce a measurable impact on the wetland species. If there is more than 4% imperviousness within a wetland, then the impacts are already being experienced, and the resilience of the system is expected to be impaired.

Appendix H

Cost Summary Sheets

Western Annex - Golf Course Lands - Construction Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
Part I- On-Site					
B - Road Construction					
B-1	Rock Excavation Roadway	m3	7,134	\$90.00	\$642,060.00
B-2	Clearing and Grubbing	LS	1	\$100,000.00	\$100,000.00
B-3	Granular 'A' Roadway Bed (150 mm)	t	6,383	\$22.00	\$140,427.14
B-4	Granular 'B' Roadway Bed (300 mm)	t	11,193	\$20.00	\$223,869.36
B-5	Performance Graded Superpave 12.5mm Level B (PG 58-34) - 40 mm depth	t	3,164	\$110.00	\$348,059.25
B-6	Performance Graded Superpave 19mm Level B (PG 58-34) - 50 mm depth	t	3,955	\$110.00	\$435,074.06
B-7	Pavement Markings	LS	1	\$50,000.00	\$50,000.00
B-8	Concrete Curb	m	8,610	\$60.00	\$516,600.00
B-9	Concrete Sidewalk (assume 1.8 m average width)	m2	7,380	\$100.00	\$738,000.00
B-10	Topsoil and Seed (2 m each side of road/parking lot)	m2	49,200	\$6.00	\$295,200.00
B-12	New Bridge over Tay	LS	1	\$10,000,000.00	\$10,000,000.00
Subtotal (B)					\$13,489,289.82
C - Storm Sewers					
C-1	1200 mm dia. MH per OPSD 701.010	ea	4	\$5,600.00	\$22,400.00
C-2	1500 mm dia. MH per OPSD 701.010	ea	17	\$9,300.00	\$158,100.00
C-3	1800 mm dia. MH per OPSD 701.010	ea	7	\$11,500.00	\$80,500.00
C-4	2400 mm dia. MH per OPSD 701.010	ea	10	\$20,000.00	\$200,000.00
C-5	3000 mm dia. MH per OPSD 701.010	ea	9	\$28,000.00	\$252,000.00
C-6	600 x 600 mm PCC catchbasin per OSD 705.010, incl. CB Lead	ea	75	\$4,000.00	\$300,000.00
C-7	300 mm Storm Sewer PVC Pipe - Class SDR 28	m	147	\$300.00	\$44,160.00
C-8	375 mm Storm Sewer PVC Pipe - Class SDR 28	m	250	\$350.00	\$87,500.00
C-9	450 mm Storm Sewer PVC Pipe - Class SDR 28	m	553	\$350.00	\$193,550.00
C-10	525 mm Storm Sewer PVC Pipe - Class SDR 28	m	526	\$400.00	\$210,400.00

Western Annex - Golf Course Lands - Construction Class D Cost Estimate

C-11	600 mm Storm Sewer Conc. Pipe - Class 65D	m	70	\$500.00	\$35,000.00
C-12	675 mm Storm Sewer Conc. Pipe - Class 65D	m	285	\$600.00	\$171,000.00
C-13	750 mm Storm Sewer Conc. Pipe - Class 65D	m	64	\$675.00	\$43,200.00
C-14	825 mm Storm Sewer Conc. Pipe - Class 65D	m	90	\$750.00	\$67,500.00
C-15	900 mm Storm Sewer Conc. Pipe - Class 65D	m	751	\$750.00	\$563,250.00
C-16	1050 mm Storm Sewer Conc. Pipe - Class 65D	m	170	\$850.00	\$144,500.00
C-17	1200 mm Storm Sewer Conc. Pipe - Class 65D	m	236	\$1,000.00	\$236,000.00
C-18	Headwall, D<900mm	ea	3	\$6,000.00	\$18,000.00
C-19	Headwall, D>900mm	ea	4	\$10,000.00	\$40,000.00
				Subtotal (C)	\$2,867,060.00
D - Sanitary Sewers					
D-1	1200 mm dia. MH as per OPSD 701.010	ea	49	\$7,000.00	\$343,000.00
D-2	250 mm Sanitary Sewer PVC Pipe - Class SDR 28	m	4,100	\$450.00	\$1,845,000.00
D-3	Rock excavation for sanitary sewer	m3	3,500	\$150.00	\$525,000.00
D-4	Cleaning and Televising Sewers (after installation)	m	4,100	\$7.00	\$28,700.00
D-5	Force Main Sewer	m	800	\$600.00	\$480,000.00
D-6	Tay River Crossing	ea	2	\$160,000.00	\$320,000.00
D-7	Wastewater Pump Station	ea	2	\$300,000.00	\$600,000.00
D-8	Connection to Existing	ea	2	\$2,000.00	\$4,000.00
				Subtotal (D)	\$4,145,700.00
E - Watermain					
E-1	Rock Excavation	m ³	8465.4	\$90.00	\$761,886.00
E-2	200 mm Diameter Watermain	m	2750	\$345.00	\$948,750.00
E-3	200mm Isolation Valves	ea	20	\$2,800.00	\$56,000.00
E-4	300 mm Diameter Watermain	m	2000	\$450.00	\$900,000.00
E-5	300mm Gate Valve	ea	13	\$2,800.00	\$36,400.00
E-6	Fire Hydrants	ea	44	\$7,500.00	\$330,000.00
E-7	Waterservice (inc. saddle and curb stop)	ea	460	\$2,000.00	\$920,000.00

Western Annex - Golf Course Lands - Construction Class D Cost Estimate

E-8	Connection to Existing	ea	1	\$7,500.00	\$7,500.00
E-9	Watermain Testing	LS	1	\$30,000.00	\$30,000.00
E-10	Adjust Valves	ea	66	\$500.00	\$33,000.00
E-11	Jack and bore - river crossing	ea	2	\$100,000.00	\$200,000.00
E-12	Excavation pits per crossing (2 per crossing)	ea	2	\$50,000.00	\$100,000.00
E-13	Steel casing	m	200	\$1,000.00	\$200,000.00
E-14	Dewatering of excavation pits	LS	1	\$100,000.00	\$100,000.00
Subtotal (E)					\$4,623,536.00
F - Active Transportation					
F-1	Pedestrian Path	m	3500	\$15.00	\$52,500.00
F-2	Bicycle Path	m	1880	\$20.00	\$37,600.00
F-3	Multi-Use Path	m	1270	\$25.00	\$31,750.00
Subtotal (F)					\$121,850.00
G - Stormwater Management Facilities					
G-1	Storm Ponds - excavation, lining, vegetation	m3	7,023	\$126.00	\$884,898.00
G-2	LID Excavation	m3	25,450	\$20.00	\$509,000.00
G-3	LID Berm	m3	12,545	\$50.00	\$627,250.00
G-4	LID filter media	m3	1,515	\$50.00	\$75,750.00
G-5	LID Rock Fill	m3	3,785	\$50.00	\$189,250.00
G-6	Berm cart-way Granular A	t	1,980	\$24.00	\$47,520.00
G-7	Hydraulic Seeding and Mulching	m2	22,500	\$5.50	\$123,750.00
Subtotal (G)					\$2,457,418.00
On-site Subtotal					\$27,704,853.82
Part II- Off-Site					

H - Sanitary Sewers					
H-1	Inverness Ave	m	350	\$600.00	\$210,000.00
H-2	George Ave	m	300	\$600.00	\$180,000.00

Western Annex - Golf Course Lands - Construction Class D Cost Estimate

H-3	Alan Ave	m	35	\$600.00	\$21,000.00
H-4	Sherbrooke St E	m	100	\$600.00	\$60,000.00
H-5	Last Duel Easement	m	120	\$600.00	\$72,000.00
				Subtotal (G)	\$543,000.00
I - Lane Construction and Traffic Signals					
I-1	Rock Excavation Roadway	m3	383	\$90.00	\$34,425.00
I-2	Clearing and Grubbing	LS	1	\$2,000.00	\$2,000.00
I-3	Granular 'A' Roadway Bed (150 mm)	t	793	\$22.00	\$17,441.82
I-4	Granular 'B' Roadway Bed (300 mm)	t	1,390	\$20.00	\$27,805.80
I-5	Performance Graded Superpave 12.5mm Level B (PG 58-34) - 40 mm depth	t	46	\$110.00	\$5,093.55
I-6	Performance Graded Superpave 19mm Level B (PG 58-34) - 50 mm depth	t	58	\$110.00	\$6,366.94
I-7	Pavement Markings	LS	1	\$1,000.00	\$1,000.00
I-8	Concrete Sidewalk (assume 1.8 m average width)	m2	216	\$100.00	\$21,600.00
I-9	Topsoil and Seed (2 m each side of road/parking lot)	m2	720	\$6.00	\$4,320.00
I-10	Traffic Signal	LS	1	\$70,000.00	\$70,000.00
I-11	Improvements to Peter St, Bridge, sidewalks	LS	1	\$140,000.00	\$140,000.00
				Subtotal (I)	\$330,053.11
J - Watermain Replacement on Inverness Avenue					
J-1	300 mm Diameter Watermain	m	450	\$450.00	\$202,500.00
J-2	300mm Gate valve	ea	1	\$2,800.00	\$2,800.00
J-3	Trench reinstatement	m	450	\$220.00	\$99,000.00
J-4	Adjust Valves	ea	1	\$500.00	\$500.00
J-5	Watermain Testing	LS	1	\$7,500.00	\$7,500.00
J-6	Water service reconnection to watermain	ea	16	\$500.00	\$8,000.00
J-7	Temporary water supply Inverness Avenue	ea	1	\$15,000.00	\$15,000.00
J-8	Connection into Existng	ea	2	\$7,500.00	\$15,000.00
				Subtotal (J)	\$350,300.00
				Off-site Subtotal	\$350,300.00

Western Annex - Golf Course Lands - Construction Class D Cost Estimate

CONSTRUCTION ESTIMATE SUB-TOTAL	\$402,800.00
DETAILED PLANNING AND ENGINEERING SERVICES (15% of Construction Estimate)	\$60,420.00
* UTILITIES (5% of Construction Estimate)	
SUB-TOTAL	\$463,220.00
CONTINGENCY (20%)	\$92,644.00
TOTAL COST (excl. HST)	\$555,864.00
H.S.T. (13%)	\$72,262.32
TOTAL COST (incl. HST)	\$628,126.32

* Natural Gas connection and meter costs are assumed to be included as part of this utilities price

Western Annex - Tayview Lands - Construction Class D Cost Estimate

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
Part I- On-Site					
B - Road Construction					
B-1	Rock Excavation Roadway	m3	2,958	\$90.00	\$266,220.00
B-2	Clearing and Grubbing	LS	1	\$50,000.00	\$50,000.00
B-3	Granular 'A' Roadway Bed (150 mm)	t	2,925	\$22.00	\$64,357.13
B-4	Granular 'B' Roadway Bed (300 mm)	t	5,130	\$20.00	\$102,598.32
B-5	Performance Graded Superpave 12.5mm Level B (PG 58-34) - 40 mm depth	t	1,312	\$110.00	\$144,317.25
B-6	Performance Graded Superpave 19mm Level B (PG 58-34) - 50 mm depth	t	1,640	\$110.00	\$180,396.56
B-7	Pavement Markings	LS	1	\$25,000.00	\$25,000.00
B-8	Concrete Curb	m	3,570	\$60.00	\$214,200.00
B-9	Concrete Sidewalk (assume 1.8 m average width)	m2	3,060	\$100.00	\$306,000.00
B-10	Topsoil and Seed (2 m each side of road/parking lot)	m2	20,400	\$6.00	\$122,400.00
Subtotal (B)					\$1,475,489.26
C - Storm Sewers					
C-1	1500 mm dia. MH per OPSD 701.010	ea	1	\$9,300.00	\$9,300.00
C-2	1800 mm dia. MH per OPSD 701.010	ea	8	\$11,500.00	\$92,000.00
C-3	2400 mm dia. MH per OPSD 701.010	ea	2	\$20,000.00	\$40,000.00
C-4	3000 mm dia. MH per OPSD 701.010	ea	5	\$28,000.00	\$140,000.00
C-5	600 x 600 mm PCC catchbasin per OSD 705.010, incl. CB Lead	ea	24	\$4,000.00	\$96,000.00
C-6	300 mm Storm Sewer PVC Pipe - Class SDR 28	m	175	\$300.00	\$52,500.00
C-7	375 mm Storm Sewer PVC Pipe - Class SDR 28	m	200	\$350.00	\$70,000.00
C-8	450 mm Storm Sewer PVC Pipe - Class SDR 28	m	60	\$350.00	\$21,000.00
C-9	600 mm Storm Sewer Conc. Pipe - Class 65D	m	200	\$500.00	\$100,000.00
C-10	675 mm Storm Sewer Conc. Pipe - Class 65D	m	240	\$600.00	\$144,000.00
C-11	825 mm Storm Sewer Conc. Pipe - Class 65D	m	100	\$750.00	\$75,000.00

Western Annex - Tayview Lands - Construction Class D Cost Estimate

C-12	1050 mm Storm Sewer Conc. Pipe - Class 65D	m	100	\$850.00	\$85,000.00
C-13	1200 mm Storm Sewer Conc. Pipe - Class 65D	m	130	\$1,000.00	\$130,000.00
C-14	Headwall, D>900mm	ea	1	\$10,000.00	\$10,000.00
C-15	Rock Excavation	m3	1,205	\$90.00	\$108,450.00
Subtotal (C)					\$1,173,250.00
D - Sanitary Sewers					
D-1	1200 mm dia. MH as per OPSD 701.010	ea	15	\$7,000.00	\$105,000.00
D-2	250 mm Sanitary Sewer PVC Pipe - Class SDR 28	m	967	\$450.00	\$435,150.00
D-3	Rock excavation for sanitary sewer	m3	500	\$150.00	\$75,000.00
D-4	Cleaning and Televising Sewers (after installation)	m	967	\$7.00	\$6,769.00
D-5	Connection to Existing	ea	1	\$2,000.00	\$2,000.00
Subtotal (D)					\$623,919.00
E - Watermain					
E-1	Rock Excavation	m ³	2347.92	\$90.00	\$211,312.80
E-2	200 mm Diameter Watermain	m	1087	\$345.00	\$375,015.00
E-3	200mm Isolation Valves	ea	7	\$2,800.00	\$19,600.00
E-4	Fire Hydrants	ea	16	\$7,500.00	\$120,000.00
E-5	Waterservice (inc. saddle and curb stop)	ea	75	\$2,000.00	\$150,000.00
E-7	Watermain Testing	LS	1	\$15,000.00	\$15,000.00
E-8	Adjust Valves	ea	14	\$500.00	\$7,000.00
Subtotal (E)					\$897,927.80
G - Stormwater Management Facility					
G-1	Earth Excavation Drainage	m3	2,400	\$20.00	\$48,000.00
G-2	Rock Excavation	m3	740	\$90.00	\$66,600.00
G-3	Clay liner	m2	4,550	\$50.00	\$227,500.00
G-4	Riprap (including geotextile)	m2	40	\$80.00	\$3,200.00
G-5	Headwall	ea	2	\$10,000.00	\$20,000.00
G-6	Granular 'B' (access road - 300mm thick)	t	149	\$24.00	\$3,576.00

Western Annex - Tayview Lands - Construction Class D Cost Estimate

G-7	Hydraulic Seeding and Mulching	m2	3,250	\$5.50	\$17,875.00
Subtotal (G)					\$386,751.00
On-site Subtotal					\$4,557,337.06
Part II- Off-Site					
H - Watermain Construction on Sunset					
H-1	200 mm Diameter Watermain	m	733	\$345.00	\$252,885.00
H-2	200mm Isolation Valves	ea	2	\$2,800.00	\$5,600.00
H-3	Connection to Existing	ea	1	\$7,500.00	\$7,500.00
H-4	Adjust Valves	ea	2	\$500.00	\$1,000.00
Subtotal (E)					\$266,985.00
i - Sanitary Construction on Sunset					
I-1	1200 mm dia. MH as per OPSD 701.010	ea	6	\$7,000.00	\$42,000.00
I-2	250 mm Sanitary Sewer PVC Pipe - Class SDR 28	m	733	\$345.00	\$252,885.00
I-3	Connection to Existing	ea	1	\$7,500.00	\$7,500.00
Subtotal (E)					\$302,385.00
Off-site Subtotal					\$569,370.00
CONSTRUCTION ESTIMATE SUB-TOTAL					\$5,126,707.06
DETAILED PLANNING AND ENGINEERING SERVICES (15% of Construction Estimate)					\$769,006.06
* UTILITIES (5% of Construction Estimate)					
SUB-TOTAL					\$5,895,713.12
CONTINGENCY (20%)					\$1,179,142.62
TOTAL COST (excl. HST)					\$7,074,855.74
H.S.T. (13%)					\$919,731.25
TOTAL COST (incl. HST)					\$7,994,586.99

* Natural Gas connection and meter costs are assumed to be included as part of this utilities price

Appendix I Consultation

July 18, 2016

Attention: Glen McDonald, Director, Planning
Rideau Valley Conservation Authority

Prepared by: Claire Milloy, P.Geo., Groundwater Scientist
Brian Stratton, P.Eng., Manager of Engineering Services
Watershed Science and Engineering Services, Rideau Valley Conservation Authority

Project: **Western and Northern Annex of Perth**
Email from Doug Nuttall, JP2G
Received: June 26, 2016

With respect to the hydrological impact assessment required for natural features such as wetlands and streams, and in reference to JP2G's June 26, 2016, email about the related scope of work for the Western and Northern Annex lands in Perth, we offer the following preliminary advice for consideration. The advice is general in nature, since we have not been provided with any details about the proposed development. This advice is also separate from any related ecological considerations that may be required by the municipality and separate from any advice related to headwater drainage feature assessment requirements by RVCA.

As per Ontario Regulation 174/06, development is regulated within wetlands. In addition, the hydrological function of a wetland (*including areas within 120 meters of all provincially significant wetlands ...*) is regulated in other areas where development could interfere with this function. RVCA's practice is not to evaluate related setback requirements when it comes to potential hydrologic impacts in a wetland, even though setbacks may be required for other reasons (ecological, planning etc.). RVCA recommends that the study addresses the advice from Section 3.2 of the MOECC's 2003 *Stormwater Management Planning and Design Manual* with consideration to the following discussion.

In the case of specific natural features, the advice should be addressed considering the defined catchments for these natural features. The MOECC's advice accounts for changes in soil type, topography and land cover (including impervious areas). In this way, diversions, regrading, and land cover or soil type modifications, which all affect the hydrologic cycle, would be accounted for.

An important aspect of the MOECC's advice, that is very important for wetlands, is the use of monthly or daily data. Wetlands require very specific water level at specific times of the year, therefore any related assessment must be undertaken monthly and in direct reference to an actual established (measured) hydroperiod (wetland water level fluctuation pattern).

In addition, it is also always important to properly discretize an area into unique combinations of soil and land cover under pre-development and post-development scenarios. The water budget calculations are undertaken for these unique areas rather than for the total site. In this way, blended water holding capacities or water surplus values are not used.

Additional detailed advice is available from Credit Valley and Toronto Region Conservation Authorities in Chapter 6 and Appendices C and D of *Stormwater Management Criteria* (August 2012).

<http://www.creditvalleyca.ca/wp-content/uploads/2014/09/cvc-swm-criteria-appendices-Aug12-D-july14.pdf>

In addition, there is an example of how to employ the MOECC's methodology in *Hydrogeological Assessment Submissions (Conservation Authorities Guidelines for Development Applications)*.

<http://cloca.ca/devreview/HydroAssessmentGuidelines-20130610-FINAL2.pdf> Please note that in

Appendix A, there are some erroneous interpretations of Thornthwaite and Mather's calculations and other assumptions that may not be valid for all locations / circumstances, so caution is advised.

Further, if a detailed water budget assessment is required, then the USGS provides free related software

<http://wi.water.usgs.gov/Soil Water Balance/>

RVCA recommends detailed pre-consultation for development in advance of any site specific work.

Respectfully,



Claire A Milloy, M.Sc., P.Geo.
Groundwater Scientist
ext. 1217
claire.milloy@rvca.ca



Brian Stratton, P.Eng.
Manager Engineering Services
ext. 1141
brian.stratton@rvca.ca

and

July 18, 2016

Claire A Milloy, P.Geo., Groundwater Scientist and Brian Stratton, P.Eng., Manager, Engineering Services
Watershed Science and Engineering Services

Rideau Valley Conservation Authority

PO Box 559 | 3889 Rideau Valley Drive | Manotick, Ottawa, Ontario | K4M 1A5 | 613-692-3571 | 1-800-267-3504

Town of Perth
Infrastructure Master Plan Western Annexed Area
Notice of Study Commencement

THE STUDY

The Town of Perth has engaged Jp2g Consultants to undertake a study to determine infrastructure requirements for the development of the Western Annexed Area (see Key Map). This study is being conducted in accordance with the requirements of Phase 1 and 2 of the Municipal Class Environmental Assessment which is an approved process under the Environmental Assessment Act and has now commenced.

PUBLIC COMMENT INVITED

Public consultation is a key component of the Class EA planning and design process. The Master Plan process will include scheduled public information (consultation) centres (PIC) in the Fall 2016 to review servicing problems and opportunities and the alternative solutions being considered. In addition there will be an opportunity to review the final Infrastructure Master Plan report at the conclusion of the process. Separate notices indicating the date and time of the PIC will be published in the newspaper and Town's web site and sent to all persons requesting to be included on the study mailing / contact list.

STUDY CONTACTS

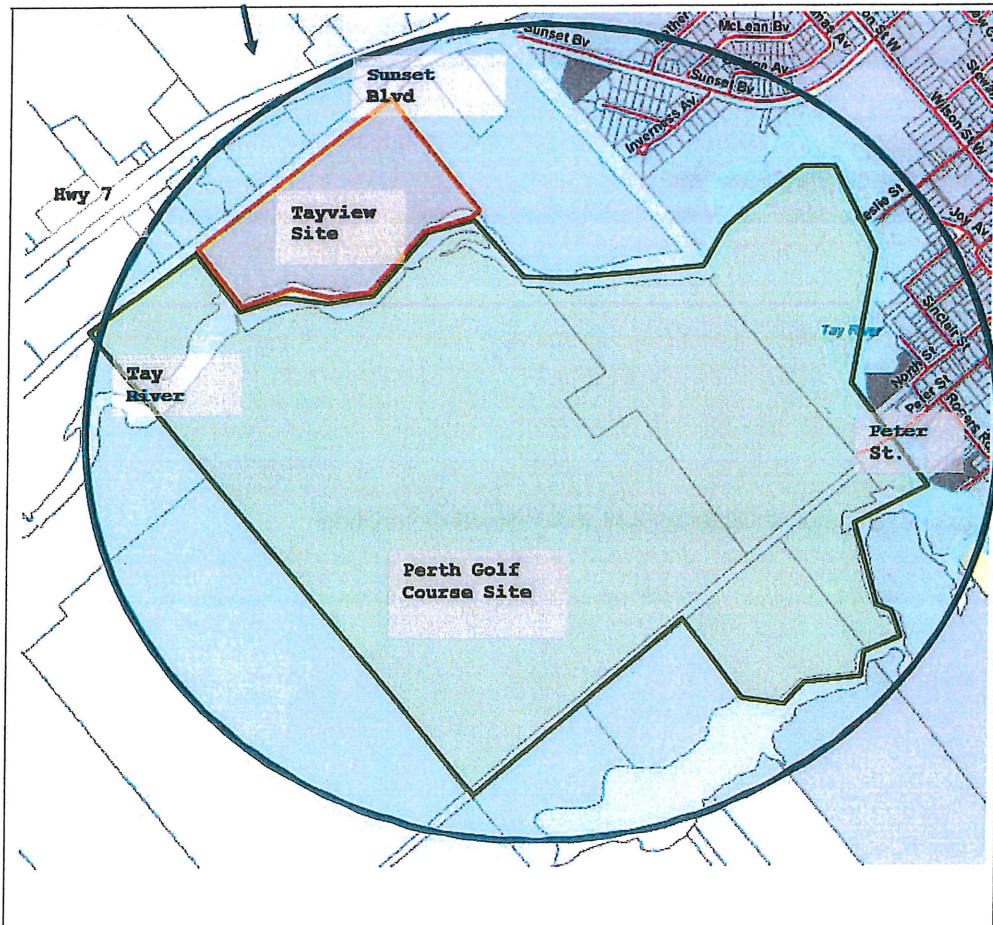
If you require additional information or wish to be added to the contact list please communicate with :

Eric Cosens, MCIP, RRP
Director Development and Protective Services
Town of Perth
80 Gore Street East
Perth, ON K7H 1H9
Ph: 613-267-3311 Ext. 2235
Email: ecosens@perth.ca

Doug Nuttall, P.Eng.
Project Manager
Jp2g Consultants Inc.
1150 Morrison Drive, Suite 410
Ottawa, ON K2H 8S9
Ph: 613-828-7800 Ext. 202
doug@jp2g.com

Information related to this study will be collected in accordance with the Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments received will become part of the public record.

STUDY AREA – WESTERN ANNEXED AREA





Jp2g Consultants Inc.

ENGINEERS • PLANNERS • PROJECT MANAGERS

1150 Morrison Drive, Suite 410, Ottawa, ON K2H 8S9

T 613-828-7800, F 613-828-2600, www.jp2g.com

Jp2g No. 2161774A

August 9, 2016

**Re: Town of Perth
Infrastructure Master Plan Western Annexed Area
Municipal Class Environmental Assessment**

Dear Agency:

The Town of Perth has initiated an Infrastructure Master Plan for the development of the Western Annexed Area, attached find a Notice of Study Commencement.

This project is being planned as a Schedule B activity defined by the Municipal Class Environmental Assessment document prepared by the Municipal Engineers Association of Ontario.

The Master Plan will be completed following Phases 1 and 2 of the Municipal Class EA which will involve Phase 1 - identify the problems and opportunities for developing and servicing the study area, and Phase 2 – evaluate road, water, sewage and stormwater alternative solutions to select the preferred servicing strategy.

It is expected that the potential Alternative Solutions will be available for agency and public review in the Fall 2016.

Please advise either by mail or e-mail of your comments (or intention to provide comments) and/or if you wish to receive further notice as the project proceeds through the Municipal Class EA planning and design process. My e-mail address is dougn@jp2g.com.

Yours very truly,

Jp2g Consultants Inc.
ENGINEERS ■ PLANNERS ■ PROJECT MANAGERS

A handwritten signature in black ink, appearing to read 'Doug Nuttall', is written over a faint horizontal line.

Doug Nuttall, P.Eng.
Project Manager

cc Eric Cosens, Director of Development and Protective Services

Ministry of the Environment and Climate Change
Eastern Region
1259 Gardiners Road
P.O. Box 22032
Kinston, ON K7M 8S5
Attention: Vicki Mitchell
Environmental Assessment Coordinator

Phone: 613-549-4000
E-Mail: vicki.mitchell@ontario.ca

Ministry of the Environment and Climate Change
Ottawa District Office
2430 Don Reid Drive
Ottawa, ON K1H 1E1
Attention: Steve Burns
District Manager

Phone: 613-521-5437
E-Mail: steve.burns@ontario.ca

County of Lanark
99 Christie Lake Road
Perth, ON K7H 3C6
Attention: Kurt Greaves, CAO

Phone: 613-267-4200 x 1101
E-Mail: kgreaves@clanarkcounty.ca

Tay Valley Township
217 Harper Road
Perth, ON K7H 3C6
Attention: Larry Donaldson, CAO

Phone: 613-267-5353
E-Mail: ldonaldson@tayvalley.ca

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
PO Box 599
Manotick, ON K4M 1A5
Attention: Glen McDonald
Director of Planning

Phone: 613-692-3571 x 1133
E-Mail: glen.mcdonald@rvca.ca

Leeds, Grenville and Lanark District Health Unit
458 Laurier Boulevard
Brockville, ON K6V 7A3
Attention: Paula Stewart
Medical Officer of Health

Phone: 613-345-5685
E-Mail: paula.stewart@healthunit.org

Ministry of Natural Resources and Forestry
Kemptville District
PO Box 2002
Kemptville, ON K0G 1J0
Attention: Lyn Garrah
District Planner

Phone: 613-258-8204
E-Mail: lyn.garrah@ontario.ca

Algonquins of Ontario
Consultation Office
31 Riverside Drive
Pembroke, ON K8A 8R6
Attention: Janet Stavinga
Executive Director

Phone: 613-735-3759
E-Mail: jstavinga@tanikiwin.com



Ministry of Tourism, Culture & Sport
435 South James Street, Suite 334
Thunder Bay, ON P7E 6S7

Attention: Paige Campbell
Archaeology Review Officer

Phone: 807-475-1632

E-Mail: paige.campbell@ontario.ca

Ministry of Municipal Affairs and Housing
Municipal Services Office – Eastern
8 Estate Lane, Rockwood House
Kinston, ON K7M 9A8

Attention: Damien Schaefer
Planner

Phone: 1-800-267-9438 ext 121

E-Mail: damien.schaefer@ontario.ca



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T 613-828-7800, F 613-828-2600, www.jp2g.com

Jp2g No. 2161774A

August 9, 2016

Tayview Properties

Attention: Ken and Brenda Wright

E-Mail: brenda.ken.wright@bell.net

**Re: Town of Perth
Infrastructure Master Plan Western Annexed Area
Municipal Class Environmental Assessment**

Dear Ken and Brenda Wright:

The Town of Perth has initiated an Infrastructure Master Plan for the development of the Western Annexed Area, attached find a Notice of Study Commencement.

This project is being planned as a Schedule B activity defined by the Municipal Class Environmental Assessment document prepared by the Municipal Engineers Association of Ontario.

The Master Plan will be completed following Phases 1 and 2 of the Municipal Class EA which will involve Phase 1 - identify the problems and opportunities for developing and servicing the study area, and Phase 2 – evaluate road, water, sewage and stormwater alternative solutions to select the preferred servicing strategy.

In order to conduct this study we request the opportunity to obtain any information on your property, and we will require access to conduct limited fieldwork investigations and site inspections.

We would be pleased to meet and discuss the project approach and how the development of your property may be affected. My email address is dougn@jp2g.com, and we have recently established an office at 40 Sunset Boulevard, Unit 40, Perth, ON – Phone No.: 613-281-8762

Yours very truly,

Jp2g Consultants Inc.

ENGINEERS ■ PLANNERS ■ PROJECT MANAGERS

A handwritten signature in black ink, appearing to read 'Doug Nuttall', written over a faint, illegible printed name.

Doug Nuttall, P.Eng.
Project Manager

cc Eric Cosens, Director Development and Protective Services
Vicki Mitchell, MOECC



Jp2g Consultants Inc.

ENGINEERS • PLANNERS • PROJECT MANAGERS

1150 Morrison Drive, Suite 410, Ottawa, ON K2H 8S9

T 613-828-7800, F 613-828-2600, www.jp2g.com

Jp2g No. 2161774A

August 9, 2016

Perth Golf Club Links O'Tay
141 Peter Street
Perth, ON K7H 3E4

Phone: 613-267-3090

E-Mail: jbaxter@storm.ca

Attention: Mr. Jim Baxter

**Re: Town of Perth
Infrastructure Master Plan Western Annexed Area
Municipal Class Environmental Assessment**

Dear Mr. Jim Baxter et al:

The Town of Perth has initiated an Infrastructure Master Plan for the development of the Western Annexed Area, attached find a Notice of Study Commencement.

This project is being planned as a Schedule B activity defined by the Municipal Class Environmental Assessment document prepared by the Municipal Engineers Association of Ontario.

The Master Plan will be completed following Phases 1 and 2 of the Municipal Class EA which will involve Phase 1 - identify the problems and opportunities for developing and servicing the study area, and Phase 2 – evaluate road, water, sewage and stormwater alternative solutions to select the preferred servicing strategy.

In order to conduct this study we request the opportunity to obtain any information on your property, and we will require access to conduct limited fieldwork investigations and site inspections.

We would be pleased to meet and discuss the project approach and how the development of your property may be affected. My email address is dougn@jp2g.com, and we have recently established an office at 40 Sunset Boulevard, Unit 40, Perth, ON – Phone No.: 613-281-8762

Yours very truly,

Jp2g Consultants Inc.

ENGINEERS ■ PLANNERS ■ PROJECT MANAGERS

A handwritten signature in blue ink, appearing to read 'Doug Nuttall', is written over a horizontal line.

Doug Nuttall, P.Eng.
Project Manager

cc Eric Cosens, Director Development and Protective Services
Vicki Mitchell, MOECC

David Trick

E-Mail: trickdavid61@gmail.com

Mark Beveridge

E-Mail: betron@on.aibn.com

Tim Lee

E-Mail: timleebroker@gmail.com



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1150 Morrison Drive, Suite 410, Ottawa, ON K2H 8S9

T 613-828-7800, F 613-828-2600, www.jp2g.com

Jp2g No. 2161774A

August 9, 2016

**Re: Town of Perth
Infrastructure Master Plan Western Annexed Area
Municipal Class Environmental Assessment**

Dear Utility:

The Town of Perth has initiated an Infrastructure Master Plan for the development of the Western Annexed Area, attached find a Notice of Study Commencement.

This project is being planned as a Schedule B activity defined by the Municipal Class Environmental Assessment document prepared by the Municipal Engineers Association of Ontario.

The Master Plan will be completed following Phases 1 and 2 of the Municipal Class EA which will involve Phase 1 - identify the problems and opportunities for developing and servicing the study area, and Phase 2 – evaluate road, water, sewage and stormwater alternative solutions to select the preferred servicing strategy.

As part of our data collection for this study could you confirm where your utility infrastructure is located relative to the Study Area. If you are not the correct contact person please advise.

Prior to any on-site investigations which may be necessary we will be obtaining locates for confirmation. My email address is dougn@jp2g.com.

Yours very truly,

Jp2g Consultants Inc.

ENGINEERS ■ PLANNERS ■ PROJECT MANAGERS

A handwritten signature in black ink, appearing to read 'Doug Nuttall', is written over a faint, illegible printed name.

Doug Nuttall, P.Eng.
Project Manager

cc Eric Cosens, Director Development and Protective Services

Hydro One Networks Inc.
Real Estate Services,
Land Use Planning
P.O. Box 4300
Markham, ON L3R 5Z5

Phone: 905-946-6237
E-Mail: landuseplanning@hydroone.com

Attention: Dennis De Rango
Specialized Services Team Lead

Enbridge Gas Distribution Inc.
400 Coventry Road
Ottawa, ON K1K 2C7
Attention: Denis Comtois

Phone: 613-748-6795
E-Mail: denis.comtois@enbridge.com

Bell Canada
469 Coventry Road
PO Box 8239
Ottawa, ON K1G 3J4
Attention: Brad Wilson

Phone: 613-432-9101
E-Mail: bradwilson@bell.ca

Rogers Cable Communication Inc.
475 Richmond Road
Ottawa, ON K2A 3Y8

Phone:
E-Mail: joanshirley.zacharias@rci.rogers.com

From: [David Trick](#)
To: [Kevin Mooder](#)
Cc: [MSB](#)
Subject: Re: Perth Master Infrastructure Plan Western Annexed Area Class EA
Date: Wednesday, August 10, 2016 1:47:39 PM
Attachments: [image001.png](#)

Any and all information that you require should be on file with McIntosh Perry as they were the consultants for us. James Baxter is no longer involved with the Perth Golf Course.

Please direct any further correspondence to myself.

Regards,
David Trick

On Tue, Aug 9, 2016 at 11:30 AM, Kevin Mooder <kmooder@jp2g.com> wrote:

> Eric Cosens provided us with a list of contact persons regarding this
> project, see attached. I apologize in advance if there is an error or
> omission in this list
>
> Mr Nuttall is on holidays August 15-26, so in the meantime if you have any
> questions please do not hesitate to contact me.
>
>
>
> *Kevin Mooder, MCIP, RPP*
>
> T: 613-828-7800 x209
>
> 1150 Morrison Drive, Suite 410, Ottawa, Ontario, K2H 8S9
>
> [image: cid:image001.png@01D008AD.1ECF4950]
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> *Keep it Clean - Go Green*
>
>
>

From: [Inforequest, Kemptville \(MNRF\)](#)
To: bryanak@jp2g.com
Cc: [Inforequest, Kemptville \(MNRF\)](#)
Subject: MNR Kemptville District Information Request (2016_BAT-3631) Response
Date: Thursday, August 11, 2016 3:59:31 PM
Attachments: [ESA Infosheet-InfoRequest.pdf](#)
[NHIC-LIO Infosheet-InfoRequest.pdf](#)
[2016_BAT-3631_Response.pdf](#)
Importance: High

Hello,

Bryana Kenny
JP2G Consultants Inc.

Please find attached a response to your information request for project 'Perth Master Plan Class EA'.

In regard to your questions about the need to carry out new surveys – positive survey results are generally valid until there is sufficient survey effort to conclude that a previously occupied habitat has been permanently abandoned. The length of time negative survey results are considered valid is variable and dependent on considerations such as the species site fidelity, local habitat availability and site conditions. Generally, results have been considered valid for planning purposes for 1-2 years, after which species presence/absence and habitat use/mapping must be re-assessed. I recommend that new surveys be carried out as part of the updated EIS, including targeted surveys for gray ratsnake which is known to occur in the vicinity of the project site.

If you have any questions or concerns, please contact Mary Dillon at mary.dillon@ontario.ca.

Sincerely,

Information Request Services
Kemptville District
Ministry of Natural Resources

From: [Jamie Delaney](#)
To: kmooder@jp2g.com
Subject: EGD 12637906 - Perth Infrastructure Master Plan Western Annexed Area Class EA - GENERAL LOCATE
Date: Thursday, August 25, 2016 9:46:11 AM
Attachments: [12637906.zip](#)
[BOOKLETS.zip](#)

Please do not open any attachments from organizations or people that you are not familiar with. Also, since it is possible for viruses to SPOOF or fake the sender's address, do not open emails with attachments from people you know, or from whom you were not expecting an attachment, or if the attachment is a file type or file name that you customarily do not receive from this person.

Attached is the information you had requested.
The information provided is for GENERAL LOCATION ONLY. You must re-submit detailed drawings for sign-off by Enbridge Gas Distribution.
Should you require anything further please let me know.

Kind Regards,

Jamie Delaney

Distribution Planning & Records

ENBRIDGE GAS DISTRIBUTION

TEL: 416-495-6321, 866-326-2924 | FAX: 416-753-6941
500 Consumers Road North York, Ontario M2J 1P8

enbridgegas.com

Integrity. Safety. Respect.

Enbridge Gas Distribution cannot provide information regarding the depth of cover over our gas infrastructure. We suggest that a field locate be performed through Ontario One Call (1800-400-2255). If further details are still required, it is suggested that test holes be performed by an outside party in order to determine the actual Enbridge Infrastructure depth.

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From: Denis Comtois
Sent: Tuesday, August 09, 2016 3:04 PM
To: Mark-Ups
Cc: Shona Thirsk
Subject: EGD 12637906 - Perth Infrastructure Master Plan Western Annexed Area Class EA
Attachments: Utiles Letter.pdf; Notice of Study-July 19, 2016.pdf

Categories: Jamie

Please see attachments and respond to Consultant.
Thank you.

Denis Comtois
Leak Surveyor

613-513-3616 cell
613-748-6795 direct
Enbridge Gas Distribution Inc,
400 Coventry Road, Ottawa ON K1K 2C7

From: Kevin Mooder [mailto:kmooder@jp2g.com]
Sent: Tuesday, August 09, 2016 12:14 PM
To: landuseplanning@hydroone.com; Denis Comtois; brad.wilson@bell.ca;
joanshirley.zacharias@rci.rogers.com
Cc: ecosens@perth.ca; 'Doug Nuttall'
Subject: Perth Infrastructure Master Plan Western Annexed Area Class EA

Attached find a notice of study commencement and request for information
Mr Nuttall is on holidays August 15-26, so in the meantime if you require any clarification please do
not
hesitate to contact me.

Kevin Mooder, MCIP, RPP

T: 613-828-7800 x209

1150 Morrison Drive, Suite 410, Ottawa, Ontario, K2H 8S9

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From: [Garrah, Lyn \(MNRF\)](#)
To: [Kevin Mooder](#); dougn@jp2g.com
Cc: ecosens@perth.ca
Subject: RE: Perth Infrastructure Master Plan Western Annexed Area Class EA
Date: Friday, August 26, 2016 4:34:01 PM
Attachments: [image001.png](#)

Hello,

The MNRF received the notice of study commencement. We sent an information letter for this file on August 11, 2016. The information from that letter should be helpful in scoping and assessing the presence and impact on natural heritage features and species at risk in the study area. Please send me further notice as the project proceeds through the Municipal Class EA process, and send any reports relating to MNRF's mandate for our review and comment.

Thank you sincerely.

Lyn

Lyn Garrah, M.E.S.
District Planner

Ministry of Natural Resources and Forestry
Kemptville District
10 Campus Drive, PO Box 2002, Kemptville, ON K0G 1J0
613-258-8414

From: Kevin Mooder [mailto:kmooder@jp2g.com]
Sent: August 9, 2016 11:30 AM
To: Mitchell, Vicki (MOECC); Burns, Steve (MOECC); Kurt Greaves; ldonaldson@tayvalley.ca; 'Glen McDonald'; paula.stewart@healthunit.org; Garrah, Lyn (MNRF); Janet Stavinga (Algonquins Of Ontario); Campbell, Paige (MTCS); Schaefer, Damien (MAH)
Cc: ecosens@perth.ca; 'Doug Nuttall'
Subject: Perth Infrastructure Master Plan Western Annexed Area Class EA

Mr Nuttall is on holidays the week of August 15 to 26, in the meantime if you have any questions please do not hesitate to contact me.

Kevin Mooder, MCIP, RPP
T: 613-828-7800 x209
1150 Morrison Drive, Suite 410, Ottawa, Ontario, K2H 8S9
[cid:image001.png@01D008AD.1ECF4950](#)

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Doug Nuttall

From: Doug Nuttall
Sent: September 3, 2016 11:48 AM
To: brenda.ken.wright
Subject: RE: Perth Infrastructure Master Plan Wester Annexed Area Class EA

Thank you both for coming in and discussing this project with me on Friday, September 2, 2016.

I am including a summary of the topics we discussed and action items that we agreed to:

The Environmental Assessment process is intended to find the most effective method of servicing (transportation, water, sanitary, storm) the western annex as a whole, including the Tayview property and the Golf Course property.

The intent is to develop as little new information as possible, and rather rely on existing information to make the required assessments.

Additional information is currently being collected by the Town of Perth on existing traffic counts, and while this was originally expected to be available in July, it is currently expected in October.

JP2G, together with our sub-consultants, will develop projected future traffic counts, pedestrian and cycling routes, service capacities for Sanitary and Water, etc., and from that develop a decision matrix for servicing options.

We will be arranging for geotechnical investigations at the most logical crossing location(s) to develop an approximate cost of construction of a potential new river crossing(s).

In the event that a crossing is to be considered adjacent to or through your property, I will contact you directly to obtain access through your property for the geotechnical investigation equipment – likely a truck mounted drill rig.

It is not expected at this time that we will need access to your property for other purposes. If this changes, I will contact you to discuss what information we would require, and what access we would require to collect that information.

The results of our traffic studies will be useful to you as part of your subdivision planning and approval process.

The results of our compilation efforts of the existing data may be useful to you, if only to identify existing data gaps that would need to be filled through the subdivision process.

The original completion date for the EA was intended to be in December, 2016. As some of the critical data has not been made available as expected, the completion date will be later than originally expected. At this time, it is expected that completion will be in January, 2017.

Action Items:

JP2G will prepare these notes of our meeting.

JP2G will maintain communication with Brenda and Ken Wright throughout the EA process.

JP2G will contact Brenda and Ken Wright to specifically arrange access for the geotechnical investigation.

JP2G will contact Brenda and Ken Wright if any other reasons to access their property develop throughout the EA process.

Douglas Nuttall, P.Eng.
Senior Civil Engineer

T: 613-828-7800 x202
C: 613-281-8762
40 Sunset Drive, Suite 40, Perth, Ontario, K7H 2Y4



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By email only

September 9, 2016

Jp2g Consultants Inc.

Attention: Doug Nuttall, P. Eng., Project Manager
dougn@jp2g.com

Dear Mr. Nuttall:

Re: Town of Perth Infrastructure Master Plan Western Annexed Area

Thank you for providing the Notice of Study Commencement on August 9, 2016. The Notice indicates that the project is following the Master Planning process in the Municipal Class EA, and will address phases 1 and 2 of the Municipal Class EA process.

Please keep me on your mailing list for notices. In addition, it is helpful to provide scanned copies of the notices as they appear in newspapers, and confirm the dates of publication and names of the newspapers.

Master Plan Process

The Master Plan process is discussed in section A.2.7 and Appendix 4 of the Class EA. Appendix 4 of the Class EA sets out different approaches that could be followed, and includes sample notices. It is preferable to determine the Master Plan approach at an early stage of the process, so that the public and commenting agencies are aware of future commenting opportunities, appeal mechanisms, and additional work needed for individual projects in the plan.

For example, the proponent will need to decide whether the final notice of study completion for the Master Plan will also serve as a final notice of completion for some or all of the schedule B projects identified in the Master Plan. In this case, the notice should list the specific schedule B projects and include a statement informing the public that they have a right to request a Part II Order for the specified projects (approach # 2).

Alternatively, if the proponent has determined that additional EA work and public consultation is needed before the schedule B and C projects are deemed to be completed, and the Master Plan simply provides the framework for future decisions, then the Master Plan is not subject to Part II Order requests, and the notice would not include a statement about the Part II Order mechanism (approach # 1, sample notice # 3).

Approach # 4 involves integrating the Master Plan with a planning approval such as an Official Plan or a comprehensive Official Plan Amendment. With this approach, the Master Plan must meet the requirements set out in Section A.2.9 of the Municipal Class EA:

The proponent should be aware that copies of notices must be provided to the Director of this ministry's Environmental Approvals Branch, with a brief summary of how the Master Plan followed the Class EA requirements. This information is required to be sent to EAB for tracking purposes, to monitor the effectiveness of the Master Plan approach at MEA.Notices.EAAB@ontario.ca.

The Master Plan document should clearly define the projects which will be carried out under the Master Plan, the appropriate schedule for each project, future documentation or studies that will be needed, and future public consultation opportunities for each project or class of projects. The Master Plan should also explain the appeal mechanisms for the projects in the plan (for example, opportunities to request a Part II Order at a later date, appeal to OMB if integration with a Planning Act approval is proposed). We recommend that the Master Plan include a chart which summarizes the above information.

As the Master Plan is intended to satisfy Phases 1 and 2 of the Municipal Class EA process, the Master Plan should evaluate alternatives and identify impacts to the environment. The description and evaluation of alternatives should be completed in sufficient detail to allow any reviewer to understand the advantages and disadvantages of each alternative and the rationale for selecting the preferred alternative. The Master Plan may also identify technical studies that will be carried out in future as the individual projects within the Master Plan are further developed.

The Ministry of the Environment and Climate Change Areas of Interest

This ministry's interest in infrastructure projects includes impacts to surface water from stormwater discharge, impacts to groundwater and surface water quality and quantity due to construction (for example, water crossings, dewatering, control of erosion and sedimentation, spill control), noise and air quality impacts to nearby residents or planned subdivisions, potential for encountering contaminated soil or contaminated sediment, and appropriate removal and disposal of waste material. These issues should be addressed during the EA process.

This ministry's interest in road projects includes impacts to surface water from stormwater discharge, impacts to groundwater and surface water quality and quantity due to construction (for example, water crossings, dewatering, control of erosion and sedimentation, spill control), noise and air quality impacts to nearby residents or planned subdivisions, potential for encountering contaminated soil or contaminated sediment, and appropriate removal and disposal of waste material. These issues should be addressed during the EA process.

The following comments are standard Ministry of the Environment and Climate Change (the “ministry”) comments for road projects. They may not all apply to the proposed project.

Noise and Vibration

The Project File should include commitments to comply with municipal noise bylaws, implement general noise control measures, investigate noise complaints, and comply with ministry sound level criteria for construction equipment.

Where there is a potential for permanent noise increases from this project, a noise study should be completed as part of the Class EA process to assess impacts on residences, proposed residential development, or other sensitive land uses. This noise assessment should be available to the public during the Class EA process and should be included in the Project File.

If blasting is required, pre-blast surveys are recommended, and the proponent should establish protocols for notifying residents and addressing blasting complaints. Noise, dust and flyrock should be controlled.

Water

Where there is a potential to impact creeks, rivers and lakes, appropriate mitigation measures should be considered prior to construction:

- machinery should not operate directly in a watercourse;
- refuelling of all vehicles and equipment should be done away from watercourses;
- adequate erosion and sedimentation controls must be incorporated into the planning and construction for the project;
- the time between excavation and restoration must be kept to a minimum,
- disturbed shoreline should be stabilized as soon as possible;
- removal of vegetation from the right-of-way should be kept to a minimum;
- materials removed and stockpiled such as excavated soil and backfill material must be contained in a manner to ensure sediment does not enter a waterway;
- contingency plans should be developed to respond to spills from equipment or release of sediment into a waterway;
- spill containment materials should be available on site and workers should be trained on spill containment and other contingency measures; and,
- construction work should be monitored to ensure mitigation measures are working and to ensure contingency plans are implemented when necessary (for example, in-stream turbidity and suspended solids).

If construction involves taking, dewatering, storage or diversion of water in excess of 50,000 litres per day, the activity may be required to be registered on the Environmental Activity and Sector Registry (EASR) or may require a Permit To Take Water. The process to be used depends on the source of the water, the quantity of water taken, and the type of construction activity. EASR requirements for water takings for road

construction and construction dewatering are prescribed in Ontario Regulation 63/16 under the Environmental Protection Act. The Permit To Take Water requirements are prescribed in Section 34, Ontario Water Resources Act.

Guidance on nearshore construction and dredging may be obtained from the following ministry guidelines:

- *B-6 Guidelines for Evaluating Construction Activities Impacting on Water Resources,*
- *Evaluating Construction Activities Impacting on Water Resources, Part III A, Part III B, and Part III C (dredging handbook) and accompanying Appendix A Provincial Sediment Quality Guidelines,*
- *Guidelines for Identifying, Assessing and Managing Contaminated Sediments in Ontario: An Integrated Approach.*

Stormwater management should be in accordance with the *Stormwater Management Planning and Design Manual*. Stormwater ponds require an approval under section 53 of the Ontario Water Resources Act.

The ministry has concerns with the use of a cured-in-place process (CIPP) for culverts. Styrene released into the environment can result in harm to fish.

Waste

Waste, including contaminated soil, must be managed in accordance with MOECC standards. The Environmental Protection Act (EPA) and Regulation 347 require waste to be classified and disposed of appropriately. When determining the waste category, the proponent must ensure compliance with Schedule 4 of Regulation 347.

Where the removal and movement of soils is required for the project, we recommend that you refer to the MOECC document *Management of Excess Soil – A Guide for Best Management Practices* and Ontario Regulation 153/04 and the accompanying *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* for guidance on assessment, management, restoration and soil quality criteria.

The Waste Disposal Site Inventory, dated June 1991, may be helpful in identifying the locations of open and closed waste disposal sites in Ontario.

Spills should be reported to the Spills Action Centre at 1-800-268-6060.

Consultation with First Nation and Métis Communities

Your proposed project may have the potential to affect Aboriginal communities who hold or claim Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982.

The Crown has a duty to consult First Nation and Métis communities when it knows about established or credibly asserted Aboriginal or treaty rights, and contemplates decisions or actions that may adversely affect them.

Although the Crown remains responsible for ensuring the adequacy of consultation with potentially affected Aboriginal communities, it may delegate procedural aspects of the consultation process to project proponents.

The environmental assessment process requires proponents to consult with interested persons and government agencies, including those potentially affected by the proposed project. This includes a responsibility to conduct adequate consultation with First Nation and Métis communities.

The ministry relies on consultation conducted by proponents when it assesses the Crown's obligations and directs proponents during the regulatory process.

Where the Crown's duty to consult is triggered in relation to your proposed project, the ministry is delegating the procedural aspects of rights-based consultation to you through this letter.

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the attached "Aboriginal Consultation Information" document. Please complete the checklist contained there, and keep related notes as part of your consultation record. Doing so will help you assess your project's potential adverse effects on Aboriginal or treaty rights.

You must contact the Director, Environmental Approvals Branch if you have reason to believe that your proposed project may **adversely affect an Aboriginal or treaty right, consultation has reached an impasse**, or if a Part II Order request is anticipated. The ministry will then assess the extent of any Crown duty to consult in the circumstances, and will consider whether additional steps should be taken and what role you will be asked to play in them.

Should you or any members of your project team have any questions regarding the material above, please contact me at (613) 540-6852.

Yours truly,



Vicki Mitchell
Environmental Assessment Coordinator
Eastern Region
VM/dv

ec: Eric Cosens, Director Development and Protective Services, Town of Perth
ecosens@perth.ca

ABORIGINAL CONSULTATION INFORMATION

Consultation with Interested Persons under the Ontario Environmental Assessment Act

Proponents subject to the Ontario *Environmental Assessment Act* are required to consult with interested persons, which may include First Nations and Métis communities. In some cases, special efforts may be required to ensure that Aboriginal communities are made aware of the project and are afforded opportunities to provide comments. Direction about how to consult with interested persons/communities is provided in the Code of Practice: Consultation in Ontario's Environmental Assessment Process available on the Ministry's website:

<https://www.ontario.ca/environment-and-energy/consultation-ontarios-environmental-assessment-process>

As an early part of the consultation process, proponents are required to contact the Ontario Ministry of Aboriginal Affairs' Consultation Unit and visit Aboriginal Affairs and Northern Development Canada's Aboriginal and Treaty Rights Information System (ATRIS) to help identify which First Nation and Métis communities may be interested in or potentially impacted by their proposed projects.

ATRIS can be accessed through the Aboriginal Affairs and Northern Development Canada website:

http://sidait-atris.aadnc-aandc.gc.ca/atris_online/

For more information in regard Aboriginal consultation as part of the Environmental Assessment process, refer to the Ministry's website:

www.ontario.ca/government/environment-assessments-consulting-aboriginal-communities

You are advised to provide notification directly to all of the First Nation and Métis communities who may be interested in the project. You should contact First Nation communities through their Chief and Band Council, and Metis communities through their elected leadership.

Rights-based consultation with First Nation and Métis Communities

Proponents should note that, in addition to requiring interest-based consultation as described above, certain projects may have the potential to adversely affect the ability of First Nation or Métis communities to exercise their established or credibly asserted Aboriginal or treaty rights. In such cases, Ontario may have a duty to consult those Aboriginal communities.

Activities which may restrict or reduce access to unoccupied Crown lands, or which could result in a potential adverse impact to land or water resources in which harvesting rights are exercised, may have the potential to impact Aboriginal or treaty rights. For assistance in determining whether your proposed project could affect these rights, please refer to the attached "Preliminary Assessment Checklist: First Nation and Métis Community Interest."

If there is likely to be an adverse impact to Aboriginal or treaty rights, accommodation may be required to avoid or minimize the adverse impacts. Accommodation is an outcome of consultation and includes any mechanism used to avoid or minimize adverse impacts to Aboriginal or treaty rights and traditional uses. Solutions could include mitigation such as

adjustments in the timing or geographic location of the proposed activity. Accommodation may in certain circumstances involve the provision of financial compensation, but does not necessarily require it.

For more information about the duty to consult, please see the Ministry's website at:

www.ontario.ca/government/duty-consult-aboriginal-peoples-ontario

The proponent must contact the Director, Environmental Approvals Branch if a project may adversely affect an Aboriginal or treaty right, consultation has reached an impasse, or if a Part II Order or an elevation request is anticipated; the Ministry will then determine whether the Crown has a duty to consult.

The Director of the Environmental Approvals Branch can be notified either by email with the subject line "Potential Duty to Consult" to EAASIBgen@ontario.ca or by mail or fax at the address provided below:

Email:	EAASIBGen@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Approvals Branch 135 St. Clair Avenue West, 1 st Floor Toronto, ON, M4V 1P5

Delegation of Procedural Aspects of Consultation

Proponents have an important and direct role in the consultation process, including a responsibility to conduct adequate consultation with First Nation and Métis communities as part of the environmental assessment process. This is laid out in existing environmental assessment codes of practice and guides that can be accessed from the Ministry's environmental assessment website at

www.ontario.ca/environmentalassessments

The Ministry relies on consultation conducted by proponents when it assesses the Crown's obligations and directs proponents during the regulatory process. Where the Crown's duty to consult is triggered, various additional procedural steps may also be asked of proponents as part of their delegated duty to consult responsibilities. In some situations, the Crown may also become involved in consultation activities.

Ontario will have an oversight role as the consultation process unfolds but will be relying on the steps undertaken and information you obtain to ensure adequate consultation has taken place. To ensure that First Nation and Métis communities have the ability to assess a project's potential to adversely affect their Aboriginal or treaty rights, Ontario requires proponents to undertake certain procedural aspects of consultation.

The proponent's responsibilities for procedural aspects of consultation include:

- Providing notice to the elected leadership of the First Nation and/or Métis communities (e.g., First Nation Chief) as early as possible regarding the project;

- Providing First Nation and/or Métis communities with information about the proposed project including anticipated impacts, information on timelines and your environmental assessment process;
- Following up with First Nation and/or Métis communities to ensure they received project information and that they are aware of the opportunity to express comments and concerns about the project. If you are unable to make the appropriate contacts (e.g. are unable to contact the Chief) please contact the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office for further direction.
- Providing First Nation and/or Métis communities with opportunities to meet with appropriate proponent representatives to discuss the project;
- Gathering information about how the project may adversely impact the relevant Aboriginal and/or Treaty rights (for example, hunting, fishing) or sites of cultural significance (for example, burial grounds, archaeological sites);
- Considering the comments and concerns provided by First Nation and/or Métis communities and providing responses;
- Where appropriate, discussing potential mitigation strategies with First Nation and/or Métis communities;
- Bearing the reasonable costs associated with these procedural aspects of consultation, which may include providing support to help build communities' capacity to participate in consultation about the proposed project.
- Maintaining a Consultation Record to show evidence that you, the proponent, completed all the steps itemized above or at a minimum made meaningful attempts to do so.
- Upon request, providing copies of the Consultation Record to the Ministry. The Consultation Record should:
 - summarize the nature of any comments and questions received from First Nation and/or Métis communities
 - describe your response to those comments and how their concerns were considered
 - include a communications log indicating the dates and times of all communications; and
 - document activities in relation to consultation.

Successful consultation depends, in part, on early engagement by proponents with First Nation and Métis communities. Information shared with communities must be clear, accurate and complete, and in plain language where possible. The consultation process must maintain sufficient flexibility to respond to new information, and we trust you will make all reasonable efforts to build positive relationships with all First Nation and Métis communities contacted. If you need more specific guidance on Aboriginal consultation steps in relation to your proposed project, or if you feel consultation has reached an impasse, please contact the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office.

Preliminary Assessment Checklist: First Nation and Métis Community Interests and Rights

In addition to other interests, some main concerns of First Nation and Métis communities may pertain to established or asserted rights to hunt, gather, trap, and fish – these activities generally occur on Crown land or water bodies. As such, projects related to Crown land or water bodies, or changes to how lands and water are accessed, may be of concern to Aboriginal communities.

Please answer the following questions and keep related notes as part of your consultation record. “Yes” responses will indicate a potential adverse impact on Aboriginal or treaty rights.

Where you have identified that your project may trigger rights-based consultation through the following questions, you should arrange for a meeting between you and the Environmental Assessment and Planning Coordinator at the Ministry's appropriate regional office to provide an early opportunity to confirm whether Ontario's duty to consult is triggered and to discuss roles and responsibilities in that event.

	YES	NO
<p>1. Are you aware of concerns from First Nation and Métis communities about your project or a similar project in the area?</p> <p>The types of concerns can range from interested inquiries to environmental complaints, and even to land use concerns. You should consider whether the interest represents on-going, acute and/or widespread concern.</p>		
2. Is your project occurring on Crown land, or is it close to a water body? Might it change access to either?		
3. Is the project located in an open or forested area where hunting or trapping could take place?		
4. Does the project involve the clearing of forested land?		
5. Is the project located away from developed, urban areas?		
<p>6. Is your project close to, or adjacent to, an existing reserve?</p> <p>Projects in areas near reserves may be of interest to the First Nation and Métis communities living there.</p>		
7. Will the project affect First Nations and/or Métis ability to access areas of significance to them?		
<p>8. Is the area subject to a land claim?</p> <p>Information about land claims filed in Ontario is available from the Ministry of Aboriginal Affairs; information about land claims filed with the federal government is available from Aboriginal Affairs and Northern Development Canada.</p>		
9. Does the project have the potential to impact any archaeological sites?		

Ministry of Tourism,
Culture and Sport

Heritage Program Unit
Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314 7145
Fax: 416 212 1802

Ministère du Tourisme,
de la Culture et du Sport

Unité des programmes patrimoine
Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416 314 7145
Télééc: 416 212 1802



September 26, 2016 (EMAIL ONLY)

Doug Nuttall, P.Eng.
Jp2g Consultants Inc.
1150 Morrison Drive, Suite 410
Ottawa, ON K2H 8S9
E: dougn@jp2g.com

RE: MTCS file #: 0005630
Proponent: Town of Perth
Subject: Notice of Commencement, Municipal Class Environmental Assessment Infrastructure Master Plan Western Annexed Area
Location: Town of Perth, County of Lanark, Ontario

Dear Doug Nuttall:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of Commencement for your project. MTCS's interest in this Master Plan project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- Archaeological resources, including land-based and marine;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Under the Municipal Class Environmental Assessment (EA) process, the proponent is required to determine a project's potential impact on cultural heritage resources. A Master Plan project at minimum will address Phases 1 and 2 of the Municipal Class EA process. Developing and reviewing inventories of known and potential cultural heritage resources within the study area can identify specific resources that may play a significant role in guiding the evaluation of alternatives for subsequent project-driven EAs.

While some cultural heritage resources may have already been formally identified, others may be identified through screening and evaluation. Aboriginal communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Aboriginal communities includes a discussion about known or potential cultural heritage resources that are of value to these communities. Municipal Heritage Committees, historical societies and other local heritage organizations may also have knowledge that contributes to the identification of cultural heritage resources.

Archaeological Resources

Your Master Plan project may impact archaeological resources and you should screen the project with the MTCS [Criteria for Evaluating Archaeological Potential](#) and [Criteria for Evaluating Marine Archaeological Potential](#) to determine if an archaeological assessment is needed. MTCS archaeological sites data are available at archaeology@ontario.ca. If your Master Plan project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by an archaeologist licenced under the OHA, who is responsible for submitting the report directly to MTCS for review.

Built Heritage and Cultural Heritage Landscapes

The MTCS [Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes](#) should be completed to help determine whether your Master Plan project may impact cultural heritage resources. The Clerks for the Town of Perth and County of Lanark can provide information on property registered or designated under the *Ontario Heritage Act*. Municipal Heritage Planners can also provide information that will assist you in completing the checklist.

If potential or known heritage resources exist, MTCS recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant, should be completed to assess potential project impacts. Our Ministry's [Info Sheet #5: Heritage Impact Assessments and Conservation Plans](#) outlines the scope of HIAs. Please send the HIA to MTCS for review, and make it available to local organizations or individuals who have expressed interest in review.

Environmental Assessment Reporting

All technical heritage studies and their recommendations are to be addressed and incorporated into Master Plan projects. Please advise MTCS whether any technical heritage studies will be completed for your Master Plan project, and provide them to MTCS before issuing a Notice of Completion. If your screening has identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the Master Plan report or file.

Thank-you for consulting MTCS on this project: please continue to do so through the Master Plan process, and contact me for any questions or clarification.

Sincerely,

Joseph Muller, RPP/MCIP
Heritage Planner
Joseph.Muller@Ontario.ca

Copied to: Eric Cosens, Director Development and Protective Services, Town of Perth

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their Master Plan report or file is accurate. MTCS makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the Master Plan process, and in no way shall MTCS be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MTCS if archaeological resources are impacted by Master Plan project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

If human remains are encountered, all activities must cease immediately and the local police as well as the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

From: [Doug Nuttall](#)
To: [Kevin Mooder](#)
Subject: Fwd: Inquiry/ concern re Master Plan process
Date: Tuesday, September 27, 2016 8:05:42 PM
Attachments: [image001.png](#)

Sent from my iPhone

Begin forwarded message:

From: Eric Cosens <ecosens@perth.ca>
Date: September 27, 2016 at 7:40:58 PM EDT
To: Doug Nuttall <dougn@jp2g.com>
Cc: Julianna Zhuo <jzhuo@perth.ca>
Subject: Inquiry/ concern re Master Plan process

Hello Doug: I have been contacted by a resident who has an interest in the environment generally and in the Blanding's Turtle in particular. Jim Ronson has submitted a Parks Canada info sheet on the Turtle and expressed the opinion that the entire Golf Course site may be unsuitable for development given the presence of the Turtle in the adjacent reach of the Tay River and associated wetlands. He has advised that he understands the turtle can nest up to a half mile upland from its normal habitat. He wants to know what consideration will be given to the turtle during the Master Plan process. He did not say specifically but I anticipate from our discussion that any suggestion that a bridge could be inserted within the Turtle's habitat would be, in his perspective, totally unacceptable. His phone number is 613-264-1937. His address for future notification is 105 Peter Street K7H 1S4.

I would appreciate it if you could contact him to discuss how endangered species will be considered through the Master Plan process. Please let me know the outcome of any discussions you may have.

Thanks.
Eric Cosens
Director of Development and Protective Services

Corporation of the Town of Perth
80 Gore Street East
Perth, Ontario
K7H 1H9

Tel: [\(613 \) 267-3311 ext. 2235](tel:(613)267-3311)
Fax: [\(613 \) 267-5635](tel:(613)267-5635)
Email: ecosens@perth.ca
Web: www.perth.ca

Also please visit Perth Tourism on Facebook

Description: facebook-icon



 *Please consider the environment before printing this email.*

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THE CORPORATION OF THE TOWN OF PERTH

Western Annexed Area of Perth Infrastructure Master Plan Notice of Public Consultation Centre

The lands annexed to the Town in 2009 along the western boundary included the Perth Golf Course landholdings and the Tayview property (Sales Barn site) which are proposed to accommodate future residential growth. The Infrastructure Master Plan identifies development constraints and opportunities and provides a functional design solution for transportation, water distribution, wastewater collection and storm drainage to service future Plan of Subdivision development applications under the Planning Act.

This Infrastructure Master Plan is being planned as a Schedule B project under the Municipal Class Environmental Assessment. Before selection of the preferred solutions the Town of Perth wishes to obtain public input on the transportation and servicing alternatives, and the preliminary identification of a preferred master plan solution.

Monday March 25, 2019
Open House 3:30 pm to 4:30 pm
Presentation 5:00 pm
Municipal Building: 80 Gore Street East

Following the public consultation centre, further comments are invited for incorporation into the planning and design of this project and will be received until April 3, 2019. Subject to comments received because of this Notice, the Town plans to finalize the Infrastructure Master Plan and place on the public record for a minimum 30-day review period.

If you require additional information or wish to be added to the mailing list, please contact:

Forbes Symon, MCIP RRP
Director Development and Protective Services
Town of Perth
80 Gore Street East
Perth, ON K7H 1H9
Ph: 613-267-3311 Ext. 2235
Email: fsymon@perth.ca

Doug Nuttall, P.Eng.
Project Manager
Jp2g Consultants Inc.
40 Sunset Blvd. Unit 40
Perth, ON K7H 1H9
Ph: 613-828-7800 Ext. 202
dougn@jp2g.com

This Notice issued March 6, 2019



3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504
F 613-692-0831 | www.rvca.ca

March 22, 2019
19-TOP-EA

Town of Perth
80 Gore Street East
Perth, ON
K7H 1H9

Attention: Forbes Symon

Subject: **Infrastructure Master Plan – Wester Annex in the Town of Perth
dated 31 January, 2019**

Lands in Part Lot 25 and 26, Concession 2, geographic Township of
Bathurst, now the Town of Perth (Roll Numbers 09219110350950000000
and 09219110350930000000)

Dear Mr. Symon,

The Rideau Valley Conservation Authority (RVCA) has reviewed the subject document, in fulfillment of our regulatory requirements and memorandum of agreement with the County of Lanark, within the context of:

- Section 1.6.6 Sewage, Water and Stormwater, 2.1 Natural Heritage, 2.2 Water and 3.1 Natural Hazards of the Provincial Policy Statement under Section 3 of the Planning Act;
- The Rideau Valley Conservation Authority Development Policies (“Development, Interference with Wetlands and Alteration to Shorelines and Watercourses” regulation 174/06 under Section 28 of the Conservation Authorities Act);
- The Mississippi-Rideau Source Water Protection Plan;
- The Tay Subwatershed Report
- The Tay River – Perth Catchment Report;
- The Tay River – Grants Creek Catchment Report;
- The Blueberry Creek Flood Risk Mapping Report;
- The Tay River Flood Plain Mapping Report – Glen Tay to Lower Rideau;

In addition to these documents, the reviewing planner has referred to the Stormwater Management Planning and Design Manual as an appropriate template for reviewing a project of this scope and nature.

The Document

The document is titled "*Infrastructure Master Plan – Western Annex in the Town of Perth*". It is dated 31 January, 2019 and was received by our office on 27 February, 2019.

The RVCA understands that this document has been commissioned by the Town of Perth in support of a related Official Plan Amendment (OPA-16).

The Area

The Infrastructure Master Plan (IMP) considers future development, infrastructure and servicing to an area of the Town of Perth known as the "western annex". It is also known as the "golf course lands", for those lands south of the Tay River, and "Sale Barn" for those lands north of the Tay River.

Discussion

Stormwater Management Planning and Design Manual

This manual advocates the combination of environmental and municipal land use planning as there are inter-relationships between the two fields of planning. For the submitted IMP, where there are complementary planning documents, it is important that they be considered holistically. Therefore, it is appropriate to consider watershed studies and catchment reports concurrently with the Town's Official Plan. The Manual advocates for understanding existing environmental conditions when undertaking large scale planning. Although not always required, typical components that need to be identified include:

- Surface water resources, including an evaluation of the water budget, baseflows, and peak flows as well as flood line assessment;
- Hydrogeology, including definition of geologic conditions; groundwater flow patterns and recharge/discharge areas; location, capacity, and quality of aquifers; and quantification of existing well usage;
- Surface water quality, including characterization of water quality constituents for dry and wet weather conditions;
- Fluvial geomorphology, including classification of streams with respect to their stability and sensitivity to land use change;
- Terrestrial resources, including characterization of resources such as wetlands, woodlands, landforms and specially designated natural areas; and
- Aquatic resources, including fish and macroinvertebrate (aquatic insect) inventories.

When all of this information is collected, it can establish the existing environmental conditions, identify their linkages, establish goals, evaluate alternatives and select the preferred approach for development.

Provincial Policy Statement

These PPS excerpts were first provided on the RVCA comment letter for the Town of Perth's Official Plan Amendment 16. They are repeated here as they are relevant to the IMP document we are reviewing.

Planning authorities are required to provide infrastructure in a coordinated, efficient and cost-effective manner that considers impacts from climate change while accommodating projected needs (Section 1.6). Authorities must ensure that infrastructure systems are provided in a manner that can be sustained, are feasible, financially viable and complies with all regulatory requirements. In addition, these systems need to ensure that human health and the natural environment are protected (Section 1.6.6.1[b]).

When planning for stormwater management, authorities shall minimize, or where possible, prevent increases in contaminant loads (Section 1.6.6.7). Authorities are also required to consider significant resources identified in Section 2.0 of the PPS when planning for corridors and rights-of-way for significant transportation, and infrastructure facilities (Section 1.6.8.5).

Planning authorities are required to protect natural features for the long-term (Section 2.1.1) and also maintain, restore or improve the diversity and connectivity of natural features in an area and the long-term ecological and biodiversity of natural heritage systems (Section 2.1.2). Development and site alteration are permitted on adjacent lands to natural heritage features, but only when demonstrated that there will be no negative impacts on these features or their ecological functions (Section 2.1.8).

Water quality and quantity shall be protected, improved or restored by minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts, identifying water resource systems. This includes ground and surface water features, and natural heritage features including shorelines. Linkages between all these features are required to be maintained and this may require necessary restrictions on development and site alteration to protect all municipal drinking water supplies, designated vulnerable areas, sensitive surface and ground water features and their hydrologic functions. Protection of water quality and quantity can be further achieved through the use of stormwater management practices that minimize stormwater volumes and contaminant loads and maintain or increase the extent of pervious surfaces and vegetative cover (Section 2.2.1).

The PPS recognizes that Ontario's long-term economic prosperity, environmental health and social well-being depend on reducing the potential for public cost or risk to Ontario's residents from natural or human made hazards.

To ensure that these parameters are respected, development shall be directed away from natural or human-made hazards where there is an unacceptable risk to public health or safety or of property damage, and not create new or aggravate existing hazards (Section 3.0).

Natural hazards refers to hazardous lands adjacent to river systems which are impacted by flooding hazards, and development shall generally be directed to areas outside of these hazards and areas adjacent to them (Section 3.1.1). Section 3.0 of the PPS further states that development and site alteration shall not be permitted within areas that would be rendered inaccessible to people and vehicles during times of flooding hazards, unless it has been demonstrated that the site has safe access appropriate for the nature of the development and the natural hazard (Section 3.1.2). In the consideration of these hazards, planning authorities are required to consider the potential impacts of climate change that may increase the risk associated with natural hazards (Section 3.1.3).

Ontario Regulation 174/06

The reviewing planner would like to highlight several areas within the preferred solution identified as part of the IMP where Ontario Regulation 174/06 (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) would apply.

A review of our records indicates the presence of the Grant's Creek Provincially Significant Wetland, located within the subject area, to the southwest of the proposed lot layout for the golf course lands. Many of the lots indicated in the preferred layout would be within the adjacent lands of this wetland. Therefore permits from our office would be required based on the potential for interference.

A review of our records also indicates the 1:100 year floodplain located on both the golf course lands and Sale Barn properties. As proposed in the IMP, it appears that the golf course lands would need to proceed through a balanced cut in fill if the preferred solution is to be realized. Our regulatory policies indicate that public infrastructure, including stormwater management facilities, and various utilities shall not generally be permitted within the 1:100 year regulatory floodplain except where the development has been approved through a satisfactory Environmental Assessment process clearly demonstrating that there is no viable alternative and / or if it has been demonstrated to the satisfaction of the Conservation Authority that the control of flooding, erosion, pollution or the conservation of land will not be affected.

Watercourses, including headwater drainage features (HDFs), the Tay River and Blueberry Creek are also located within the subject study area. Development is required to be setback a minimum of 30 metres from the normal high water mark of a watercourse or beyond the floodplain, whichever is greater, in accordance with our regulatory policies.

Any future development located within or adjacent provincially significant wetlands or the regulatory floodplain, and any alterations to watercourses, including changes in flow, requires the prior written permission of the RVCA in accordance with Regulation 174/06.

Catchment Reports

The RVCA produces catchment reports which provide information on the health of a catchment area based on many parameters assessed by the Provincial Water Quality Objective (PWQO) guidelines. These objectives assess watershed health based on a variety of factors, including, but not limited to, nutrient levels (such as nitrogen and phosphorus), presence or absence of *E. coli*, riparian vegetation and fish surveys. It is important to consider the information in the catchment reports in a holistic manner.

An appendix with all fish species encountered in the two catchment reports has been provided to this comment letter. This should be forwarded to any consultants completing future work on this project and can assist with forming part of the existing conditions.

Tay Subwatershed Report

The Tay Subwatershed indicates that efforts should be made to support reforestation and protect what remains in all catchments, but with a focus on the Perth and Grant's Creek catchments where forest cover is less than 30%. In the long term, sustained water supplies and effective flood damage reduction will depend, in large part, on maintaining the remaining wetland features throughout the watershed and restoring them in those area that are more prone to the impacts of a changing climate (i.e. poorer water quality conditions, stressed water supplies, increased flooding and erosion and reduced biodiversity). The report advocates for a 30 metre naturally vegetated buffer on either side of a watercourse to be maintained over 75% of its length for the protection of water quality and instream shoreline habitat. The Perth and Grants Creek catchments do not currently meet the 75% guideline, therefore, restoration efforts should be undertaken. Perth and Grants Creek catchments are also identified as locations for focused reforestation. If the RVCA can assist with reforestation efforts and protection, we would be pleased to help.

Tay River – Grants Creek Catchment Report

The Grants Creek catchment report identifies water quality as being "very good" at the upstream end of the catchment to "fair" just upstream of the Grants Creek wetland at Grant's Creek Station 1. At this station, our records indicate that total phosphorus and nitrogen are consistently above PWQO guidelines. Total phosphorus concentrations meet the guideline only 33% of the time and nitrogen only 26% of the time. The report also identifies high concentrations of aluminum before Grant's Creek enters the Grant's Creek Wetland. The average concentration is 0.110 mg/L which is below the guideline 67% of the time.

Reasons for elevated metals/nutrients may be from runoff due to meltwater and rainfall which transports pollutants from farms, yards, roads and parking lots. Identification is difficult, and efforts should continue to be made to improve overall stream health and lessen downstream impacts on the Tay River.

Tay River – Town of Perth Catchment Report

The most recent report for the Town of Perth catchment indicates that the water quality index is “fair” and “good” within the catchment based on occasional exceedances of nitrogen when compared to PWQO guidelines. Bacteriological contamination does occur in this part of the Tay River, though this is not a persistent problem. Metal pollution is also occasionally an issue in this part of the Tay River. Some invasive species, such as European frogbit, yellow iris and flowering rush have been encountered along this section of the Tay River.

The future Sale Barn and Golf Course Lands are listed as a site for potential riparian restoration in this catchment report. The report indicates that there is limited stream shading from shoreline vegetation. It recommends that the riparian corridor within 30 metres from the normal high water mark of the Tay River be maintained in a natural vegetative state. This provides a buffer that can protect banks against erosion, improve habitat for fish by shading and cooling the water and provide protection for birds and other wildlife that feed and rear their young near the water. These buffers also provide natural filtration to overland storm water before it enters the waterbody.

Mississippi Rideau Source Water Protection Plan

Several Intake Protection Zones have been identified based on the Mississippi-Rideau Source Water Protection Plan. Our review did not currently identify any prohibitions based on the preferred solution in the IMP, but risk management plans may be required for some activities and infrastructure within source protection areas. The entirety of the Sale Barn property and portions of the Golf Course Lands are located within an Intake Protection Zone 2 (IPZ-2). Within the IPZ-2, the reviewing planner understands that the proposed uses are predominantly residential in nature. Risk management plans and potential consultation with the Ministry of Environment, Conservation and Parks may be required for stormwater management facilities and some of the sanitary facilities (pump stations and forcemains).

There is also an Intake Protection Zone 1 (IPZ-1) located at the Town's primary water intake along the Tay River, approximately 500 metres downstream of the proposed bridge crossing over the Tay River.

In addition, most of The Town of Perth has been identified as a highly vulnerable aquifer. These are aquifers that are vulnerable to surface contaminants due to thin or absent soils overlying bedrock that may be fractured.

Where these conditions exist, it may be possible for contaminants to enter drinking ground water supplies. For this reason, care should be taken to avoid land uses and practices that may inadvertently lead to undesirable effects on groundwater.

Unevaluated Wetlands

Several unevaluated wetlands have been identified through our desktop review of the subject area. Specifically, it appears that unevaluated wetlands exist on the south shore of the Sale Barn property and north shore of the Golf Course Lands.

Unevaluated wetlands are currently required to be regulated under the Conservation Authorities Act. Given the numerous benefits of all wetlands, the Conservation Authority strongly encourages their preservation. These benefits include: attenuation of flood water; serving as a groundwater recharge/discharge area and providing a more stable source of water during low water conditions; filtering our drinking water; and providing habitat to many species of plants and animals (often including fish). The RVCA is in the process of reviewing the implementation of our policies and procedures to comply with the updated Conservation Authorities Act. For further information on these changes please see the following link: <http://conservationontario.ca/policy-priorities/conservation-authorities-act/>.

Discussion

IMP Review

The IMP considers the planning context and development trends within the Perth area. Sections of the plan consider natural heritage features, including terrestrial and aquatic environments within the Inventory of Existing Environment (Section 3). Following the establishment of the parameters within the IMP, a problem statement is created and states, among other things:

- The lands within the Western Annexed Area are intended to be developed based on full municipal water and sanitary sewage service in an efficient and sustainable manner, and stormwater services to protect the water quality and natural heritage features of the Tay River and Grant's Creek.
- The lands within the Western Annexed Area are subject to the Tay River and Grant's Creek regulatory flood plain.
- The study area is subject to development restrictions as adjacent lands to Natural Heritage Feature and Provincially Significant Wetlands.
- The water supply intake for the Town of Perth Water Treatment Plant is to be protected.
- The servicing for the Western Annex area is limited by the surrounding infrastructure and the costs associated with upgrading pinch points.
- Terrestrial habitats will be affected by developing the Western Annex, and this may include habitat for endangered species.

- Aquatic habitat will be disturbed by bridges and/or other services crossing the Tay.

Following this problem statement, the document shows a preferred layout for development of the golf course lands. The preferred layout is the culmination of various options that are considered. The preferred layout presented includes general location of blocks and indicates their dwelling type. The preferred infrastructure network is included. It depicts the location of the road network, including a future bridge which would connect the golf course lands to the current County of Lanark building / Lanark Lodge property. It depicts the location of multi-use pathway and pedestrian facilities. It also depicts the location of the sanitary and storm pipe networks.

RVCA consolidated comments

Based on our review of the document, our office has the following comments for consideration by the Town as part of the IMP:

General Comments

- The future bridge crossing goes onto lands in the Township of Tay Valley. This will require significant engineering, hydraulic analysis of the floodplain, consideration of the ecological impact of the bridge and a permit will be required when construction is contemplated.
- The IMP appears to show land being serviced into what is currently designated "natural heritage feature" by the Town of Perth's Official Plan. The related Official Plan Amendment (OPA-16) makes no change to this designation.
- The RVCA agrees with the recommendation in Section 3.1.4 of the IMP that a new SAR survey should be carried out on site. We would suggest that it be a component of an appropriate EIS, described elsewhere in this letter.
- Section 5.4.1 of the IMP states that:

"the development in the Golf Course Lands and Tayview Development are proposed to be urbanized, draining by conventional storm sewers, treated within stormwater management facilities located in the existing low areas, and draining to the Tay River, Grants Creek Wetland or Grant's Creek."

The reviewing planner would like to point out that the "existing low areas" are all located within the regulatory floodplain. As stated in the O.Reg Section 174/06 of this report:

public infrastructure and various utilities shall not generally be permitted within the 1:100 year regulatory floodplain except where the development has been approved through a satisfactory Environmental Assessment process clearly demonstrating that there is no viable alternative and / or if it has been demonstrated to the satisfaction of the Conservation Authority that the control of flooding, erosion, pollution or the conservation of land will not be affected.

- The reviewing planner understands that Option 3 has been selected as the preferred stormwater conveyance and treatment option as part of the IMP. The reviewing planner appreciates that this option proposes pre-development stormwater flows which will equal post-development flows, but it is not clear if 80% TSS will be achieved. The option indicates that the ponds will achieve 60% TSS, and that the linear retention facility will complete the remaining treatment. However, the IMP does not specify that 80% will be achieved by the overall system. Please clarify that the overall stormwater management system will be able to meet this target.
- Significant regrading and vegetation removal is proposed for all options considered by the IMP. Section 5.4.2 states that it is expected that all disturbed material would remain on-site, providing grade-raise to areas outside the floodplain. This section also states that regrading the rock areas will require removal of much of the forest within the urbanized area. What is not clear is what effect this grading will have on the floodplain, whether it would be altered or not. In addition, vegetation maintenance is strongly encouraged through the Tay River Subwatershed report, especially within this location, and by the Town's Vision Statement in its Official Plan. Our office would recommend that the Town consider completing a tree preservation plan such that every opportunity to preserve existing vegetation is explored.
- The transportation assessment does not respect the existing floodplain and there is no mention of the three identified floodplain crossings to implement the IMP. The IMP should address these matters in section 5.6.1.
- The LID proposed as part of the preferred design in Section 6.1.4 would be constructed adjacent the wetland with a berm between the LID and Grant's Creek PSW, which would have specifically designed porosity and overflow locations to provide adequate flow attenuation. The berm would be used as part of the overall active transportation system network. Our office offers the following comments on this proposed system:
 - This has not been assessed by any related hydrological assessment or water budget which would provide an indication of any impact to Grant's Creek PSW as a result of this feature.

- The proposed LID facility and berm trail appear to be located very close to the PSW and no indication is given for the setback. Should we offer a minimum?
- The 2012 EIS that has been prepared in support of this application is still being reviewed by our office. Related to our review, we will be looking to see if the LID and related infrastructure proposed in the IMP were assessed and whether it was indicated that these features will have no negative impacts on the PSW.
- Further appraisal of the three options presented for the Active Transportation Route shown on Figures 5.6, 5.7 and 5.8 should occur. As currently shown, the proposed bike route/pedestrian/multi-use pathway system could cause many unintended impacts to the natural hazards and natural heritage feature in and adjacent to the Grants Creek floodplain and PSW. It may also negatively affect the habitat and functions of the various vegetation communities listed in the IMP, which it is proposed to pass through. As an example of this is Vegetation Community 9, described in Appendix C of the IMP. It, along with Vegetation Community 1, contains an impressive array of biological diversity, as evidenced by the species observed listing for these communities found in the same appendix of the report. It is also noted that Vegetation Community 9 contains interior forest habitat, which is a special type of habitat that may harbor unique flora and fauna. In the Town of Perth, interior forest habitat is found in a few locations only and, as such, should be considered to be significant habitat within the western annex lands.

This is important given that it is a major factor (as are the other points raised in this review) to be considered, in order to address one of the key policy provisions (1.2.17) stated in the Town of Perth Official Plan (as noted on p.10 of the IMP):

“the Town’s vision embraces the concept of sustainable development through land use and infrastructure development decisions and operational practices that integrate human needs with the natural and built environment. Land use approvals and infrastructure redevelopment decisions will include sustainable design measures for transportation, infrastructure, waste management, energy systems, and will strive for the efficient use of natural resources and preservation of historic, cultural and natural heritage features. This vision intends to be adaptive to innovative design and human activities that support sustainability.”

- Section 6.1.5 of the IMP depicts a sanitary pipe traversing the Tay River 500 metres upstream of the Town's intake for its potable drinking water supply. It is not clear if this will be a forcemain. Although a review of the Mississippi Source Water Plan did not indicate the location of this sanitary pipe as prohibited, our office would like to raise the location of the pipe as a matter for the Town to consider at this stage of planning.
- Figure 6.5 shows two pump stations, which will be constructed with wet wells. Through discussions with the consultant, it is our understanding that bypasses and overflows are planned to be redirected to SWM facilities and ultimately discharge into Grant's Creek PSW. Source Protection staff within our office are currently inquiring with the MOECP regarding this to verify what type of risk management plan, if any, is required for these discharges. The northernmost pump station is located within the floodplain and also within the IPZ-2. Regarding its location in the floodplain, our policies with respect to infrastructure would apply. The southern pump station appears to be located outside the floodplain, but also appears to be located within 30 metres of the normal highwater mark of the Tay River and should meet the required 30 metre setback identified in our regulation.
- A further question for consideration is the depth of the proposed pump station excavations. This may have an effect on groundwater, which should be understood. To assist in this understanding, related background information should include groundwater elevations and a water budget analysis.
- As the subject property is a greenfield development, all proposed lots, infrastructure and facilities should achieve a minimum 30 metre setback from the Tay River, Blueberry Creek and headwater features.

Natural heritage / Water comments

- Our office would like to acknowledge receipt of the 2012 EIS. A review of our records did not indicate whether we had previously been provided a copy.
- Our office would be pleased to work with the Town to conduct a series of field visits by RVCA staff (watershed biologist, ecologist and Tay Watershed planner) to assess the natural heritage features on the western annex lands with respect to the findings in the 2012 EIS and subsequent 2016 field survey. Amongst other things, this activity will help to confirm the boundary of the Grants Creek PSW, as well as other wetland features on the western annex lands.

- The majority of the development appears to be focused towards the table lands, and the RVCA appreciates these efforts.
- Some of the fish species referenced in the existing conditions section do not account for the full range of species our office has encountered during 2015 – 2017 and our historical records. For assistance, we have included this information as Schedule 'A' to this comment letter to assist with completing a fulsome existing conditions section to the IMP.
- Headwater drainage features have been identified through our desktop mapping. We note that at least one feature has been identified by the 2012 EIS. In addition, there may be additional features not mapped, but located on the property. Our office would be willing to participate in a walk of the property to explore all features within this area in the spring. Ultimately, these features will need to be assessed by a qualified professional who would make recommendations on their status and whether they should be maintained or if mitigation/relocation is possible. Our office does note that one of the stormwater management facilities is proposed to locate on an existing watercourse identified through our mapping. Our office has not been provided enough information to demonstrate that the control of flooding, erosion, pollution and conservation of lands will be acceptable to our office associated with the relocation of this feature and replacement with a stormwater pond. We offer the following additional information about headwater features:
 - Applications to alter HDFs will need to be assessed in accordance with the document titled "*Evaluation, Classification and Management of Headwater Drainage Features Guideline, Toronto and Region Conservation Authority and Credit Valley Conservation, TRCA Approval July 2013 (Finalized January 2014)*".
 - The applicant should pre-consult with RVCA to ensure that the scope and timing of the evaluation is appropriate for the scale/type of the proposal, availability of information for the feature and the sensitivity of the feature.
 - The evaluation of an HDF shall include collecting information that may be available in a watershed or subwatershed plan, catchment reports, an environmental management plan, fisheries management plan etc.
 - In order for the RVCA to issue future permits under the *Conservation Authorities Act* the guideline provides a consistent methodology to evaluate, classify and provide a management action for all HDF's. The results from the management classifications for HDF will inform what future permits are necessary and how best to manage them based on their function.

- Detailed information pertaining to future in water work and alterations to the watercourse will be required for review by RVCA. Types of work requiring review includes:
 - channel piping/realignments
 - storm water/discharge outlets to existing watercourses
 - flow diversions
 - bridge construction
 - Other alterations not yet identified

Hydrologic considerations

- Our office had provided comment during the 2016 initiation of this project and this correspondence was included in Section 7.2 of the IMP. Based on our comments in 2016, the IMP does not address the matters raised in this letter.
- Additional existing information should be provided in the form of a water budget analysis. The urban effects of development has the potential to interfere with the natural transfers of water between storage components of the hydrologic cycle. Submission of a water balance is used to describe the hydrological cycle and provide an accounting of water transfers across the development area over time. Any difference between inflows to the system and outflows from the system during a specified time period will need to be balanced by the proposed urbanization of the area which will have an effect on storage of the hydrologic system. This is especially important with the adjacent Grant's Creek PSW to ensure that it remains hydrated. The water balance would form the basis of permits for interference to the wetland.

Analysis

There are several outstanding matters that do not appear to be addressed through the submission of the IMP.

The problem statement from the IMP acknowledges that the subject lands are subject to the regulatory floodplain and natural heritage features, but the IMP does not appear to fully respect natural hazards and natural heritage features with the current development layout.

It does appear that the IMP is mostly consistent with Section 3.1.1 of the PPS. This section states that development shall generally be directed to areas outside of *"hazardous lands adjacent to river, stream and small inland lake systems which are impacted by flooding hazards..."* Much of the development area appears to be located on higher ground, and generally located outside hazardous lands as defined in the PPS. However, the proposed infrastructure layout depicts transportation and related infrastructure within the 1:100 year regulatory floodplain. In the opinion of the reviewing planner this is not consistent with Section 3.1.2 of the PPS which states:

"development and site alteration shall not be permitted within: ...areas that would be rendered inaccessible to people and vehicles during times of flooding hazards...unless it has been demonstrated that the site has safe access appropriate for the nature of the development and the natural hazard."

The IMP shows access roads traversing the floodplain in three separate locations. While these may be proven to be suitable with additional information and hydraulic analysis of the change of the floodplain as a result of the development, safe access has not yet been demonstrated. There are also still some areas depicted on the preferred plan that show future lots within the 1:100 year floodplain. Creation of new lots within the floodplain is not supported by our policies.

The IMP appears to be missing several key considerations that would normally be seen as part of an infrastructure master planning exercise. There is some information on existing conditions in terms of vegetation communities, underlying soils, some information on grades and species at risk. Yet the document does not appear to provide an assessment of groundwater conditions, water balance or headwater drainage features. This information is crucial to demonstrate that the overall development is consistent with section sections 2.1 and 2.2 of the PPS. Specifically, the natural heritage features of Section 2.1 are related to the water described in Section 2.2. The PPS requires planning authorities to protect, improve or restore the quality and quantity of water by: *"identifying water resource systems consisting of ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas, which are necessary for the ecological and hydrological integrity of the watershed."* In the absence of additional groundwater, hydrologic and headwater drainage feature information, it is not clear how these features have been identified, nor how the IMP proposes to protect, improve or restore the quality and quantity of water. Without this evaluation, it is not clear if the headwater features on site would be classified as sensitive surface water features, or not, and whether they are able to be relocated as identified in the preferred solution.

The proposed stormwater management solution appears to propose all stormwater management facilities within the existing regulatory floodplain. In relation to Section 1.6.6.7 of the PPS, information has not been provided to demonstrate how location within the floodplain will not increase risks to human health and safety and property damage. In addition, several sanitary pump stations are proposed, one of which appears to be located within the regulatory floodplain and IPZ-2. The other pump station appears to be located outside the regulated area but is proposed within 30 metres of a watercourse. These facilities also need to satisfy our regulatory policies with respect to infrastructure in the floodplain.

Significant grading is proposed within the study area, and it is not known what effect this may have on the existing regulatory floodplain and whether this may exacerbate flooding up or downstream for existing properties.

This should be considered with hydraulic modelling to account for any changes that may occur, and to demonstrate if those changes are acceptable.

The golf course lands, in particular, should also consider the impacts of climate change that may increase the risk associated with natural hazards as required by Section 3.1.3 of the PPS

Recommendations

Based on the comments above, the following additional information should be completed as part of the IMP report:

- Completion of an appropriate EIS;
- Completion of a Headwater Drainage Feature Assessment;
- Completion of a water budget analysis;
- Relocation of SWM facilities outside the floodplain or engineering analysis to demonstrate that locating these facilities partially or entirely within the floodplain will not have adverse impact with respect to flooding, erosion and pollution control and the conservation of land;
- Completion of site visits with RVCA staff;
- The IMP should ensure that all proposed development is able to achieve a 30 metre setback from all watercourses.

If there is no desire at this time to undertake the additional analysis required to more fully substantiate the assumptions, conclusions and guidance provided in the IMP, we recommend that the following statements be included in the report:

1. That the preferred land use plan is conceptual and that it may change based on the outcome of the more detailed analysis required to determine the appropriate location of infrastructure (roads, watercourse crossings, watermains, sanitary sewers, stormwater management facilities) and the lot layout, relative to the natural hazard and natural heritage features within the study area;
2. That prior to consideration of development applications submitted under the *Planning Act*, the detailed analysis as described in paragraph 1, above, will be conducted to the satisfaction of the RVCA and the Town of Perth;
3. That prior to commencement of subsequent studies that will inform the final development concept plan and infrastructure servicing plan, the Town of Perth, RVCA and other government agencies as appropriate, shall engage in pre-consultation to identify outstanding issues and scope of work.

Conclusions

Although we recommend additional information be considered as part of the IMP, the RVCA is of the opinion that the development of the western annex lands provide a unique opportunity for the Town of Perth to plan a greenfield development which has the potential to be a model of sustainable small town development planning, in keeping with the Town's vision statement for future planning and development activity. It is our opinion that the natural environment could be marketed as a selling feature of the community, if maintained and enhanced as directed through the Town's vision statement.

Our organization, including relevant professionals, would be pleased to make themselves available to participate in ongoing discussions regarding development within this area, and we would welcome the opportunity to walk the property with Town officials during the spring.

Please advise us on the status of this planning exercise following the public information session. Please circulate our office on all future public information in relation to this file.

Thank you for the opportunity to comment and please do not hesitate to contact the undersigned at (613) 267-5353 x 131 should you have any questions.

Yours truly,



Phil Moshier
Planner

Appendix A – Fish Species

Fish Species	Scientific Name	Fish Code	Historical	2015	2016	2017
banded killifish	<i>Fundulus diaphanus</i>	BaKil	X	X		X
black crappie	<i>Pomoxis nigromaculatus</i>	BlCra				X
blackchin shiner	<i>Notropis heterodon</i>	BcShi	X			X
blacknose dace	<i>Rhinichthys atratulus</i>	BnDac			X	
blacknose shiner	<i>Notropis heterolepis</i>	BnShi		X		
bluegill	<i>Lepomis macrochirus</i>	Blueg				X
bluntnose minnow	<i>Pimephales notatus</i>	BnMin	X	X	X	X
brassy minnow	<i>Hybognathus hankinsoni</i>	BrMin				X
brook stickleback	<i>Culaea inconstans</i>	BrSti	X		X	
brown bullhead	<i>Ameiurus nebulosus</i>	BrBul	X	X	X	X
bullhead catfish hybrids	<i>Ictaluridae family</i>	Hy650	X			
burbot	<i>Lota lota</i>	Burbo		X		X
carps and minnows	<i>Cyprinidae</i>	CA_MI	X		X	
Central stoneroller	<i>Campostoma anomalum</i>	CeSto	X		X	
central mudminnow	<i>Umbra limi</i>	CeMud	X	X	X	X
common carp	<i>Cyprinus carpio</i>	CoCar		X		
common shiner	<i>Luxilus cornutus</i>	CoShi	X	X	X	X
creek chub	<i>Semotilus atromaculatus</i>	CrChu	X	X		X
etheostoma sp.	<i>etheostoma sp.</i>	EthSp	X	X	X	X
fallfish	<i>Semotilus corporalis</i>	Fallf	X	X		X
fathead minnow	<i>Pimephales promelas</i>	FhMin				X
golden shiner	<i>Notemigonus crysoleucas</i>	GoShi				X
greater redhorse	<i>Moxostoma valenciennesi</i>	GrRed		X		
hornyhead chub	<i>Nocomis biguttatus</i>	HhChu		X	X	X

Iowa darter	<i>Etheostoma exile</i>	IoDar	X			
largemouth bass	<i>Micropterus salmoides</i>	LmBas		X		X
logperch	<i>Percina caprodes</i>	Logpe	X	X		X
longnose dace	<i>Rhinichthys cataractae</i>	LnDac				X
northern pike	<i>Esox lucius</i>	NoPik	X	X		X
northern redbelly dace	<i>Chrosomus eos</i>	NRDac			X	
pumpkinseed	<i>Lepomis gibbosus</i>	Pumpk	X	X	X	X
rock bass	<i>Ambloplites rupestris</i>	RoBas	X	X	X	X
shorthead redhorse	<i>Moxostoma macrolepidotum</i>	ShRed		X		
smallmouth bass	<i>Micropterus dolomieu</i>	SmBas	X	X		X
spotfin shiner	<i>Cyprinella spiloptera</i>	SpShi	X			
spottail shiner	<i>Notropis hudsonius</i>	StShi	X			
sunfish family	<i>Lepomis sp.</i>	LepSp	X			
stonecat	<i>Noturus flavus</i>	Stone				X
tadpole madtom	<i>Noturus gyrinus</i>	TaMad		X		
walleye	<i>Sander vitreus</i>	Walle	X			
white sucker	<i>Catostomus commersonii</i>	WhSuc	X	X		X
yellow bullhead	<i>Ameiurus natalis</i>	YeBul	X	X	X	X
yellow perch	<i>Perca flavescens</i>	YePer		X		X

Green = observed in Grants Creek Catchment

Not highlighted = observed in Tay River – Town of Perth Catchment

Yellow = observed in both Grants Creek and Tay River – Town of Perth Catchments



Sign-In Sheet
Infrastructure Master Plan
Western Annexed Area of Perth

Monday March 25, 2019

Please print

Name	Address and/or Email
[Handwritten signature]	141 Peter St.
[Handwritten signature]	17 Glascoth St.
[Handwritten signature]	17 Glascoth St.
S BATES	10 ANTONIO WAY PERTH
R. Laing	50 Perthmore
[Handwritten signature]	[Handwritten email]
Jim GRAFF	jgraft.PERTH@gmail.com
PAUL CANVIN	pcanvin@outlook.com
MARJORY NASMITH	[Handwritten address and email]
MIKE FLYNN	22 ANTONIO WAY FLYNNMF24@gmail
Paul Cockburn	31 Antonio Way pcockburns@gmail.com
KEVIN JAMES	KJAMESCONVI@gmail.com
JEFFREY WEIR	jeffreyweir@royalpage.ca

From: [Phil Mosher](#)
To: [Doug Nuttall](#)
Cc: ["gmachan@perth.ca"; "Forbes Symon"](#)
Subject: Golf Course Lands - Floodplain
Date: Friday, April 26, 2019 9:36:57 AM
Attachments: [image007.jpg](#)
[image008.jpg](#)
[image009.jpg](#)

Good morning gentlemen,

I am writing in follow-up to our meeting last Thursday. I had the following points that needed clarification/answers

1. Can RVCA provide the HEC-RAS information to the Town at no cost?
2. Can RVCA indicate their interpretation of SWM facilities in the floodplain in light of our policies?

I have provided answers here:

1. Regarding Point #1 above, yes, our office will be able to provide this. I believe Alex from Jp2g has reached out to Evelyn regarding this information. Evelyn is in the course of preparing this data, but our office is still waiting for information from Doug regarding the scope of work based on our meeting.

2. Regarding Point #2 above, our policy states:

1.2(3) "Notwithstanding Section 1.2(1), public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) shall generally not be permitted within the 1:100 year regulatory floodplain except where the development has been approved through a satisfactory Environmental Assessment process clearly demonstrating that there is no viable alternative and / or if it has been demonstrated to the satisfaction of the Conservation Authority that the control of flooding, erosion, pollution, or the conservation of land will not be affected."

(emphasis added)

- So, SWM facilities can be permitted in the floodplain where there is a satisfactory (to RVCA) EA process which clearly demonstrates that there is no viable alternative or the control of flooding, erosion, pollution, or the conservation of land will not be affected. So far, the EA process has been initiated. Because the SWM facilities are being proposed in the floodplain it appears the Town is taking the position of satisfying the second criteria (control of flooding, erosion, pollution, or the conservation of land will not be affected). To date, our office has not received information demonstrating that SWM facilities in the floodplain have met these criteria specified in our policy. This information will need to be provided as part of the EA process and to the satisfaction of our office in order for us to accept this position from the Town.
- I would be remiss if I did not point out that the other compliance alternative is locating the SWM facilities outside the floodplain.

As a final comment, determination of SWM facilities and floodplain represents a component of our review of the IMP. Based on our March 22, 2019 comment letter there are other components that should be considered by the Town as part of the IMP.

Please let me know if there are any questions regarding this information.

Phil Mosher
Planner

phil.mosher@rvca.ca, ext. 1181 (Manotick) 613-267-5353 x 131 (Tay Valley)

email footer





THE CORPORATION OF THE TOWN OF PERTH

Western Annexed Area of Perth Infrastructure Master Plan Notice of Completion

The lands annexed to the Town in 2009 along the western boundary included the Perth Golf Course landholdings and the Tayview property (Sales Barn site) which are proposed to accommodate future residential growth. The Infrastructure Master Plan identifies development constraints and opportunities and provides a functional design solution for transportation, water distribution, wastewater collection and storm drainage to service future Plan of Subdivision development applications under the Planning Act.

This Infrastructure Master Plan is being planned as a Schedule B project under the Municipal Class Environmental Assessment. The report has identified the preferred solutions for transportation and servicing the residential subdivisions.

The Infrastructure Master Plan is available for review at www.perth.ca and at the Municipal Office at 80 Gore Street East, Perth, Ontario, Monday to Friday, 8:30 am to 4:30 pm.

Interested persons shall provide written comments to the Municipality on the proposal within 30 calendar days from the date of this Notice. Comments should be directed to the Director Development and Protective Services.

A person or party may request that the projects identified in The Master Plan require a higher level of assessment under the Environmental Assessment Act, referred to as a Part II Order. The Master Plan itself is not subject to Part II of the Act. Copies of the Request Form must be sent to:

Minister of the Environment Conservation and Parks
77 Wellesley Street West
11th Floor, Ferguson Block
Toronto, ON M7A 2T5

-and-

Director Environmental Assessment and Permissions Branch
135 St. Clair Avenue West
1st Floor
Toronto, ON M4V 1P5

-and-

Director of Development and Protective Services
Town of Perth
80 Gore Street East
Perth, ON K7H 1H9

If there is no "request received by September 9, 2019", the landowners may proceed with the planning and design of the subdivisions as presented.

Please note that ALL personal information included in a Part II Order submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the ministry's Freedom of Information and Privacy Coordinator at 416-327-1434.

This Notice issued August 8, 2019



Jp2g Consultants Inc.

ENGINEERS • PLANNERS • PROJECT MANAGERS

1150 Morrison Drive, Suite 410, Ottawa, ON K2H 8S9
T 613-828-7800, F 613-828-2600, www.jp2g.com

Jp2g No. 2161774A

August 7, 2019

**Re: Town of Perth
Infrastructure Master Plan Western Annexed Area
Municipal Class Environmental Assessment**

Dear :

The Town of Perth has completed an Infrastructure Master Plan for the development of the Western Annexed Area, attached find a Notice of Study Completion.

This project has been planned as a Schedule B activity defined by the Municipal Class Environmental Assessment document prepared by the Municipal Engineers Association of Ontario.

The Infrastructure Master Plan followed Phases 1 and 2 of the Municipal Class EA process which involved Phase 1 - identify the problems and opportunities for developing and servicing the study area, and Phase 2 – evaluate road, water, sewage and stormwater alternative solutions to select the preferred servicing strategy. The Master Infrastructure Plan is available on the Town's website.

Please advise by e-mail acknowledging receipt of this letter and whether you wish to provide any comments or have any questions my e-mail address is dougn@jp2g.com.

Yours very truly,
Jp2g Consultants Inc.
ENGINEERS ■ PLANNERS ■ PROJECT MANAGERS

A handwritten signature in black ink, appearing to read 'Doug Nuttall', is written over a faint, light-colored rectangular stamp or watermark.

Doug Nuttall, P.Eng.
Project Manager

cc Forbes Symon, Director of Development and Protective Services

Ministry of the Environment Conservation and Parks
Eastern Region
1259 Gardiners Road
P.O. Box 22032
Kinston, ON K7M 8S5
Attention: Vicki Mitchell
Environmental Assessment Coordinator

Phone: 613-549-4000
E-Mail: vicki.mitchell@ontario.ca

Ministry of the Environment Conservation and parks
Ottawa District Office
2430 Don Reid Drive
Ottawa, ON K1H 1E1
Attention: Tracy Hart
District Manager

Phone: 613-521-5437
E-Mail: tracy.hart@ontario.ca

County of Lanark
99 Christie Lake Road
Perth, ON K7H 3C6
Attention: Kurt Greaves, CAO

Phone: 613-267-4200 x 1101
E-Mail: kgreaves@lanarkcounty.ca

Tay Valley Township
217 Harper Road
Perth, ON K7H 3C6
Attention: Amanda Mabo, Clerk

Phone: 613-267-5353
E-Mail: clerk@tayvalleytwp.ca

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
PO Box 599
Manotick, ON K4M 1A5
Attention: Phil Mosher
Planner

Phone: 613-692-3571
E-Mail: phil.mosher@rvca.ca

Leeds, Grenville and Lanark District Health Unit
458 Laurier Boulevard
Brockville, ON K6V 7A3
Attention: Paula Stewart
Medical Officer of Health

Phone: 613-345-5685
E-Mail: paula.stewart@healthunit.org

Ministry of Natural Resources and Forestry
Kemptville District
PO Box 2002
Kemptville, ON K0G 1J0
Attention: Mary Dillon
District Planner

Phone: 613-258-8414
E-Mail: mary.dillon@ontario.ca

Algonquins of Ontario
Consultation Office
31 Riverside Drive
Pembroke, ON K8A 8R6
Attention: Janet Stavinga
Executive Director

Phone: 613-735-3759
E-Mail: jstavinga@tanakiwin.com
algonquins@tanakiwin.com



Ministry of Tourism, Culture & Sport
435 South James Street, Suite 334
Thunder Bay, ON P7E 6S7
Attention: Paige Campbell
Archaeology Review Officer

Phone: 807-475-1632
E-Mail: paige.campbell@ontario.ca

Ministry of Municipal Affairs and Housing
Municipal Services Office – Eastern
8 Estate Lane, Rockwood House
Kinston, ON K7M 9A8
Attention: Damien Schaefer
Planner

Phone: 1-800-267-9438 ext 121
E-Mail: damien.schaefer@ontario.ca

Ken and Brenda Wright
17 Glascott Street
Perth ON K7H 2V6

Email: brenda.ken.wright66@gmail.com

Jim Ronson
105 Peter Street
Perth ON K7H 1S4

Phone: 613-264-1937

Tim Lee Broker
Century 21
203-23 Beckwith Street N
Smiths Falls, ON K7A 2B2

Email : tim.lee@century21.ca

David Trick
Perth Golf Course
141 Peter Street
Perth, ON K7H 3E4

Email : trickdavid61@gmail.com



THE CORPORATION OF THE TOWN OF PERTH

Western Annexed Area of Perth Infrastructure Master Plan Notice of Completion

The lands annexed to the Town in 2009 along the western boundary included the Perth Golf Course landholdings and the Tayview property (Sales Barn site) which are proposed to accommodate future residential growth. The Infrastructure Master Plan identifies development constraints and opportunities and provides a functional design solution for transportation, water distribution, wastewater collection and storm drainage to service future Plan of Subdivision development applications under the Planning Act.

This Infrastructure Master Plan is being planned as a Schedule B project under the Municipal Class Environmental Assessment. The report has identified the preferred solutions for transportation and servicing the residential subdivisions.

The Infrastructure Master Plan is available for review at www.perth.ca and at the Municipal Office at 80 Gore Street East, Perth, Ontario, Monday to Friday, 8:30 am to 4:30 pm.

Interested persons shall provide written comments to the Municipality on the proposal within 30 calendar days from the date of this Notice. Comments should be directed to the Director Development and Protective Services.

A person or party may request that the projects identified in The Master Plan require a higher level of assessment under the Environmental Assessment Act, referred to as a Part II Order. The Master Plan itself is not subject to Part II of the Act. Copies of the Request Form must be sent to:

Minister of the Environment Conservation and Parks
77 Wellesley Street West
11th Floor, Ferguson Block
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-and-

Director Environmental Assessment and Permissions Branch
135 St. Clair Avenue West
1st Floor
Toronto, ON M4V 1P5

-and-

Director of Development and Protective Services
Town of Perth
80 Gore Street East
Perth, ON K7H 1H9

- If there is no “request received by September 9, 2019”, the landowners may proceed with the planning and design of the subdivisions as presented.

- Please note that ALL personal information included in a Part II Order submission – such as name, address, telephone number and property location – is collected, maintained and disclosed by the Ministry of the Environment Conservation and Parks for the purpose of transparency and consultation. The information is collected under the authority of the Environmental Assessment Act or is collected and maintained for the purpose of creating a record that is available to the general public as described in s.37 of the Freedom of Information and Protection of Privacy Act. Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential. For more information, please contact the ministry’s Freedom of Information and Privacy Coordinator at 416-327-1434.

- This Notice issued August 8, 2019



September 4, 2019

Lauren Walton
Clerk
Town of Perth
Town Hall
80 Gore Street East
Perth, Ontario, K7H 1H9

Dear Ms. Walton

RE: Infrastructure Master Plan Western Annex in the Town of Perth

The Town of Perth has filed a notice of completion of the above noted Infrastructure Master Plan.

The intent of the Plan is to assess the requirements for municipal infrastructure required to service the Golf Course and Tayview property sites and the projected residential development comprising some 170 housing units. The development is intended to help enable the Town to achieve a population growth target of 8,085 by 2038.

The Master Plan provides an assessment of existing conditions, the identification of a problem statement, options for addressing the problems identified and preferred solutions.

The Friends of the Tay Watershed is interested in the sustainability of the ecological functions associated with the Tay River and the potential impacts on those functions of projected development. The following are the comments provided by the Friends of the Tay Watershed (FoTW) in response to the Infrastructure Master Plan.

1. FoTW supports OPA 16 requirements (Section 8.8.3 d.) that the impact on the Natural Heritage Features "must be considered prior to any change in this designation". The commitment to the conservation of natural heritage features and areas will ensure that the integrity of the area's ecology is maintained before, during and after the development process.
2. Section 3.1.1: FoTW concurs with the need to mitigate and adapt to the effects of climate change and that a detailed analysis should be undertaken as part of future design studies. Further to this objective Section 6.1.7 should specify a target, preferable 40%, for the vegetative canopy cover as an additional measure as the extent of canopy cover is considered essential to provide for a required level of carbon sequestration and a level that will also help to sustain pre-development stormwater volumes.
3. The Problem Statement (Section 4) identifies the scope of issues of interest to FoTW in Bullets 3, 5, 11, 15 and 16. However, bullet # 3 should more appropriately refer to "stormwater services" as stormwater management services or stormwater management

facilities. Bullet 5 should more correctly refer to both natural heritage features and areas and adjacent lands, not just adjacent lands. Bullet 11 should more correctly refer to the "habitat of endangered and threatened species" in order to be consistent with the Provincial Policy Statement and the Official Plan. Bullet 16 refers only to climate change adaptation. The design for any development must consider climate change mitigation first and foremost. Such wording would also be consistent with Section 6.1.7.

4. Section 5.4, 5.4.2, 6.1.4, 6.1.6: Stormwater Management. The Master Plan sets out three options for stormwater management, all of which establish the maintenance of pre-development flows as the objective. All three options will require significant regrading including removal of much of the forest in the urbanized area. "This will increase the runoff coefficients of the open space." Section 6.1.4 is not clear as to whether any of the three options is a preferred option; rather, the preference appears to be a combination of the three options with deference to the LID berm as an important feature. Section 6.1.4 also indicates that a hydrologic model and water balance study would be required notwithstanding that there is no regulatory requirement for the hydrologic impact study.

Phase 2 (p.74) of the development works within the flood plain talks to raising the land by filling part of the flood plain. The proposal intends to maintain the ecological function over a program of replanting coincident with the regrading of the lands, installation of SWM ponds and the LID linear corridor. Despite the proposal, the plan states: "While it is possible to clear, raise, and replant the area to allow it to return to a forest, due to the surrounding disturbance associated with residential development, it is not clear that this would be the most effective manner to attempt to maintain the ecological function. Rather, it is proposed that the Town of Perth and the RVCA are to negotiate the most appropriate method ensuring the requirement for Conservation of Land is maintained."

The clearing of forested land for urban development will have an impact on the ecological functions of the existing forest ecosystem as will any alteration to the flood plain. The intent to replant with native species to compensate for the loss of the forested area reflects conventional practice; however, the renaturalization through replanting means that the ecological functions may not be restored for an extended time period, perhaps 25 – 50 years. The preferred alternative does not appear to require replanting of the developed properties within the subdivision and even replanting of surrounding lands is questioned as to whether the approach "would be the most effective manner." A more integrated approach should be required starting with and including an EIS-based forest management plan that identifies what/which trees and vegetative communities should be conserved in the design and layout of lots, streets and infrastructure. The lot fabric should be designed to integrate with the natural environment not the reverse. SWM planning should be integrated with the forest management plan since effective SWM should start with the retention of run-off on lots to minimize off-site discharge into sewers, swales etc. Development should be integrated into the existing topographic features to the greatest extent possible and with the intent to minimize the need for regrading. The forest management plan, coincident with the Master Plan's proposal for climate change mitigation, should establish a minimum forest canopy retention target, preferably 40% as part of the Plan and the target should be science-based to also address carbon sequestration. Building design should incorporate on-site soakaway pits, measures for minimizing impervious surfaces, recycling rain-water etc.

A construction plan should also be a requirement to ensure effective implementation of the forest management plan during the installation of services and the building of homes/lot development. Such a plan will ensure that trees and other vegetation are not damaged by heavy equipment during construction.

The Master Plan provides an opportunity to implement state-of-the-art SWM best practices that are ecologically-driven rather than development driven. The Town's intent to partner with the RVCA on developing the best approach to the design and development of land for conservation of natural features and the environment is commendable, but not fully evident in the proposed Master Plan.

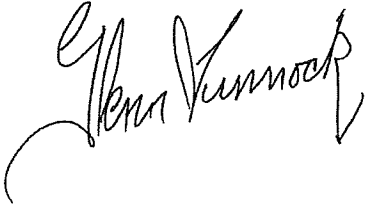
5. Section 6.1.7 – Climate Change. Suggestions are made for mitigating climate change; however, the proposal makes the application of mitigation measures optional rather than regulatory. A more detailed climate change plan as suggested above could be a landmark feature of the Master Plan. As an example, the conventional approach to flood plain management is to use the 1:100 year flood design. Extreme climate events in today's context appear to have exceeded this parameter as witnessed on Christie Lake where the 1:100 flood was exceeded. Extreme climactic events raise the question as to whether this could occur within the Perth community as well. The question of how such an extreme event would be addressed through development guidelines is not addressed in the Master Plan?

In summary, the Master Plan acknowledges the importance of the correlation with infrastructure planning/installation and sustaining the natural environment; however, the Master Plan is weak with respect to best practices for on-site SWM and the relationship to the conservation of forest/vegetative cover. The lotting fabric of the subdivisions proposed should be deferred until there is a more fulsome assessment of the natural heritage features and areas accompanied by the preparation of a forest management plan and climate change plan. The lotting pattern and infrastructure should be integrated with these environmentally-driven plans along with the results of the hydrologic impact study.

The ownership of the lands outside of any proposed lots is unknown. The FoTW's position is that where these lands are located within a floodplain, they should be retained within the public domain for open space uses and such uses could include recreational trails where the trail is appropriately integrated to ensure the integrity of the existing natural environment.

Perth is a community known for its forward thinking. Friends of the Tay Watershed believe that the Town is committed to conserving the integrity of the Tay watershed through sustainable and science-based development decisions and aspires to having an Infrastructure Master Plan that reflects that belief.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Glenn Tunnock". The signature is fluid and cursive, with a large initial "G" and a long, sweeping underline.

Glenn Tunnock, MPA, MCIP, RPP
President

Ministry of Natural Resources & Forestry

Ministère des Richesses naturelles et des Forêts

Kemptville District

District de Kemptville

10-1 Campus Drive
Kemptville ON K0G 1J0
Tel.: 613 258-8204
Fax: 613 258-3920

10-1 promenade Campus
Kemptville ON K0G 1J0
Tel.: 613 258-8204
Fax: 613 258-3920

September 5, 2019

Via Email

Doug Nuttall
Project Manager
Jp2g Consultants Inc.
dougn@jp2g.com

Subject: Review of the Infrastructure Master Plan Western Annex in the Town of Perth

Dear Mr. Nuttall:

The Ministry received the Notice of Study Completion for the above-noted Schedule 'B' Municipal Class Environmental Assessment project on August 8, 2019. We reviewed the Infrastructure Master Plan (plan) prepared by Jp2g Consultants Inc. and dated August 2019. We understand the project is to identify development constraints and opportunities and to provide a functional design solution for infrastructure and servicing for future residential development in the "western annex" area of the Town of Perth. Lisa McShane and I completed a review of the report. The following comments are based on this review and our understanding of the proposed project and its location.

Fisheries

1. The Tay River provides habitat for a variety of spring and fall spawning species. There is walleye spawning habitat in a reach of the Tay River adjacent to the project site. These habitats are considered critical fish habitat and should be protected from adverse effects. A new bridge across the Tay River as an extension of North Street is not a preferred access option given the walleye spawning area.
2. No in-water work should be carried out between October 15th and June 30th in any given year, to protect spring and fall spawning species.
3. We recommend the establishment and/or retention of a minimum 30 m of natural vegetated cover from the high-water mark to protect fish habitat and water quality. Appropriate measures to avoid harm to fish and fish habitat (including measures to maintain or improve water quality) should be implemented if any infrastructure or

facilities are constructed adjacent to fish habitat. Generally, development should be directed to areas outside of the floodplain.

Wetland

4. There is unevaluated wetland within and adjacent to the Tayview property which should be evaluated prior to development approvals to ensure adequate protection and setbacks. There is other unevaluated wetland along the shores of the Tay River (e.g., where the new bridge crossing is proposed) which should be evaluated for the same reasons before any development is approved.
5. The Grant Creek Wetland Provincially Significant Wetland (PSW) is located at the southern limits of the project site. It appears from the mapping in the report that no development (e.g., multi-use pathway, bike route, pedestrian pathway etc.) is proposed within the PSW. Can you please confirm? Development and site alteration should not occur in the adjacent lands either, unless it has been demonstrated that there will be no negative impacts on the feature or its ecological functions. Has this been demonstrated?
6. We recommend the establishment and/or retention of a minimum 30 m of natural vegetated cover adjacent to PSW. At the detail design stage, wetland boundaries should be staked by a qualified professional to protect the feature and ensure adequate setbacks are maintained.

Species at Risk

7. The Ministry of Environment, Conservation and Parks (MECP) assumed responsibility for the Endangered Species Act (ESA), including species at risk (SAR), earlier this year. Please contact MECP directly regarding the ESA or SAR at SAROntario@ontario.ca.

Wildland Fire

8. Development should be directed away from areas that are unsafe for development due to the presence of hazardous forest types for wildland fire. The risks associated with wildland fire in the project area are anticipated to be low, based on the Ministry's generalized wildland fire hazard data which provides a coarse scale assessment of areas with the greatest potential for risks associated with wildland fire. Site-specific information obtained as part of the existing environmental conditions investigation for this project should provide more confidence regarding the wildland fire hazardous forest types and risk level.

Authorizations

9. Work in and adjacent to the Tay River or Grant Creek may require authorization under the Lakes and Rivers Improvement Act and/or the Public Lands Act. Please contact Tarique Kamal (tarique.kamal@ontario.ca) for further information.

Closure

We appreciate the opportunity to provide input. If there are any questions or concerns regarding these comments, please give me a call and we will resolve them with you.

Sincerely,



Mary Dillon
District Planner
613-258-8470

c: Lisa McShane, Management Biologist

From: [Forbes Symon](#)
To: [Doug Nuttall](#)
Subject: FW: Western Annexed Area of Perth Infrastructure Master Plan
Date: Friday, September 6, 2019 3:02:29 PM

Another one.

-----Original Message-----

From: Bob Strachan [<mailto:bobsperth@gmail.com>]
Sent: Friday, September 6, 2019 2:05 PM
To: Forbes Symon <dpdir@perth.ca>
Cc: John Fenik <jfenik@perth.ca>
Subject: Western Annexed Area of Perth Infrastructure Master Plan

Dear Forbes

Thank you for taking the time to listen to my suggestion regarding the above noted Infrastructure Master Plan however, since I have not received any follow up, I feel obligated to put my concerns in writing before the advertised deadline for comments on September 9, 2019.

As I mentioned, I feel that the consultant has not considered a viable and much less costly alternative for servicing Stage 2 of the development.

The consultant indicates that the preferred servicing route for this stage would be to enlarge the infrastructure on Inverness Ave. out to Sunset Blvd. This would require ripping up the entire street - asphalt, curb and gutter, approximately 20 household services for water and sewer as well as the storm sewer system - and reinstating all the above after enlarging the sewer and water to accommodate the new development. Also to get access to Inverness Ave from the new development there is only a very narrow easement between two houses that currently carries the services to the County Admin. Bldg.

The consultants have not shown as an alternative the logical route for this new infrastructure to follow the 66 ft unused road allowance (Town of Perth) parallel to the County Administration Building driveway that is centered on the "Bathurst" side of the double road allowance formerly between Bathurst Twp and the Town of Perth.

When the County Admin Bldg. was constructed the driveway was intentionally centered on the Bathurst side to allow for future servicing opportunities on the Perth side. At that time the road allowance went right from Highway 7 through to the Scotch Line however a portion has since been closed by the Town behind the former Brown Shoe property.

This would permit the services to be tied into new services at the intersection of Sunset Blvd. New water and sewer services will be required along Sunset past County Admin Bldg, PCCC and Lanark Lodge to the Sales Barn Site. I feel that this alternative would be much preferable to the costly project of upgrading services on Inverness Ave. I realize that this part of the project is years away but I feel that this document will be used by potential developers during due diligence stages of the purchase of the development properties and they should be aware of this less costly alternative.

I therefore request that an addendum be prepared to compare the viability of my suggested route with the Inverness option and include this comparison in the report for future consideration when we both aren't around to respond to questions!!

Please acknowledge receipt of this correspondence — I certainly do not feel this request should include a "bump up" to the EA but that the addendum should be carried out to ensure a complete report.

Thanks for your co operation

Robert B Strachan P.Eng.

♂Sent from Bob's iPad ♂



3889 Rideau Valley Drive
PO Box 599, Manotick ON K4M 1A5
T 613-692-3571 | 1-800-267-3504
F 613-692-0831 | www.rvca.ca

September 6, 2019
19-TOP-EA

Town of Perth
80 Gore Street East
Perth, ON
K7H 1H9

Attention: Forbes Symon

Subject: **Western Annex In the Town of Perth – Infrastructure Master Plan; Notice of Completion**

Dear Mr. Symon,

Thank you for circulating our office on the Notice of Completion for the Western Annex in the Town of Perth Infrastructure Master Plan. Please read this letter in conjunction with our previous comments provided March 22, 2019.

Our office has reviewed the submitted notice of completion and updated document and would like to indicate that we appreciate many of our comments, made on March 22, 2019, being addressed through the document. For instance, we appreciate that the subject document now indicates the following:

- The future bridge will be addressed as a separate process under the Municipal Class EA;
- It has been clarified that any proposed stormwater treatment system would achieve long-term efficiency of better than 80% TSS removal;
- Tree preservation plans will be required for future development proposals;
- Water Budget and groundwater analysis will be required for future development proposals;
- It has been clarified that any proposed LID facility and berm trail will be located the more distant of the regulatory floodplain or setback 30 metres from the boundary of the Provincially Significant Wetland;
- An HIS will be required for all development within 120 metres of the Provincially Significant Wetland;

Proudly working in partnership
with our 18 watershed municipalities

Athens, Augusta, Beckwith, Central Frontenac, Clarence-Rockland,
Drummond/North Elmsley, Elizabethtown-Kitley, Merrickville-Wolford, Montague,
North Dundas, North Grenville, Ottawa, Perth, Rideau Lakes, Smiths Falls, South Frontenac, Tay Valley, Westport

- Headwater Drainage Feature Assessment will be required for future subdivision applications;
- That a 30 metre setback from watercourses will be able to be achieved through future subdivision applications;

While we appreciate these matters being addressed, based on our review of the notice of completion, it is the opinion of the reviewing planner that additional clarification is still required. We had recommended that there be several additional statements within the document of the infrastructure master plan. Notably these included the following:

1. That the preferred land use plan is conceptual and that it may change based on the outcome of the more detailed analysis required to determine the appropriate location of infrastructure (roads, watercourse crossings, watermains, sanitary sewers, stormwater management facilities) and the lot layout, relative to the natural hazard and natural heritage features within the study area;
2. That prior to consideration of development applications submitted under the *Planning Act*, the detailed analysis as described in paragraph 1, above, will be conducted to the satisfaction of the RVCA and the Town of Perth;
3. That prior to commencement of subsequent studies that will inform the final development concept plan and infrastructure servicing plan, the Town of Perth, RVCA and other government agencies as appropriate, shall engage in pre-consultation to identify outstanding issues and scope of work.

While the notice of completion includes portions of these statements in Table 7.3 of the document, these statements do not appear to be reproduced in a fulsome manner within the document. Notably, the IMP should be explicit that the proposed land use plan is conceptual. This is most important because of the continued depiction of infrastructure and parcels being located within the floodplain without any additional analysis. Staff from our office had participated in ongoing discussions with the Town in order to define the level of information required in relation to floodplain crossings and stormwater management facilities within the floodplain. Within our correspondence, included as part of appendix I and dated April 26, 2019, it was stated that:

"...SWM facilities can be permitted in the floodplain where there is a satisfactory (to RVCA) EA process which clearly demonstrates that there is no viable alternative or the control of flooding, erosion, pollution, or the conservation of land will not be affected. So far, the EA process has been initiated. Because the SWM facilities are being proposed in the floodplain it appears the Town is taking the position of satisfying the second criteria (control of flooding, erosion, pollution, or the conservation of land will not be affected). To date, our office has not received information demonstrating that SWM facilities in the floodplain have met these criteria specified in our policy. This information will need to be provided as part of the EA process and to the satisfaction of our office in order for us to accept this position from the Town."

This matter has been referred to in Section 6.1.6 of the IMP and concludes, regarding Phase 1, that:

"...the existing hydraulic modelling of the Tay River already considers this connection closed, so closing this connection would not negatively affect flooding, erosion, or

pollution. Conservation Land is described by RVCA as the ecological function of the affected land.”

Although this statement is made in the IMP, water resources engineering staff within our office advise that this statement has not yet been proven or demonstrated. Please refer to our enclosed technical review memorandum dated August 29, 2019.

Regarding Phase 2, the IMP again concludes:

“Closing this connection would have no negative impact of flooding, erosion, or pollution – the flood plain modelling by RVCA already assumes this connection has been closed off, and no flow between Tay River and Grant’s Creek is accounted for, so this development will not change the regulatory flood levels....”

And, regarding the final, western floodplain connection, the IMP concludes:

“As the SWM feature is constructed above the flood elevation of Grant’s Creek wetland, all of the land draining to it must also be above the flood elevation, necessitating the filling of approximately 0.5 ha of land.”

Again, water resources engineering staff within our office advise that this statement has not yet been proven or demonstrated.

All of these statements make assumptions regarding the floodplain within this vicinity, but our office has not received any information to substantiate these conclusions. Without additional supplemental information, such as hydraulic calculations, it is not possible for our office to agree with these statements at this time. We do not know if they are correct, and we do not know if there will be any negative effects or increased flooding to adjacent landowners downstream of the subject development as a result of the preferred solution.

In our view, planning infrastructure within the floodplain, without any substantiating information, does not appropriately address Section 3.1 of the PPS with respect to development within the floodplain. Specifically, the PPS states the following:

“3.1.2 Development and site alteration shall not be permitted within:

- c) areas that would be rendered inaccessible to people and vehicles during times of flooding hazards...unless it has been demonstrated that the site has safe access appropriate for the nature of the development and the natural hazard; and*
- d) a floodway regardless of whether the area of inundation contains high points of land not subject to flooding.”*

To be clear, RVCA is not opposed to the development, but we are of the opinion that the questions of public health and safety must be addressed in a manner that is appropriate to the EA document.

We recommend the following changes to **Section 6.1.6** of the document to address our concerns above:

- Under the heading **Phase 1**, delete the following text:

Paragraph 1, Sentence 1 - *"Within Phase 1, it is proposed to construct a road and a SWM facility within the existing flood plain."*

Paragraph 1, Sentence 4 - *"The existing hydraulic modelling of the Tay River already considers this connection closed, so closing this connection would not negatively affect flooding, erosion, or pollution."*

- Under the heading **Phase 2**, delete the following text:

Paragraph 1, Sentence 5 - *"Closing this connection would have no negative impact of flooding, erosion, or pollution – the flood plain modelling by RVCA already assumes this connection has been closed off, and no flow between the Tay River and Grant's Creek is accounted for, so this development will not change the regulatory flood levels;"*

Paragraph 2, Sentence 2 - *"As the SWM feature is constructed above the flood elevation of Grant's Creek wetland, all of the land draining to it must also be above the flood elevation, necessitating the filling of approximately 0.5 ha of land."*

By deleting these sentences, something to the effect of the following should be inserted into Section 6.1.6:

"While this Plan proposes to locate infrastructure within the regulatory floodplain, it is acknowledged that the preferred land use plan for Phases 1 and 2 is conceptual and that it may change based on the outcome of the more detailed analysis required to determine the appropriate location of infrastructure (roads, watercourse crossings, watermains, sanitary sewers, stormwater management facilities) and the lot layout, relative to the natural hazard and natural heritage features within the study area."

Finally, within Section 8, Project Summary, and ahead of Table 8-1, we recommend that the following be included:

"While this Plan proposes to locate infrastructure within the regulatory floodplain, it is acknowledged that the preferred land use plan for Phases 1 and 2 is conceptual and that it may change based on the outcome of the more detailed analysis required to determine the appropriate location of infrastructure (roads, watercourse crossings, watermains, sanitary sewers, stormwater management facilities) and the lot layout, relative to the natural hazard and natural heritage features within the study area. It is further acknowledged that prior to plans of subdivision being submitted to the approval authority, detailed analysis will be undertaken which demonstrates that development will not affect the control of flooding, erosion, pollution or the conservation of land. This shall be to the satisfaction of the RVCA and the Town or Perth."

Future proponents will pre-consult with the RVCA to ensure appropriate scoping of any future studies to address floodplain and hydraulic analysis."

Throughout the EA document reference is made to additional studies and reports that will be required prior to development. For clarity of the document, we recommend that Table 8-1 include the following additional items that have already been identified throughout the report:

- Tree preservation plans will be required for future development proposals;
- Water Budget and groundwater analysis will be required for future development proposals;
- An HIS will be required for all development within 120 metres of the Provincially Significant Wetland;
- Headwater Drainage Feature Assessment will be required for future subdivision applications;

Should the recommended reports and studies identified in Table 8-1 be undertaken in an isolated fashion, only applicable to a particular phase of development, it is possible that this may result in additional costs to future applicants. These reports and studies should be completed in a coordinated effort and should assess the entire area that is subject to development. To ensure a coordinated fashion, our office recommends that a further statement above Table 8-1 be included which says:

“The required studies and reports identified below shall be completed in a coordinated manner and assess the entirety of the lands that are the subject of this Plan. Future proponents will pre-consult with the RVCA to ensure appropriate scoping of any of these future studies.”

There are a few additional points of clarification that we would like to raise:

- Section 2.1.4 appears to incorrectly state that the effect of the Town of Perth’s OPA-16 was to re-designate lands previously identified as “special study area” to “future residential”.
- Section 3.1.2 - **Water Environment and Aquatic Flora/Fauna** - appears to indicate that our office identified concerns with the North Street bridge extension. To clarify, our comments from March 22, 2019 regarding the new bridge were directed towards the proposed new bridge that would be extended onto the County of Lanark administrative property.
- Figure 3-1 – **Water Environmental Features** – does not show the location of the watercourse we had identified through our March 22, 2019 correspondence.
- Throughout the document references are made to Section 3.1.4, however there does not appear to be such a section within the document.
- Within Table 7.3 – **RVCA Consultation – item 3.4** indicates that figures 6.1, 6.2, 6.3, 6.4 and 6.5 have been revised. However, it does not appear that these revisions have fully addressed our regulatory policy requirement of locating future lots outside the regulatory floodplain.
- Regarding **Appendix G**, staff within our office advises that this attachment should also refer to the MOECP stormwater management manual for guidance about water budgets.


Staff note that any hydrological assessment should also consider function of the wetland beyond exclusively water budget considerations.

Conclusions

As always, please continue to keep us informed of the EA as it is finalized.

Thank you for the opportunity to comment and please do not hesitate to contact the undersigned at (613) 267-5353 x 131 should you have any questions. Please advise us on any decision respecting this application or any changes in the status of the application.

Yours truly,



Phil Mosher
Planner, RVCA

cc – Doug Nuttall, Jp2g

encl. Technical Review Comments regarding floodplain crossings



August 29, 2019

To: Phil Moser, Planner, Planning Advisory Services, RVCA
From: Ferdous Ahmed, Senior Water Resources Engineer, RVCA
RE: Perth Western Annex – Infrastructure Master Plan, Town of Perth
Work within Floodplain – Review

As requested, I have reviewed Section 6.1.6 (Work Within a Floodplain) of the following report:

- Report entitled “Infrastructure Master Plan – Western Annex in the Town of Perth,” prepared by Jp2g Consultants Inc., dated August 2019

My comments are as follows:

1. It has been proposed that three overland flood routes will be closed by building roads. It is claimed that this closing will not adversely affect flooding; however, no analysis has been offered to support this claim. In our opinion, this may cause piling up of flood water up to the water level prevalent in the Tay River, thus increasing the flood risk and inundating more areas. Moreover, it would also slightly increase the flood risk along the Tay River, at least up to Rogers Street. We need appropriate technical analysis to demonstrate that the proposed closing of the flood routes will not adversely impact the control of flooding.
2. It is also proposed that stormwater ponds will be located within the identified floodplain. The 2003 MOE Guideline in Section 4.2 states that “End-of-pipe SWMPs should normally be located outside of the floodplain (above the 100 year elevation). If the facility is multi-purpose in nature (e.g., providing quantity control in addition to quality and erosion control) it must be located above the highest design flood level.” The stormwater design should conform to the MOE Guidelines.

I trust this is satisfactory for your present purpose. Please call if you have any questions.

Respectfully,

RVCA Watershed Sciences and Engineering Services

A handwritten signature in black ink, appearing to read "F. Ahmed", is written over a light blue horizontal line.

Ferdous Ahmed, Ph.D., P.Eng.
Senior Water Resources Engineer

Ministry of Tourism,
Culture and Sport

Programs and Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416.314.7133

Ministère du Tourisme,
de la Culture et du Sport

Direction des programmes et des services
401, rue Bay, Bureau 1700
Toronto ON M7A 0A7
Tél: 416.314.7133



September 17, 2019

EMAIL ONLY

Doug Nutall, P.Eng.
Project Manager
Jp2g Consultants Inc.
1150 Morrison Drive, Suite 410
Ottawa, ON K2H 8S9
doughn@jp2g.com

MTCS File : 0005630
Proponent : Town of Perth
Subject : Notice of Study Completion
Project : Infrastructure Master Plan
Location : Western Annexed Area, Town of Perth, County of Lanark

Dear Mr. Nutall:

Thank you for providing the Ministry of Tourism, Culture and Sport (MTCS) with the Notice of Study Completion and Infrastructure Master Plan prepared by Jp2g Consultants Inc. (August 2019), for the above-referenced project. MTCS's interest in this Environmental Assessment (EA) project relates to its mandate of conserving Ontario's cultural heritage, which includes:

- Archaeological resources, including land and marine;
- Built heritage resources, including bridges and monuments; and,
- Cultural heritage landscapes.

Project Summary

In 2009 the Town of Perth annexed two parcels along the western limits known locally as the Perth Golf Course and the Tayview property, formerly in Tay Valley Township. The annexation process was initiated by private landowners interested in new development on their properties to be serviced with piped municipal sewage and water services from the Town. In September 2014, a revised Official Plan for Perth was adopted. The revised Official Plan added these additional lands to the Land Use Schedule and proposed policies to guide development based on conceptual plans prepared by landowners.

Jp2h Consultants Inc., was retained by the Town of Perth to complete an Infrastructure Master Plan for the Western Annexed Area of Perth. The plan will develop a framework for transportation, water supply, sanitary sewer and stormwater servicing for the study area and provide the Town with an understanding of both the short- and long-term opportunities and constraints associated with development of this unique area.

Review of the Infrastructure Master Plan

MTCS has reviewed the Infrastructure Master Plan and has the following comments and observations:

- On September 26, 2016, MTCS provided advice on this project as follows:
 - If the Master Plan project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by a licensed archaeologist.

- If there are potential or known cultural heritage resources (built heritage or cultural heritage landscape), MTCS recommends that a Heritage Impact Assessment (HIA), prepared by a qualified consultant should be completed to assess potential project impacts.
- All technical heritage studies and their recommendations are to be addressed and incorporated into Master Plan projects.
- The completed screening checklists in Appendix D ([Criteria for Evaluating Archaeological Potential](#) and [Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes](#)) indicates that the study area does have archaeological potential as well as potential for built heritage resources and/or cultural heritage landscapes.
- MTCS does note that in Section 3.2 (Cultural Heritage- page 23) that the plan states that any applications under the *Planning Act* will require both an Archaeological Assessment and a Cultural Heritage Evaluation. MTCS also notes that Table 8-1 (Documentation for Plan of Subdivision and Approvals- page 93) includes archaeological assessment but it does not include cultural heritage evaluation. MTCS would like further clarification in terms of timing and coordination between the Environmental Assessment and *Planning Act* processes. MTCS is still of the opinion that technical cultural heritage studies be undertaken by a qualified person in order to inform the Master Plan EA process. The same studies would likely be accepted for *Planning Act* purposes in order to avoid duplication and additional costs.
- Under Section 4 (Problem Statement- page 34), it is noted that, "The Perth Golf Course is the oldest in Canada and the first 9 holes should be protected from development". However, it is noted that in Appendix D in the Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes checklist that the property contains a parcel of land that is the subject of a municipal, provincial or federal commemorative plaque. MTCS recommends that these sections are reviewed and aligned as appropriate. At this time, it is not clear if the golf course is a potential cultural heritage resource or whether there are any other cultural resources in the study area. MTCS strongly recommends that a cultural heritage evaluation be undertaken for the study area. An Existing Conditions and Preliminary Impact Assessment report would be appropriate for the size of the study area.
- Under Section 5.6 (Assessment Alternatives- page 64), it states that, "The Cultural and Socio-Economic criteria will be addressed on the comparative evaluation of an alternative to minimize impact on the sensitive features identified in Section 3.2 and 3.3 of this report". Please clarify how cultural heritage resources were assessed and informed the evaluation of alternatives if no technical cultural heritage studies have been undertaken.

Thank you for consulting MTCS on this project. If you have any questions or require clarification, do not hesitate to contact me.

Sincerely,



Kimberly Livingstone
Heritage Planner (A)
Heritage Planning Unit
kimberly.livingstone@ontario.ca

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. MTCS makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MTCS be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Please notify MTCS if archaeological resources are impacted by EA project work. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists*.

If human remains are encountered, all activities must cease immediately and the local police or coroner as well as the Registrar, Burials of the Ministry of Government and Consumer Services (<https://www.ontario.ca/feedback/contact-us?id=26922&nid=72703>) must be contacted. In situations where human remains are associated with archaeological resources, MTCS should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.



Jp2g Consultants Inc.

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Jp2g No. 2161774B

October 4, 2019

Via e-mail

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
P.O. Box 599, Manotick ON K4M 1A5
Tel.: 613 692-3571
Fax: 613 692-0831
phil.mosher@rvca.ca

Attention Phil Moser, Planner

Re: Infrastructure Master Plan for Western Annexed Area, Town of Perth

Thank you for your letter dated September 6, 2019. There are several comments in your letter, some of which are being addressed through ongoing conversations. Those that we are currently satisfied with will be addressed as described below:

Throughout the EA document reference is made to additional studies and reports that will be required prior to development. For clarity of the document, we recommend that Table 8-1 include the following additional items that have already been identified throughout the report:

- Tree preservation plans will be required for future development proposals;
- Water Budget and groundwater analysis will be required for future development proposals;
- An HIS will be required for all development within 120 metres of the Provincially Significant Wetland;
- Headwater Drainage Feature Assessment will be required for future subdivision applications;

Table 8-1 has been revised accordingly.

Should the recommended reports and studies identified in Table 8-1 be undertaken in an isolated fashion, only applicable to a particular phase of development, it is possible that this may result in additional costs to future applicants. These reports and studies should be completed in a coordinated effort and should assess the entire area that is subject to development. To ensure a coordinated fashion, our office recommends that a further statement above Table 8-1 be included which says:

"The required studies and reports identified below shall be completed in a coordinated manner and assess the entirety of the lands that are the subject of this Plan. Future proponents will pre-consult with the RVCA to ensure appropriate scoping of any of these future studies."

The noted text has been added to the report.

Section 2.1.4 appears to incorrectly state that the effect of the Town of Perth's OPA-16 was to re-designate lands previously identified as "special study area" to "future residential".

The text has been revised to reflect the wording of OPA-16.



Section 3.1.2 - **Water Environment and Aquatic Flora/Fauna** - appears to indicate that our office identified concerns with the North Street bridge extension. To clarify, our comments from March 22, 2019 regarding the new bridge were directed towards the proposed new bridge that would be extended onto the County of Lanark administrative property.

The text has been revised to clarify this.

Figure 3-1 – **Water Environmental Features** – does not show the location of the watercourse we had identified through our March 22, 2019 correspondence.

The figures in the report have been revised to clarify this.

Throughout the document references are made to Section 3.1.4, however there does not appear to be such a section within the document.

The section has been restored and expanded on.

Within Table 7.3 – **RVCA Consultation – item 3.4** indicates that figures 6.1, 6.2, 6.3, 6.4 and 6.5 have been revised. However, it does not appear that these revisions have fully addressed our regulatory policy requirement of locating future lots outside the regulatory floodplain.

The figures in the report have been revised to clarify this.

Regarding **Appendix G**, staff within our office advises that this attachment should also refer to the MOECP stormwater management manual for guidance about water budgets.

The figure has been amended to include a statement that guidance is available from the MECF SWM document.

Trusting this is satisfactory.

Yours truly,

Douglas Nuttall, P.Eng.
Senior Civil Engineer

Cc Forbes Symon, Town of Perth



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F 613-692-0831 | www.rvca.ca

October 22, 2019
19-TOP-EA

Town of Perth
80 Gore Street East
Perth, ON
K7H 1H9

Attention: Forbes Symon

Subject: **Western Annex In the Town of Perth – Infrastructure Master Plan; Notice of Completion**

Dear Mr. Symon,

Thank you for coming to the RVCA office on October 3, 2019 to discuss the Notice of Completion for the Western Annex in the Town of Perth – Infrastructure Plan.

During our discussion, confirmation was provided by RVCA engineers and representatives from Jp2g indicating that the “preferred concept”, which would involve cutting off floodplain connections between the Tay River and Grants Creek, would not result in significant impact on expected flood levels or velocities. To further clarify, this statement was made on the understanding that cutting of these floodplain connections would not result in change to the existing mapped 1:100 year regulatory floodplain.

Based on the expert opinion of qualified professionals within the field of floodplain mapping, our office is now in a position to offer support for the “preferred concept”. A regulatory permit will still be required from our office to complete the exercise of cutting of the regulatory floodplain.

As always, please continue to keep us informed of the EA as it is finalized.

Thank you for the opportunity to comment and please do not hesitate to contact the undersigned at (613) 267-5353 x 131 should you have any questions. Please advise us on any decision respecting this application or any changes in the status of the application.

Yours truly,

Phil Mosher, RPP

cc – Doug Nuttall, Jp2g

Proudly working in partnership
with our 18 watershed municipalities

Athens, Augusta, Beckwith, Central Frontenac, Clarence-Rockland,
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North Dundas, North Grenville, Ottawa, Perth, Rideau Lakes, Smiths Falls, South Frontenac, Tay Valley, Westport



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Jp2g No. 2161774B

November 29, 2019

Via e-mail

Robert Strachan, P.Eng.
bobsperth@gmail.com

Re: Infrastructure Master Plan for Western Annexed Area, Town of Perth

Thank you for your letter dated September 6, 2019. There are 1 principal concern in your letter, and we are addressing it as described below:

- The consultants have not shown as an alternative the logical route for this new infrastructure to follow the 66 ft unused road allowance (Town of Perth) parallel to the County Administration Building driveway that is centered on the "Bathurst" side of the double road allowance formerly between Bathurst Twp and the Town of Perth.

Based on the expected timing of this project, we have assumed that the work on Inverness would be done concurrently with the Town of Perth infrastructure renewal program, and as such, the associated incremental costs and disturbance of the residents will be minimized (although this is not reflected in the costs). If it turns out that the two projects can not be done concurrently, this assumption will have to be re-evaluated, and the unopened road allowance adjacent to the county lands would have to be considered as a potential alternative.

We have made it clear in the report that the alternative you have recommended is to be considered if the timing of the works can not be coincident with the planned infrastructure renewal.

The Infrastructure Master Plan, amended to include all of the comments received, is available at the Town of Perth's website.

Yours truly,

A handwritten signature in black ink, appearing to read 'Douglas Nuttall', is written over a horizontal line.

Douglas Nuttall, P.Eng.
Senior Civil Engineer

Cc Grant Machan, Town of Perth



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Jp2g No. 2161774B

November 29, 2019

Via e-mail

Glenn Tunnock, MPA, MCIP, RPP
gtunnock@tunnockconsulting.ca

Re: Infrastructure Master Plan for Western Annexed Area, Town of Perth

Thank you for your letter dated September 5, 2019. There are 5 comments in your letter, and we are addressing them as described below:

1. FoTW supports OPA 16 requirements (Section 8.8.3 d.) that the impact on the Natural Heritage Features “must be considered prior to any change in this designation”. The commitment to the conservation of natural heritage features and areas will ensure that the integrity of the area’s ecology is maintained before, during and after the development process.

Noted.

2. Section 3.1.1: FoTW concurs with the need to mitigate and adapt to the effects of climate change and that a detailed analysis should be undertaken as part of future design studies. Further to this objective Section 6.1.7 should specify a target, preferable 40%, for the vegetative canopy cover as an additional measure as the extent of canopy cover is considered essential to provide for a required level of carbon sequestration and a level that will also help to sustain pre-development stormwater volumes.

We have recommended that the Town consider an overall target of 30% to 40% tree cover within the Town as part of their discussions with RVCA regarding Conservation of Land. While we concur that tree cover is important for both Mitigation and Adaptation to Climate Change, the area of tree canopy is less important than both the services of shading/evaporative cooling and carbon sequestration. The first is a function of orientation of building and trees, while the second is a function of tree type and depth of soils. We do not expect to provide direction on either of these as part of the Master Plan.

3. The Problem Statement (Section 4) identifies the scope of issues of interest to FoTW in Bullets 3, 5, 11, 15 and 16. However, bullet # 3 should more appropriately refer to “stormwater services” as stormwater management services or stormwater management facilities. Bullet 5 should more correctly refer to both natural heritage features and areas and adjacent lands, not just adjacent lands. Bullet 11 should more correctly refer to the “habitat of endangered and threatened species” in order to be consistent with the Provincial Policy Statement and the Official Plan. Bullet 16 refers only to climate change adaptation. The design for any development must consider climate change mitigation first and foremost. Such wording would also be consistent with Section 6.1.7.

Noted. We have reviewed bullets #3, 5, 11, and 16, and have revised where appropriate to make this clear.



4. Section 5.4, 5.4.2, 6.1.4, 6.1.6: Stormwater Management. The Master Plan sets out three options for stormwater management, all of which establish the maintenance of pre-development flows as the objective. All three options will require significant regrading including removal of much of the forest in the urbanized area. "This will increase the runoff coefficients of the open space." Section 6.1.4 is not clear as to whether any of the three options is a preferred option; rather, the preference appears to be a combination of the three options with deference to the LID berm as an important feature. Section 6.1.4 also indicates that a hydrologic model and water balance study would be required notwithstanding that there is no regulatory requirement for the hydrologic impact study.

Phase 2 (p.74) of the development works within the flood plain talks to raising the land by filling part of the flood plain. The proposal intends to maintain the ecological function over a program of replanting coincident with the regrading of the lands, installation of SWM ponds and the LID linear corridor. Despite the proposal, the plan states: "While it is possible to clear, raise, and replant the area to allow it to return to a forest, due to the surrounding disturbance associated with residential development, it is not clear that this would be the most effective manner to attempt to maintain the ecological function. Rather, it is proposed that the Town of Perth and the RVCA are to negotiate the most appropriate method ensuring the requirement for Conservation of Land is maintained."

The clearing of forested land for urban development will have an impact on the ecological functions of the existing forest ecosystem as will any alteration to the flood plain. The intent to replant with native species to compensate for the loss of the forested area reflects conventional practice; however, the renaturalization through replanting means that the ecological functions may not be restored for an extended time period, perhaps 25 – 50 years. The preferred alternative does not appear to require replanting of the developed properties within the subdivision and even replanting of surrounding lands is questioned as to whether the approach "would be the most effective manner." A more integrated approach should be required starting with and including an EIS-based forest management plan that identifies what/which trees and vegetative communities should be conserved in the design and layout of lots, streets and infrastructure. The lot fabric should be designed to integrate with the natural environment not the reverse. SWM planning should be integrated with the forest management plan since effective SWM should start with the retention of run-off on lots to minimize off-site discharge into sewers, swales etc. Development should be integrated into the existing topographic features to the greatest extent possible and with the intent to minimize the need for regrading. The forest management plan, coincident with the Master Plan's proposal for climate change mitigation, should establish a minimum forest canopy retention target, preferably 40% as part of the Plan and the target should be science-based to also address carbon sequestration. Building design should incorporate on-site soakaway pits, measures for minimizing impervious surfaces, recycling rain-water etc.

A construction plan should also be a requirement to ensure effective implementation of the forest management plan during the installation of services and the building of homes/lot development. Such a plan will ensure that trees and other vegetation are not damaged by heavy equipment during construction.

The Master Plan provides an opportunity to implement state-of-the-art SWM best practices that are ecologically-driven rather than development driven. The Town's intent to partner with the RVCA on developing the best approach to the design and development of land for conservation of natural features and the environment is commendable, but not fully evident in the proposed Master Plan.



The Golf Course lands Concept Plan development will require significant regrading and removal of mature trees in the urbanized area. It is noted extensive areas of existing vegetation are maintained and that the Phase 1 lands comprise the existing fairways for holes 11, 12 part of 13, 17 and 18; and part of Phase 2 comprise existing fairways for part of hole 13, 14, 15 and 16. The development will increase runoff coefficients, which will be mitigated with the preferred stormwater management approach and the compensation for lost forest cover. We have revised Section 6.1.4 to make it clear that the preferred alternative is the linear LID system with sediment forebays described as Option 3 in Section 5.4. The text of the report has been changed to clarify that there is a regulatory requirement for a Hydraulic Impact Study (HIS) but that RVCA policy does not provide details of such an approach. The recommended negotiation between the Town and the Conservation Authority provides the opportunity to provide for forest cover in locations and/or in manners that would be more beneficial than just replanting in-situ as a requirement for Conservation of Land. This may mean planting specific species and/or using specific techniques on other Town-owned land. It may be that the best location for forest development is on site, but that comparison is beyond the scope of this EA.

We have noted in Table 8-1 that further studies, including an Environmental Impact Study and a Tree Preservation Plan, will be required as part of future subdivision development proposals. A Forest Management Plan for the Town as a whole does not exist, and it is beyond the scope of this Master Infrastructure planning process or subsequent development proposals to create one. A Tree Preservation Plan has been added to the required studies. The use of soak-aways or other lot-level controls will have to be considered at a detailed design stage, due to the general presence of very shallow soils, imperfect drainage, and high groundwater.

5. Section 6.1.7 – Climate Change. Suggestions are made for mitigating climate change; however, the proposal makes the application of mitigation measures optional rather than regulatory. A more detailed climate change plan as suggested above could be a landmark feature of the Master Plan. As an example, the conventional approach to flood plain management is to use the 1:100 year flood design. Extreme climate events in today's context appear to have exceeded this parameter as witnessed on Christie Lake where the 1:100 flood was exceeded. Extreme climactic events raise the question as to whether this could occur within the Perth community as well. The question of how such an extreme event would be addressed through development guidelines is not addressed in the Master Plan?

Currently, there is no consensus as to how best to adapt to extreme events. Arbitrary measures are applied (15% increase above the 1:100 year flood flow, 1:100 year flood flow +25% as a stress test, etc) in different ways by different authorities. The choice of such a method is generally by the municipality as a whole, rather than on a significantly smaller scale, such as the scope of this Master Infrastructure Plan. Town of Perth has their Climate Change Action Plan, which provides the recommendation for solar orientation of streets and homes. The other recommendations are expected to carry the same weight.

The Infrastructure Master Plan, amended to include all of the comments received, is available at the Town of Perth's website.

Yours truly,

Douglas Nuttall, P.Eng.
Senior Civil Engineer

Cc Grant Machan, Town of Perth



Jp2g Consultants Inc.

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Jp2g No. 2161774A

November 29, 2019

Via e-mail

Ministry of Tourism, Culture, and Sport
Programs and Service Branch
401 Bay St. Suite 1700
Toronto, ON M7A 0A7
(416)314-7133
Kimberly.livingstone@ontario.ca

Attn Kimberly Livingstone, Heritage Planner

Re: Infrastructure Master Plan for Western Annexed Area, Town of Perth

Thank you for your letter dated September 17, 2019. There are 5 bullets to your letter, which we have addressed as described below:

- On September 26, 2016, MTCS provided advice on this project as follows:

Noted.

- The completed screening checklists in Appendix D (Criteria for Evaluating Archaeological Potential and Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes) indicates that the study area does have archaeological potential as well as potential for built heritage resources and/or cultural heritage landscapes.

Noted.

- MTCS does note that in Section 3.2 (Cultural Heritage- page 23) that the plan states that any applications under the Planning Act will require both an Archaeological Assessment and a Cultural Heritage Evaluation. MTCS also notes that Table 8-1 (Documentation for Plan of Subdivision and Approvals- page 93) includes archaeological assessment but it does not include cultural heritage evaluation. MTCS would like further clarification in terms of timing and coordination between the Environmental Assessment and Planning Act processes. MTCS is still of the opinion that technical cultural heritage studies be undertaken by a qualified person in order to inform the Master Plan EA process. The same studies would likely be accepted for Planning Act purposes in order to avoid duplication and additional costs.

Table 8-1 has been revised to include Cultural Heritage Evaluation. We concur that the technical archaeological and cultural heritage studies need to be undertaken by a qualified person, but believe the studies are better done as part of the Subdivision application and review process. The Infrastructure Master Plan completed under the Municipal Class EA process is done at a broad level of assessment unlike the level of investigation for specific municipal projects. The scope of the final land use plan and timing of a subdivision application for Tayview and the Phase 1 Golf Course lands is dependant on the landowners. The development plan for these properties is not well defined, may not involve all lands, may proceed in stages over many years or may not proceed at all. Phase 2 of the Golf Course project is even less defined as it is designated as 'Future Development' in the Official Plan, with the expectation of the project proceeding well past the current planning horizon.



We acknowledge that an Archaeological Assessment and Cultural Heritage Evaluation is required and it may have been more efficient and less costly if done for the study area, however it is not reasonable for the Town to incur these costs under the Municipal Class EA but rather by the landowners under a Planning Act application.

- Under Section 4 (Problem Statement- page 34), it is noted that, “The Perth Golf Course is the oldest in Canada and the first 9 holes should be protected from development”. However, it is noted that in Appendix D in the Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes checklist that the property contains a parcel of land that is the subject of a municipal, provincial or federal commemorative plaque. MTCS recommends that these sections are reviewed and aligned as appropriate. At this time, it is not clear if the golf course is a potential cultural heritage resource or whether there are any other cultural resources in the study area. MTCS strongly recommends that a cultural heritage evaluation be undertaken for the study area. An Existing Conditions and Preliminary Impact Assessment report would be appropriate for the size of the study area.

The decision was made by the owner of the golf course to avoid disturbing the first 9 holes, which are the holes that were developed in the late 1800s. It has been assumed for the Infrastructure Master Plan that the first 9 greens, tees, and fairways have heritage potential. An error was made –there isn’t a formal commemorative plaque on the property, and this has been corrected on the checklist and clarified in the report. We have revised the report to make it clear that a Cultural Heritage Impact Assessment will be required on both properties, prior to applying for Draft Plan of Subdivision.

- Under Section 5.6 (Assessment Alternatives- page 64), it states that, “The Cultural and Socio-Economic criteria will be addressed on the comparative evaluation of an alternative to minimize impact on the sensitive features identified in Section 3.2 and 3.3 of this report”. Please clarify how cultural heritage resources were assessed and informed the evaluation of alternatives if no technical cultural heritage studies have been undertaken.

It has been assumed that the portion of the golf course site that was in use prior to 1980 has the potential to be a cultural heritage landscape. All infrastructure alternatives avoid this part of the site. A Cultural Heritage Evaluation Report will be required to be completed on the site prior to applying for a Draft Plan of Subdivision. Heritage Impact Studies may be required as development proceeds.

The Infrastructure Master Plan, amended to include all of the comments received, is available at the Town of Perth’s website.

Yours truly,

Douglas Nuttall, P.Eng.
Senior Civil Engineer

Cc Grant Machan, Town of Perth



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Jp2g No. 2161774B

November 29, 2019

Via e-mail

MNRF Kemptville District
10-1 Campus Drive
Kemptville ON K0G 1J0
Tel.: 613 258-8204
Fax: 613 258-3920
Mary.Dillon@ontario.ca

Attention Mary Dillon, District Planner

Re: Infrastructure Master Plan for Western Annexed Area, Town of Perth

Thank you for your letter dated September 5, 2019. There are 9 distinct comments in your letter, and we are addressing them as described below:

1. The Tay River provides habitat for a variety of spring and fall spawning species. There is walleye spawning habitat in a reach of the Tay River adjacent to the project site. These habitats are considered critical fish habitat and should be protected from adverse effects. A new bridge across the Tay River as an extension of North Street is not a preferred access option given the walleye spawning area.

Noted. The proposed bridge crossing is at the County lands.

2. No in-water work should be carried out between October 15th and June 30th in any given year, to protect spring and fall spawning species.

Noted. We have made this evident in the report. See Section 3.1.4.

3. We recommend the establishment and/or retention of a minimum 30 m of natural vegetated cover from the high-water mark to protect fish habitat and water quality. Appropriate measures to avoid harm to fish and fish habitat (including measures to maintain or improve water quality) should be implemented if any infrastructure or facilities are constructed adjacent to fish habitat. Generally, development should be directed to areas outside of the floodplain.

Noted. We have made this evident in the report. See Section 3.1.4.

4. There is unevaluated wetland within and adjacent to the Tayview property which should be evaluated prior to development approvals to ensure adequate protection and setbacks. There is other unevaluated wetland along the shores of the Tay River (e.g., where the new bridge crossing is proposed) which should be evaluated for the same reasons before any development is approved.

Noted. We will ensure this is evident in the report. See Section 3.1.4.

5. The Grant Creek Wetland Provincially Significant Wetland (PSW) is located at the southern limits of the project site. It appears from the mapping in the report that no development



(e.g., multi-use pathway, bike route, pedestrian pathway etc.) is proposed within the PSW. Can you please confirm? Development and site alteration should not occur in the adjacent lands either, unless it has been demonstrated that there will be no negative impacts on the feature or its ecological functions. Has this been demonstrated?

No development is proposed within 30m of the PSW. With each phase of development, a Hydrologic Impact Assessment will be required to demonstrate that there are no negative impacts on the hydrologic function of the wetland due to the proposed development. With each phase of development, an Ecological Impact Assessment will be required to demonstrate there are no negative impacts on the feature or its ecological functions. We will ensure that this is evident in the report.

6. We recommend the establishment and/or retention of a minimum 30 m of natural vegetated cover adjacent to PSW. At the detail design stage, wetland boundaries should be staked by a qualified professional to protect the feature and ensure adequate setbacks are maintained.

Noted. We have made this evident in the report. See Section 3.1.4.

7. The Ministry of Environment, Conservation and Parks (MECP) assumed responsibility for the Endangered Species Act (ESA), including species at risk (SAR), earlier this year. Please contact MECP directly regarding the ESA or SAR at SAROntario@ontario.ca.

Noted. We have made this evident in the report. See Section 3.1.4.

8. Development should be directed away from areas that are unsafe for development due to the presence of hazardous forest types for wildland fire. The risks associated with wildland fire in the project area are anticipated to be low, based on the Ministry's generalized wildland fire hazard data which provides a coarse scale assessment of areas with the greatest potential for risks associated with wildland fire. Site-specific information obtained as part of the existing environmental conditions investigation for this project should provide more confidence regarding the wildland fire hazardous forest types and risk level.

Noted. We will have made this evident in the report. See Section 3.1.4.

9. Work in and adjacent to the Tay River or Grant Creek may require authorization under the Lakes and Rivers Improvement Act and/or the Public Lands Act. Please contact Tarique Kamal (tarique.kamal@ontario.ca) for further information.

Noted. We will have made this evident in the report. See Section 3.1.4.

The Infrastructure Master Plan, amended to include all of the comments received, is available on the Town of Perth's website.

Yours truly,

Douglas Nuttall, P.Eng.
Senior Civil Engineer

Cc Grant Machan, Town of Perth



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Jp2g No. 2161774A

November 29, 2019

Via e-mail

Rideau Valley Conservation Authority
3889 Rideau Valley Drive
P.O. Box 599, Manotick ON K4M 1A5
Tel.: 613 692-3571
Fax: 613 692-0831
phil.mosher@rvca.ca

Attention Phil Mosher, Planner

Re: Infrastructure Master Plan for Western Annexed Area, Town of Perth

Thank you for the letter dated October 22, 2019 (your file number 19-TOP-EA). The Infrastructure Master Plan, amended to include all of the comments received, is available on the Town of Perth's website.

Trusting this is satisfactory.

Yours truly,

A handwritten signature in black ink, appearing to read 'Douglas Nuttall', is written over a faint, light-colored signature line.

Douglas Nuttall, P.Eng.
Senior Civil Engineer

Cc Grant Machan, Town of Perth

