ENVIRONMENTAL STUDY
PROJECT SUMMARY

OTONABEE RIVER WATERMAIN CROSSING

PETERBOROUGH UTILITIES COMMISSION

DMW Project No. 07-2679
December 2012
As Amended August 2013
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1.0 Introduction and Background

The Peterborough Utilities Commission (PUC) has retained D.M. Wills Associates Ltd. (Wills) to conduct a Schedule ‘B’ Municipal Class Environmental Assessment to develop alternative alignments for the installation of a new 600mm trunk watermain across the Otonabee River between Johnston Drive at Crawford Drive to Guthrie Drive. The study has been conducted as a Schedule ‘B’ Class Environmental Assessment in accordance with the Municipal Class Environmental Assessment process, which is an approved process under the Environmental Assessment Act. The Study Area is shown in Section 1.2 within the Project Summary.

The requirement for the 600mm trunk watermain will be to provide uninterrupted water supply to all current and future customers. This program includes the extension a 600mm diameter trunk watermain between the existing watermain terminating on Johnston Drive to the existing trunk watermain at the intersection of Neal Drive and Bensfort Road by way of Guthrie Drive.

Future servicing of a large proposed development on Guthrie Drive known as the Cold Springs Secondary Plan area will also require the 600mm watermain at a specific build-out.

The study will strive to provide an economical solution that minimizes disruption to the natural habitats along the shoreline of the Otonabee River, as well as the inland areas on the east side of the river, while satisfying MTO with respect to crossing Highway 115.

This Project Summary has been prepared as an aid to the public and review agencies to help understand the key activities conducted, the evaluation process followed, and the principal decisions/conclusions made during the study.
1.1 Study Area

A map of the Study Area is outlined in Figure 1. The proposed limits of the study are Johnston Drive to the west, Guthrie Drive to the south, Bensfort Road to the east and the MTO property line to the north. The total project length is approximately 950m, measured between Johnston Drive and east limit of the proposed watermain route.

Figure 1: Study Area

1.2 Study Organization

1.2.1 Project Team

The study was carried out under the direction of the Project Team, which was comprised of staff from the PUC, D.M. Wills Associates Ltd. (Wills), and Niblett Environmental (NEA), and included the following members:

Gary Craig, P. Eng.  P.U.S.I
Paul Dunford, C.E.T.  P.U.S.I
Aaron Hill, P. Eng.  Wills
Laurie Wills, P. Eng.  Wills
Chris Ellingwood  NEA
1.3 Municipal Class EA Process

The MCEA designates three (3) project types and the corresponding process requirements for each project type. A list of the project types and general definition of project requirements, in ascending complexity, is included below:

Schedule ‘A’: Projects are limited in scale, have minimal adverse environmental effects and include the majority of municipal road maintenance, operational, and emergency activities. Projects are pre-approved and can proceed without further approval under the EA Act.

Schedule ‘A+’: Same as Schedule ‘A; except that public notification is required.

Schedule ‘B’: Projects that have the potential for some adverse environmental effects. A screening process is required and involves having mandatory contact with directly affected public and review agencies. Projects generally include improvements and minor expansions to existing facilities.

Schedule ‘C’: Projects that have the potential for significant environmental effects and which must proceed under the planning and documentation procedures specified in the Class EA document. Projects generally include the construction of new facilities and major expansions to existing facilities.

It should be noted that “environmental effects” include the social environment, natural environment, and economic environment of the study area.

The Municipal Class Environmental Assessment (MCEA) is broken down into the following five (5) design process phases:

Phase 1: Identification of the problem or opportunity.
Phase 2: Assessment and evaluation of the alternative solutions.
Phase 3: Assessment and evaluation of alternative design concepts for the preferred solution.
Phase 4: Preparation of an Environmental Study Report.
Phase 5: Contract drawings, tender, and construction.

These phases are illustrated in Appendix A, provided by the Municipal Class Environmental Assessment document.

1.3.1 Description of the Project

Consistent with the MCEA process, and noting that the subject watermain is to cross a body of water, the description of the project relative to the final preferred alternative falls under the project description of a Schedule B Municipal Water and Wastewater Project based on the following definition (MCEA document Appendix 1, Page 1-17):

11. Water crossing by a new or replacement water facility except for the use of Trenchless Technology for water crossings.
For a Schedule B proceeding, the PUC was required to complete the Phase 1 and Phase 2 design process phases of the MCEA.

The filing of a Project File for public review will complete Phases 1 and 2 of the Class EA planning and design process for a Schedule ‘B’ project. The Project File shall be made available for a minimum thirty (30) calendar day period. A public notice (Notice of Completion) will be published to announce the review period. The Project File shall be made available for public viewing online at the PUC’s website www.peterboroughutilities.ca, at the PUC head office or at the office of D.M.Wills Associates Limited during business hours, per the following contacts:

Mr. Gary Craig, P. Eng.       Mrs. Laurie Wills, P. Eng.
Water Utility Engineer        Project Manager
Peterborough Utilities Commission  D.M. Wills Associates Ltd.
1867 Ashburnham Drive          150 Jameson Drive
Peterborough, ON K9J 6Z5       Peterborough, ON K9J 0B9
gcraig@puc.org                 lwills@dmwills.com

If no outstanding concerns are brought forward during the review period, then the PUC may proceed to the Phase 5 implementation stage, i.e. detailed design, tendering, and construction of the preferred alternative.

If members of the public, agencies, utilities, or stakeholders feel that their concerns have not been addressed through the Class EA process, the MCEA process includes an appeal provision that allows for changing the status of a project from a Schedule B Class EA to a Schedule C process or an Individual Environmental Assessment. During the thirty (30) day review period, the affected stakeholders may request that the Minister of the Environment make an order for the project to comply with Part II of the EA Act. The Minister of the Environment shall decide whether to deny the request (either with or without conditions), refer the matter to mediation, or require the proponent to comply with Part II of the EA Act.

Additional information regarding this appeal process can be found in the Municipal Class EA parent document. Anyone wishing to request a Part II Order must submit a written request within the thirty (30) calendar day review period, to the Minister of the Environment at the following address, with a copy to the proponent of the project, to the PUC:

Minister of the Environment
135 St. Clair Avenue
10th Floor, Toronto, ON M4V 1P5

1.3.2 Technical Agencies & Utilities

All applicable ministries, agencies, and utilities that may have an interest in the study have been included in a stakeholder contact list to request comments and technical input. Relevant agency correspondence and a list of recipients will be included in the Project File upon completion of the study.
1.3.3 Public Consultation

An integral component of the EA process includes provision for public consultation, so that residents, local businesses, stakeholder groups, and external agencies can provide comments, identify issues, and provide additional information and data.

For a Schedule B process, the PUC is required to make two (2) points of contact with the public and review agencies. One of the two points of contact is considered to be the Notice of Project Completion, the other point of contact is at the discretion of the PUC as long as the Public and review agencies are allowed an opportunity to comment on the planning process.

1.3.4 Project Summary

For a Schedule B process, the MOE recommends that a short summary be prepared as part of Phase 2 of the EA process to be included in the Project File as a guide for the public and review agencies to follow the steps taken to determine the preliminary preferred alternative for the EA study.

1.4 Proceedings to Date

A Notice of Study Commencement was issued on October 1, 2010 declaring the official start to the Environmental Assessment.

The following timeline describes the milestone events that have taken place to date during the MEA process:

- Notice of Study Commencement – Advertised on November 30, 2007
- PIC #1 – October 12, 2011.

The PUC conducted a Public Information Centre to allow for public comment. Only two (2) nearby residents attended the PIC.

A copy of each notice, agency contact list, correspondence and PIC comments will be supplied in the Project File. Review agencies, ministries and utilities will be solicited for comments on the study upon receiving notification of the availability of the subject Project Summary.

Following the Notice of Study Completion, the mandatory 30 day review period will commence the final opportunity for public and stakeholder comment.
2.0 Phase 1

The first phase of the MEA process is simply to identify and describe the problem or opportunity that the PUC intends to solve during the planning process.

2.1 Problem/Opportunity Statement

To upgrade and expand the water distribution system with the extension a 600mm diameter trunk watermain between Johnston Drive and Guthrie Drive while minimizing impacts to the natural environment, MTO structures, and cost.

Upon defining the Problem/Opportunity Statement, this completes the first phase (Phase 1) of the EA process.

3.0 Phase 2

The second phase of the MEA process involves the following steps:

1. Identification of alternative solutions to the problem;
2. Preparation of the physical description of the area where the project is to occur, and a general inventory of the natural, social, and economic environments;
3. Evaluation of the alternative solutions including the identification of the net positive and negative effects of each alternative and identifying mitigating measures;
4. Preliminary identification of a recommended solution;
5. Consultation with review agencies and the public to solicit comment and input; and,
6. Confirmation of the preferred solution.

3.1 Identification of Alternative Solutions

A number of alternative alignments were identified and subjected to a screening process to determine whether they would address the problem statement of the study. For each alternative, the construction method of horizontal directional drilling (HDD) and open cut trenching were considered. The alternative alignments are summarized below:

Alignment No. 1: River Crossing at Northern Limit of MTO Property
(Highway 115 Crossing East of Kennedy Road)

Under this alignment, the proposed 600mm watermain will connect to the existing 600mm watermain on Johnston Drive, south of Crawford Drive before crossing the river parallel with Highway 115. The length of the river crossing is approximately 130m. Once across the river, the watermain runs parallel to Highway 115 and in close proximity to the north MTO property line. The alignment runs south of the water pollution control plant before crossing underground Kennedy Road in two (2) locations. This alignment
continues to approximately 50m east of Southpark Drive where it bends 90 degrees and travels south, perpendicular to and underneath Highway 115 and finally meets the proposed road alignment for the future Guthrie Drive development (Street C). The total length of the proposed watermain is approximately 1,100m.

Alignment No. 1A: River Crossing at Northern Limit of MTO Property (Highway 115 Crossing West of Kennedy Road)

Under this alignment, the proposed 600mm watermain will connect to the existing 600mm watermain on Johnston Drive, south of Crawford Drive before crossing the river parallel with Highway 115, similar to Alignment No. 1. The length of the river crossing is approximately 130m. Once across the river, the watermain runs parallel to Highway 115 and in close proximity to the north MTO property line for approximately 380m before bending 90 degrees (west of Kennedy Road) and travelling south, perpendicular to and underneath Highway 115. Once across the highway, the alignment reaches Guthrie Drive and follows Guthrie Drive east for approximately 300m until it meets the proposed road alignment for the future Guthrie Drive development (Street C).

The total length of the proposed watermain is approximately 1,090m.

Alignment No. 2: River Crossing North Side of the Bridge (Highway 115 Crossing Under the Bridge on the East Bank)

Under this alignment, the proposed 600mm watermain will connect to the existing 600mm watermain on Johnston Drive, south of Crawford Drive before crossing the river north of the bridge. The length of the river crossing is approximately 162m. Once across the river, the watermain runs underneath the MTO bridge structure on the east bank and until it reaches Guthrie Drive. The alignment runs parallel with Guthrie Drive for approximately 800m before reaching the connection point at proposed Street C. The total length of the proposed watermain is approximately 1,050m.

Alignment No. 2A: River Crossing North Side of the Bridge (Crossing Highway 115, 160m east of Otonabee River)

Under this alignment, the proposed 600mm watermain will connect to the existing 600mm watermain on Johnston Drive, south of Crawford Drive before crossing the river north of the bridge. The length of the river crossing is approximately 162m. Once across the river, the watermain runs parallel with Highway 115 for approximately 160m where it crosses underneath Highway 115 to Guthrie Drive. The alignment runs parallel with Guthrie Drive for approximately 630m before reaching the connection point at proposed Street C. The total length of the proposed watermain is approximately 1,030m.

Alignment No. 3: Highway 115 Crossing on MTO Bridge Structure

Under this alignment, the proposed 600mm watermain will connect to the existing 600mm watermain on Johnston Drive, south of Crawford Drive and continue along the west side of Johnston Drive, underneath the MTO bridge structure and will hang from the MTO bridge structure in order to cross the river. The alignment continues parallel...
with Guthrie Drive for approximately 800m before reaching the connection point at proposed Street C. The total length of the proposed watermain is approximately 1,190m.

Through early correspondence with the MTO, it was determined that hanging the watermain from the MTO bridge structure would not be considered as a viable option by the MTO and therefore Alignment No. 3 was not carried through the evaluation process.

Alignment No. 4: River Crossing South Side of Bridge (Highway 115 Crossing Under Bridge on West Bank)

Under this alignment, the proposed 600mm watermain will connect to the existing 600mm watermain on Johnston Drive, south of Crawford Drive and continue along the west side of Johnston Drive and underneath the MTO bridge structure. The alignment crosses the river almost in line with Guthrie Drive, south of the bridge and north of an existing gas main. The length of the river crossing is approximately 130m. The alignment continues parallel with Guthrie Drive for approximately 800m before reaching the connection point at proposed Street C. The total length of the proposed watermain is approximately 1,170m.

Alignment No. 5: Do Nothing

The Class EA document mandates consideration of the “Do Nothing” in all Class EAs as means of providing a benchmark for the evaluation of the other alternative solutions. Since this alternative does not address the problem statement, it has not been carried forward for evaluation.

3.2 Description/Inventory of the Existing Environment

3.2.1 Natural Environment

Typically, natural heritage features include elements such as landforms, groundwater, surface water and fisheries, terrestrial vegetation and wetlands, wildlife and habitat and connections provided by, or between these resources.

The natural features in the alternative alignments were examined by Niblett Environmental Associates Inc. on May 31 and June 7 and June 15, 2010 and Sept. 21, 2011 by wetland and terrestrial biologists. Fisheries surveys were conducted in the spring spawning season for muskellunge and walleye on April 15 and 16, 2010 with additional surveys of habitat and summer fish communities on June 15, 22, and 23, 2010. The surveys included targeted searches for identified Species at Risk, amphibians, birds and vegetation.

The study area includes deciduous woodland, open meadows and floodplain wetlands. A total of 23 bird species, 8 vegetation communities, 123 plant species, 2 frog species and 3 mammal species were observed during the surveys.
Spawning habitat for walleye and muskellunge is present along the shoreline of the Otonabee River. Wetland areas are present within the floodplain on the eastern banks.

Habitat for eastern meadowlark is present in the open field community between Highway 115 and the tree line.

No habitat for other 'Species-at-Risk' were found within the study area including birds, mammals or butternut trees.

There were no Areas of Natural and Scientific Interest (ANSI), Environmentally Sensitive Areas (ESA), provincially significant wetlands (PSW) or significant woodlands within the study area. Significant wildlife habitat includes possible turtle nesting or basking sites, frog breeding habitat and fish habitat.

Geotechnical Information

A geotechnical investigation was conducted by Jagger Hims (now Genivar) for the subject site on June 25, 26, 29 and August 13, 2009. The detailed report can be viewed at the PUC offices upon request and will be made available as an appendix to the Project File.

At the time of the investigation, an approximate elevation of 180m above sea level was inferred. The riverbed appears to be underlain by lacustrine deposits ranging from sands to clayey silts which extend to depths of 1.7m to 3.2m below the bottom of the river (approximate location of watermain). The lacustrine soils are composed of sandy silt to silty sand glacial till soils with some gravel and occasional cobbles.

On the west bank of the river, lacustrine soils are present to a depth of 11.4m below existing grade before the underlying glacial till soils were encountered. The launching/receiving pit on the west bank is expected to be predominantly situated in saturated lacustrine soils ranging in texture from sand to clayey silt with high hydraulic conductivity to a depth of 7.4m (4m below the surface of the river). It has been recommended that a watertight excavation support system be implemented, i.e. braced sheet piles or interlocking concrete caissons.

The launching/receiving pit on the east bank is expected to be predominantly situated in silty sand glacial till soils and given the depth of the watermain below the river bottom, an excavation support system will be required to restrain lateral soil pressures and maintain stability of the vertical excavation.

It is not anticipated that groundwater seepage inflows to either of the pits will exceed the 50,000 L/day criterion requiring a Permit-to-Take-Water from the MOE.

3.2.2 Social Environment

The Social Environment includes existing communities, residential areas and recreational areas. Key considerations are the overall community impacts to residential property and access, community facilities and access, recreational facilities and access, pedestrians, cyclists, noise impacts and air quality.
The community that will be affected by the proposed construction is solely residential on Johnston Drive and Crawford Drive. Residents will experience short term construction inconveniences and noise; however access will be maintained to all properties during the construction period.

3.2.3 Cultural Environment

The Cultural Environment refers to cultural heritage and archaeological resources in the environment. At the time of this summary, it is inferred that the method of construction for the watermain will be via trenchless technology such as HDD. Any archaeological potential along the shoreline or within the riverbed will be maintained. A Stage 1 and 2 Archaeological Assessment were considered when the study first commenced in the case that open cut trenching became the preferred method of construction. Should the construction method revert back to open cut trenching, an archaeological assessment will be revisited.

AMENDMENT

Following advertisement of the initial notice of study completion, comments received from the Ministry of Culture indicated that a Stage 1 and 2 Archaeological Study would be required along the preferred alignment. We have since amended the Project File with the results of the Archaeological Study and are re-issuing the Notice of Study Completion.

3.2.4 Land Use Planning

Within the EA Study Area, the majority of the land use is MTO right of way. The watermain will pass through areas designated as Major Open Space (Schedule A - Land Use), as well as floodplain and land adjacent to fish habitat (Schedule C - Natural Areas and Food Plains) of Peterborough’s Official Plan. It is anticipated that the HDD component of the watermain installation may be extended in order to avoid open cut trenching within the floodplain and lands adjacent to fish habitat. A copy of Peterborough’s Official Plan can be viewed on their website:


3.2.5 First Nations/Aboriginal Peoples

The First Nations/Aboriginal Peoples have been included in the study contact list to provide input and raise any specific issues or concerns related to the project.

3.2.6 Future Development and Land Use Planning

At this time, there are no future development plans for the subject lands. There are vacant lands on the east side of the Otonabee River that are owned by the Ministry of Transportation.

3.2.7 Public Transportation

There is currently no public transit route within the subject study area.
3.2.8 Utilities

Utility company stakeholders providing service within the study limits have been included in the study contact list to provide input and raise any specific issues or concerns related to the project.

Aerial wires exist in close proximity to Alignment No. 4 south of the MTO bridge structure, as well as a large diameter gas main to the south of Alignment No. 4.

3.2.9 Existing Traffic Corridor

Johnston Drive and Guthrie Drive are low density residential streets that would be temporarily inconvenienced during construction of the watermain.

Based on the use of HDD, the Otonabee River will not be impacted with regards to the Navigable Waters Protection Act. The Otonabee River will remain accessible to marine vessels at all times during construction.

3.3 Evaluation of Alternative Solutions

The following sections will include a more detailed assessment of the viable alignments identified, in order to determine the preferred solution.

A Decision Matrix was assembled based on a quantitative review analysis. Alternatives were scored for each criteria factor based on a scoring between 1 and 5 (5 being the most favourable score).

The assessment criteria factors were then applied a weighting factor based on their relevance to the problem/opportunity statement. A default-weighting factor of 1 was applied to all criteria factors except the following:

- Impact on the Natural Environment (all categories)
  Weighting Factor = 2

- Impact to Existing Infrastructure including MTO Structures
  Weighting Factor = 2

- Overall Capital Cost
  Weighting Factor = 2

A summary of the evaluation of the Five (5) alternatives is included in Appendix C. A conceptual plan has been included in Appendix D showing the proposed alignment and profile of the preferred solution.

Alignment No. 1: River Crossing at Northern Limit of MTO Property
(Highway 115 Crossing East of Kennedy Road)
The impacts (positive and negative) that this alignment is anticipated to have on the natural/social/economic/technical environment includes the following:

**Natural Environment Impacts**
- Potential impact to wetland depending on location of drill pit.
- Removal of trees and field within construction envelope.
- Temporary impact to river riparian habitat.
- Potential impact to muskellunge spawning habitat.
- Potential impact to tributary riparian and in-stream habitat in roadside watercourse.
- Potential habitat for meadowlark in field.
- Habitat for turtles not impacted.

**Social Environment Impacts**
- Minor inconveniences to residential home owners nearby during construction.

**Economic Environment Impacts**
- Least amount of road restoration costs.
- Least expensive alignment ($2.45M).

**Technical Environment Impacts**
- May be further ‘best management practice’ (BMP) requirements from TSW although limited as no in-water work.
- Furthest away from MTO structures for ease of construction.
- Preferred alignment to tie in to Cold Springs Secondary Plan and Southpark Drive looped feed.

**Mitigative Measures**

Should Alignment No. 1 be implemented, the following measures will be taken to mitigate the negative impacts on the natural/social/economic environment:
- CUM-1 zone environmental mitigation required.
- Start and end pits to be located outside of the wetland boundary or in wetland 15m from shoreline of river.
- Start and end pits to be located outside of the river bed boundaries.
- Access to residential driveways to be maintained during construction.

**Decision Matrix Results**
Alignment No. 1 received a total score of 63.
Alignment No. 1A: River Crossing at Northern Limit of MTO Property
(Highway 115 Crossing West of Kennedy Road)

The impacts (positive and negative) that this alignment is anticipated to have on the natural/social/economic/technical environment includes the following:

Natural Environment Impacts

- Potential impact to wetland depending on location of drill pit.
- No impact to river bed.
- Removal of trees within construction envelope.
- Habitat for turtles not impacted.
- Potential habitat for SAR present (Eastern meadowlark).
- Temporary impact to river riparian habitat.
- Potential impact to muskellunge spawning habitat in wetland.
- Impact to tributary riparian and in-stream habitat in roadside watercourse.

Social Environment Impacts

- Minor inconveniences to residential home owners nearby during construction.

Economic Environment Impacts

- Minimal road restoration on Guthrie Drive.
- Third highest cost ($2.55M).

Technical Environment Impacts

- May be further BMP requirements from TSW although limited as no in-water work.

Mitigative Measures

Should Alignment No. 1A be implemented, the following measures will be taken to mitigate the negative impacts on the natural/social/economic environment:

- CUM-1 zone environmental mitigation required.
- Start and end pits can be located outside of the wetland boundary or in wetland 15m from shoreline of river.
- Start and end pits can be located outside of the river bed boundaries.
- Access to residential driveways will be maintained during construction.

Decision Matrix Results

Alignment No. 1A received a total score of 51.
Alignment No. 2: River Crossing North Side of the Bridge
(Highway 115 Crossing Under the Bridge on the East Bank)

The impacts (positive and negative) that this alignment is anticipated to have on the natural/social/economic/technical environment includes the following:

Natural Environment Impacts
- Minor impact on wetland.
- No impact to river bed.
- Limited tree removal of large willows within construction envelope north of 115 bridge.
- Habitat for turtles not impacted.
- Potential habitat for SAR present (Eastern meadowlark).
- Temporary impact to river riparian habitat.

Social Environment Impacts
- Minor inconveniences to residential home owners nearby during construction.

Economic Environment
- Second least expensive alignment ($2.47M).

Technical Environment
- May be further BMP requirements from TSW although limited as no in-water work.
- Close proximity to MTO bridge structure.

Mitigative Measures
Should Alignment No. 2 be implemented, the following measures would be taken to mitigate the negative impacts on the natural/social/economic environment:
- Potential MAM2-2 and MAS3-10 zone environmental mitigation.
- Start and end pits can be located outside of the wetland boundary or in wetland 15m from shoreline of river.
- No works within wetland boundary, drilling must occur under small area of wetland.
- Access to residential driveways will be maintained during construction.

Decision Matrix Results
Alignment No. 2 received a total score of 50.
Alignment No. 2A: River Crossing North Side of the Bridge  
(Crossing Highway 115, 160m east of Otonabee River)

The impacts (positive and negative) that this alignment is anticipated to have on the  
natural/social/economic/technical environment includes the following:

Natural Environment Impacts
- Minor impact to wetland.
- No impact to river bed.
- Tree removal within portion of alignment north of 115 bridge.
- Habitat for turtles not impacted.
- Potential habitat for SAR present (Eastern meadowlark).
- Temporary impact to river riparian habitat.
- Impact to tributary riparian and in-stream habitat.

Social Environment Impacts
- Minor inconveniences to residential home owners nearby during construction.

Economic Environment
- Second most expensive alignment ($2.57M).

Technical Environment
- May be further BMP requirements from TSW although limited as no in-water work.
- May require DFO authorization.

Mitigative Measures
Should Alignment No. 2A be implemented, the following measures will be taken to  
mitigate the negative impacts on the natural/social/economic environment:
- MAM2-2 zone environmental mitigation.
- Start and end pits can be located outside of the wetland boundary.
- No works within wetland boundary, drilling must occur under small area of  
wetland.
- Access to residential driveways will be maintained during construction.

Decision Matrix Results
- Alignment No. 2A received a total score of 39.
Alignment No. 4: River Crossing South Side of Bridge
(Highway 115 Crossing Under Bridge on West Bank)

The impacts (positive and negative) that this alignment is anticipated to have on the natural/social/economic/technical environment includes the following:

**Natural Environment Impacts**
- No impact to wetland, works located further south of wetland.
- No impact to river bed.
- Limited tree removal on both banks of river within construction envelope.
- Habitat for turtles not impacted.
- No potential habitat for SAR in upland.
- Temporary impact to river riparian habitat.
- Potential impact to walleye spawning.

**Social Environment Impacts**
- Minor inconveniences to residential home owners nearby during construction.

**Economic Environment Impacts**
- Most expensive alignment ($2.7M).

**Technical Environment Impacts**
- May be further BMP requirements from TSW although limited as no in-water work.
- Close proximity to Hydro easement and existing gasmain.
- Close proximity to MTO bridge structure.

**Mitigative Measures**
Should Alignment No. 4 be implemented, the following measures will be taken to mitigate the negative impacts on the natural/social/economic environment:
- No environmental mitigation identified.
- Start and end pits can be located outside of the river bed boundaries.
- Access to residential driveways will be maintained during construction.

**Decision Matrix Results**
- Alignment No. 4 received a total score of 45.
3.4 Preliminary Preferred Solution

The resulting aggregate sum of the assessment matrix was 63, 51, 50, 39, and 45 for Alignment 1, 1A, 2, 2A, and 4, respectively. Based on the detailed analysis and the results of the decision matrix, it can be concluded that the preliminary preferred solution is **Alternative No. 1 - River Crossing at Northern Limit of MTO Property.**

The chosen alignment was found to be the most economically and technically appropriate, has rectifiable impacts to the natural environment and has crossings of MTO structures in suitable locations.

The preferred alignment addresses the problem statement by providing a route for the proposed 600mm diameter trunk watermain between Johnston Drive and Guthrie Drive while minimizing impacts to the natural environment, MTO structures, and cost.

3.4.1 Overview of Preliminary Preferred Alignment

The following sections are intended to document the selection of the preferred alignment and provide an overview of impacts and associated mitigation measures on the natural, social, technical and economic environment. A conceptual plan for the implementation of the preferred alternative is provided in the **Appendix D.**

Effects on the Social Environment

The majority of the construction will take place within the MTO right of way north of Highway 115, with little impact to Johnston Drive and Guthrie Drive.

Existing driveways and boulevards will be restored as part of the contract scope of work. At least one lane of traffic on all effected streets will be maintained at all times. Major disruptions will be advertised to local residents in advance where possible.

Effects on the Natural Environment

The effects on the natural environment will be limited to temporary impacts to the field and riparian communities. Those areas will be rehabilitated post construction.

The timing restrictions for construction include: no in-water works from March 15 to July 15 and no clearing of vegetation during the peak breeding bird season (May 1st - July 31st).

Through public feedback and discussions with the Trent Severn Waterway as well as the Environmental Consultant, it was noted that HDD was the preferred method of construction for the installation of the watermain.
Effects on the Technical Environment

Through public feedback and discussions with the Trent Severn Waterway, as well as the Environmental Consultant, it was noted that HDD was the preferred method of construction for the installation of the watermain.

The preferred alignment does not conflict with any existing utilities and crosses Highway 115 at suitable locations where future connections to the watermain will be easily made.

Effects on the Economic Environment

Alignment No. 1 is likely to cost the least amount to construct due to its distant proximity to Highway 115, the bridge structure, and existing utilities. With little road restoration required, the watermain should be constructed quickly and efficiently. The watermain will be easily accessible for maintenance and with minimal restoration costs.

4.0 Next Steps

4.1 Notice of Study Completion

This final step of the Schedule B EA process involves the selection or confirmation of the preferred solution to the problem, taking into consideration the input and comment received from the review agencies and the public and after further evaluation of the net environmental effects of the various alternatives.

To complete the Schedule B process, a Notice of Completion shall be submitted to the review agencies, as well as advertised to the public, and a period of 30 days shall be allowed for public comment and input. The Notice shall include notification of the provision to request a Part II Order.

4.2 Final 30 Day Review Period

Following advertisement of the Notice of Completion, a Project File detailing the planning process will be made available in hard copy for a 30 day review period. The Project File will include a copy of this Project Summary, as well as all correspondence, notices, and reports developed throughout the study.

If a concern cannot be resolved through discussions with the PUC, the person or party raising the objection may request the PUC to voluntarily elevate the project to a Schedule C or an individual environmental assessment. If the PUC declines, the person or party with the concern may pursue the matter during the 30 day review period by writing to the Minister of the Environment and requesting a Part II Order. If no request for an Order is received by the Minister within the review period, the PUC may develop the project based on the preferred solution and may proceed with the detailed design and preparation of the contract drawings and documents.
EXHIBIT A.2  MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the Municipal Class EA
### Project Information
- **D.M. Wills Project**: Otonabee River Watermain Crossing
- **D.M. Wills Project No.**: 2017
- **Project Location**: City of Peterborough
- **Prepared By**: J. Amrhein, P. Wils
- **Checked By**: A.T.
- **Date**: November, 2012

### Alignment Evaluation Matrix

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Alignment #1</th>
<th>Alignment #1A</th>
<th>Alignment #2</th>
<th>Alignment #2A</th>
<th>Alignment #4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact to Waterway Traffic</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Score</td>
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<td></td>
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</tr>
<tr>
<td>Impact on Neighbourhood During Construction</td>
<td>Least impact during construction.</td>
<td>Least impact during construction.</td>
<td>Significant disruption to Guthrie Drive.</td>
<td>Significant disruption to Guthrie Drive.</td>
<td>Greatest impact during construction</td>
</tr>
<tr>
<td>Score</td>
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</tr>
<tr>
<td>Rank</td>
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<tr>
<td>Impact to Archaeological and Cultural Heritage</td>
<td>None</td>
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<td>None</td>
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<td>2</td>
<td>2</td>
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<tr>
<td>Social Environment Total</td>
<td>17</td>
<td>15</td>
<td>13</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td><strong>Natural Environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact on Terrestrial Habitat and Species</td>
<td>Potential habitat for meadowlark in field.</td>
<td>Habitat for turtles not impacted.</td>
<td>Habitat for turtles not impacted.</td>
<td>Habitat for turtles not impacted.</td>
<td>Habitat for turtles not impacted.</td>
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<tr>
<td>Score</td>
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</tr>
<tr>
<td>Impact on Aquatic Habitat and Species</td>
<td>No impact to river bed.</td>
<td>No impact to river bed.</td>
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<td>No impact to river bed.</td>
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<tr>
<td>Natural Environment Total</td>
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<td>12</td>
<td>12</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td><strong>Economic and Technical</strong></td>
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<tr>
<td>Score</td>
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<td>15</td>
<td>12</td>
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<tr>
<td>Impact to Existing Infrastructure including MTO Structures</td>
<td>Least impact to existing roadways.</td>
<td>Minimal impact to existing roadways.</td>
<td>High impact to Guthrie Drive.</td>
<td>Moderate impact to Guthrie Drive.</td>
<td>Greatest impact to existing roadways.</td>
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<tr>
<td>Impact to Future Trunk Servicing Corridor</td>
<td>Preferred alignment to tie-in to Cold Springs Secondary Plan and SouthPark Drive looped feed.</td>
<td>Preferred alignment to tie-in to Cold Springs Secondary Plan.</td>
<td>Alignment does not provide opportunity for connection to South Park Drive.</td>
<td>Alignment does not provide opportunity for connection to South Park Drive.</td>
<td>Alignment does not provide opportunity for connection to South Park Drive.</td>
</tr>
<tr>
<td>Score</td>
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<tr>
<td>Score</td>
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<tr>
<td>Agency Environmental Mitigation/Approval Costs</td>
<td>CUM-1 zone environmental mitigation required.</td>
<td>CUM-1 zone environmental mitigation required.</td>
<td>Potential MAN2-2 and MASS 10 zone environmental mitigation.</td>
<td>MAN2-2 zone environmental mitigation.</td>
<td>No environmental mitigation identified.</td>
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<tr>
<td>Score</td>
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<tr>
<td>Economic &amp; Technical Total</td>
<td>32</td>
<td>24</td>
<td>19</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Overall Total and Preferred Alternative</td>
<td>63</td>
<td>51</td>
<td>50</td>
<td>39</td>
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