

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JANUARY 9, 2018
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER
SUBJECT:	APPOINTMENT OF CONSULTING ENGINEER MUD CREEK FLOOD REDUCTION AND REHABILITATION PHASE 1 DETAILED DESIGN

RECOMMENDATION

That, on the recommendation of the Managing Director, Environmental & Engineering Services & City Engineer, the following actions **BE TAKEN** with respect to the appointment of a consulting engineer for the Mud Creek Flood Reduction and Rehabilitation Phase 1 Detailed Design project:

- (a) CH2M HILL Canada Limited **BE APPOINTED** consulting engineers in accordance with the estimate, on file, at an upset amount of \$1,080,497 (including contingency and provisional allowances), excluding HST, in accordance with Section 15.2(e) of the City of London’s Procurement of Goods and Services Policy;
- (b) the financing for the project **BE APPROVED** in accordance with the “Sources of Financing Report” attached hereto as Appendix ‘A’;
- (c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this project;
- (d) the approvals given herein **BE CONDITIONAL** upon the Corporation entering into a formal contract; and,
- (e) the Mayor and City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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Civic Works Committee – August 25, 2014 – Mud Creek Municipal Class Environmental Assessment

Civic Works Committee – November 3, 2015 – Appointment of Consulting Engineers for Design and Construction of Stormwater Management Facilities

Civic Works Committee – October 4, 2016 – Mud Creek Municipal Class Environmental Assessment Study – Status Update and Scope Change

2015 – 2019 STRATEGIC PLAN

The following report supports the 2015 – 2019 Strategic Plan through the strategic focus areas of Building a Sustainable City including:

- Robust Infrastructure 1B – Manage and improve water, wastewater, and stormwater infrastructure; and
- Responsible Growth 5B – Build new transportation, water, wastewater and stormwater infrastructure as London grows.

BACKGROUND

Purpose

This report recommends the appointment of a qualified engineering consultant to complete engineering services for the Mud Creek Flood Reduction and Rehabilitation Phase 1 detailed design project and advancement of Phase 2 and Phase 3 preliminary design activities (“Location Map” provided in Appendix ‘B’). This project is required to allow 54 hectares of prime infill and intensification lands to develop and to reduce existing flooding within the Oxford Street and Proudfoot Lane areas.

Context

The Mud Creek subwatershed is a highly urbanized subwatershed with a history of frequent flooding along Oxford Street and Proudfoot Lane and adjacent private properties. Oxford Street is designated as a future Rapid Transit corridor in the London Plan. Statistically, the Oxford Street culvert currently floods every 1 in 1.2 years. Ministry of Transportation standards dictate that a 1 in 50 year design model event should not over-top an arterial roads.

Mud Creek has been highly altered with channel realignments to accommodate agriculture and development over the past 100 years. These alterations include channel straightening to accommodate the construction of a sanitary sewer, the enclosure of the creek outlet to the Thames River, and realignment along Oxford Street.

The areas north of the Canadian National Railway (CNR) culvert provide infill and intensification opportunities. The London Plan identifies portions of the area under the Transit Corridor and Neighbourhoods place types.

DISCUSSION

The Mud Creek EA, which was finalized in September 2017, identified a preferred design alternative that reduced the floodplain elevation of the east branch of the subwatershed for all properties while balancing the flooding concerns downstream at the Thames River. The Mud Creek EA preferred design alternative relies on the replacement of the CNR culvert, replacement of the Oxford Street culvert, replacement of the Proudfoot Lane culvert, channel realignment, channel deepening and widening to control flooding, channel naturalization, and environmental management plans to improve ecological conditions. The current total estimated cost for the Mud Creek Flood Reduction and Rehabilitation project is \$14,200,000. Approximately 97% is supported by Development Charge growth funding.

The Mud Creek EA recommended phasing the construction of the project starting at the downstream end of the creek moving upstream as follows:

- Phase 1 – CNR culvert and stream work from CNR culvert to Wonderland Road;
- Phase 2 – Upstream of CNR culvert to Proudfoot Lane culvert (including Proudfoot Lane culvert); and
- Phase 3 – Stream realignment from Proudfoot Lane culvert to Oxford Street culvert (including Oxford Street culvert).

A figure highlighting the major components of the overall improvements is included as Appendix ‘B’ “Location Map”.

This preferred design alternative will, once constructed, provide a significant reduction in the flooding currently experienced in the area and provide environmental enhancements throughout the Mud Creek corridor. The increased flow in the creek will

promote the natural transport of sediment loads and will result in a more stable stream environment. It will also provide for better riparian and aquatic habitats over the long term.

Construction Timing

The Mud Creek EA recommended that construction proceed in three phases. Fall through late winter is the preferred timeframe for the in-stream components due to low flows, generally favorable ground conditions, and less environmental disruption. Contrastingly, the construction of the CNR culvert should be avoided during the late winter and spring to reduce the risk of damage to the railway embankment in case of a major flood. The Oxford Street culvert and channel realignment downstream of Oxford Street to the confluence with the existing channel can be constructed during any season as long as the work is performed outside prescribed regulatory environmental protection periods.

Proposed construction timing for the overall project is:

- Phase 1 – CNR culvert and stream work from CNR culvert to Wonderland Road;
 - Construction start date Q2 – 2019
- Phase 2 – Upstream of CNR culvert to Proudfoot Lane culvert (including Proudfoot Lane culvert);
 - Construction start date Q1 – 2020
- Phase 3 – Stream realignment from Proudfoot Lane culvert to Oxford Street culvert (including Oxford Street culvert).
 - Construction start date Q4 – 2020

There may be schedule enhancements identified as the overall project progresses. Environmental Engineering Services will look to incorporate these enhancements where possible.

Phase 1 Detailed Design Scope of Work

The Phase 1 detailed design scope of work includes:

- Final design of a new CNR culvert;
- Final design of the stream channel from the new CNR culvert to Wonderland Road;
- Final tender documents and drawings for the new CNR culvert and stream channel from the new CNR culvert to Wonderland Road;
- Topographic survey across all portions of the project area;
- Stage 2 Archaeology Assessment conducted across all portions of the project area;
- 60% design of Oxford Street culvert; and
- 30% design of stream work within Phase 2 and Phase 3 limits.

The final design of the new CNR culvert requires specialized engineering expertise and comprehensive coordination with the CNR and other stakeholders. The culvert will be located in an existing railway embankment that is approximately 20 meters in height and will require detailed geotechnical investigations, technical expertise in trenchless technology (tunneling) and specialized construction experience. The Mud Creek EA provides a preliminary diameter of 3.0 m for the new CNR culvert.

The final design of the stream channel from the new CNR culvert to Wonderland Road requires expertise in geomorphology and integration with the environment including terrestrial, aquatic and civil infrastructure. The stream channel design will provide specific details of cross sections, pools, riffle, substrate composition, bank treatments, and other construction and integration details.

In addition to the final design of the new CNR culvert and stream work from the new CNR culvert to Wonderland Road, the consultant will be undertaking additional activities in advance of the Phase 2 and Phase 3 design. The 60% design of the Oxford Street culvert is being undertaken to provide coordination with the ongoing Rapid Transit project, and to ensure that no design conflicts are encountered at a later date. The Mud Creek EA provides a preliminary flow conveyance opening sizing of 12.0 m wide by 3.0 m high for this structure. The 30% design of the stream work within the Phase 2 and Phase 3 limits is being undertaken to delineate the extent of project grading impacts to help inform the overall project environmental compensation plan, and to ensure that no design conflicts are encountered at a later date.

Consulting Team

The November 3, 2015 CWC report undertook the award of several stormwater management projects following a two-stage Request for Expression of Interest / Request for Qualification and Request for Proposal process in accordance with Section 15.2(e) of the Procurement of Goods and Services Policy. CH2M HILL Canada Limited participated in the two stage process and was identified for future recommendation of work for the detailed design and tender of the Mud Creek project based on their extensive background knowledge and requirement for technical expertise with trenchless technologies and stream remediation.

CH2M HILL Canada Limited has an experienced project team that has a clear understanding of the project scope and has proven experience within the Mud Creek east branch study area, including the completion of the Mud Creek EA. CH2M HILL Canada Limited and their sub-consultants have also completed similar projects in the past that encompass the main activities included within this project such as:

- Project engagement with rail authorities;
 - The consultant has worked on multiple projects for Metrolinx (Bramalea and Kipling GO Stations) and other municipal clients where project coordination with rail authorities was required (Region of Peel, Hanlan Watermain project detailed below).
- Trenchless Technology (Tunneling)
 - The consultant has completed the installation of a 2400 mm watermain as part of the Hanlan Watermain project for Region of Peel. Large portions of the project necessitated installation of watermain using tunneling. The tunnel was excavated using a 3.7 m diameter open face rock boring machine. The tunneling include a section under a Canadian Pacific Railway line bridge.
- Stream rehabilitation and environmental management
 - The consultant is currently engaged by Waterfront Toronto for the Port Lands Flood Protection project. The project goal is to provide flood protection and naturalization of the Don River mouth through the Port Lands to revitalize a 400 ha brownfield area and develop new urban spaces. The sub-consultant (Matrix Solutions Inc.) also has extensive experience in fluvial geomorphology, aquatic ecology, terrestrial ecology and landscape architecture.

In accordance with Section 15.2(e) of the Procurement of Goods and Services Policy, Civic Administration is recommending that CH2M HILL Canada Limited be authorized to carry out the Mud Creek Flood Reduction and Rehabilitation Phase 1 Detailed Design project.

Further appointments are anticipated for this project and will include the construction administration and detailed design of future phases based on continued satisfactory completion of work. These assignments are anticipated to proceed as under 15.2(g) of

the Procurement of Goods and Services Policy which speaks to extending an existing project assignment that is in the financial advantage of the City due to the fact that such a consultant has specific knowledge of the project and has undertaken work for which duplication would be required if another firm were to be selected.

CONCLUSION

CH2M HILL Canada Limited has demonstrated an understanding of City requirements and knowledge of this project. CH2M HILL Canada Limited and their sub-consultants have also completed similar projects in the past that encompass the main activities included within this project such as: project engagement with rail authorities, trenchless technology (tunneling), stream rehabilitation and environmental management. Therefore, it is recommended CH2M HILL Canada Limited be appointed as the consulting engineer to carry out the Mud Creek Flood Reduction and Rehabilitation Phase 1 Detailed Design project in the total amount of \$1,080,497 (including contingency and provisional allowances), excluding HST.

This report was prepared by David Gough, P.Eng., Acting Division Manager, Stormwater Engineering.

SUBMITTED BY:	REVIEWED AND CONCURRED BY:
DAVID GOUGH, P.ENG. ACTING DIVISION MANAGER, STORMWATER ENGINEERING	SCOTT MATHERS, MPA, P. ENG. DIRECTOR, WATER AND WASTEWATER
RECOMMENDED BY:	
KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR ENVIRONMENTAL & ENGINEERING SERVICES AND CITY ENGINEER	

Attach: Appendix 'A' – Sources of Financing
 Appendix 'B' – Location Map

cc. John Freeman, Manager, Purchasing and Supply
 Gary McDonald, Budget Analyst
 CH2M HILL Canada Limited