

# Memo

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**To:** David Sajecki, Brook McIlroy  
**From:** Matthew Senior and Ron Scheckenberger, Amec Foster Wheeler  
**Date:** September 14, 2017  
**File:** TPB178008  
**Re:** **Scoped EIS and Scoped SWM Assessment – Mobility Hubs  
Project Status Update – Downtown Mobility Hub  
City of Burlington**

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## Introduction

A scoped Environmental Impact Study (EIS) is required for each of the City's four (4) Mobility Hubs as part of the overall planning study for the Burlington Mobility Hubs. The purpose of each scoped EIS is to inventory existing conditions of the natural environment (e.g., woodlands, wetlands, valleys, wildlife habitat, watercourses), identify the potential impacts that the proposed Area Specific Plans may have on these features, and develop high-level mitigation plans, where appropriate, focusing on appropriately minimizing or eliminating impacts. The approach for the scoped EIS work focuses on two key objectives:

- i. Identifying lands which are not suitable for development based on their significance or related constraints; and,
- ii. Identifying opportunities for ecological restoration, as a number of the lands around the hub areas are heavily urbanized.

The focus of the current Project Status Update is on the Downtown Mobility Hub, which is considered to be the highest priority hub based on ongoing development pressures.

A summary of the status/findings of the natural systems assessment (as completed by Dillon Consulting) for the Downtown Mobility Hub has been attached. This memorandum provides a summary of Amec Foster Wheeler's work related to the on-going work related to the assessment of the Downtown Mobility Hub, as well as the related work for the Burlington Mobility Hub.

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### **Downtown Mobility Hub**

Amec Foster Wheeler has been proceeding with the generation of new hydrologic and hydraulic models for the Downtown Mobility Hub, as none currently exist (Lower Hager and Lower Rambo Creeks). To summarize:

- New PCSWMM model has been completed (combined hydrology/hydraulics)
  - Provides the simulated flows for trunk storm sewers, roadways, and creeks for 100-year and Regional Storm (Hurricane Hazel) events
  - Assesses hydraulics for all systems (maximum depths and velocities for trunk storm sewers, roadways, creeks and culverts/enclosures)
- New HEC-GeoRAS model is in process of being finalized for creek hydraulics
  - Approved hydraulics for open watercourses as per CH requirements
  - Provides simulated flood depths and extents for 100-year and Regional Storm (Hurricane Hazel) events
  - Note: to be compared against results from PCSWMM modelling to determine which yields the most conservative results

The next steps for the Downtown Mobility Hub drainage assessment work include:

- Develop riverine (creek) floodplain mapping for the Lower Hager and Lower Rambo Creeks based on the results of the HEC-GeoRAS model for the 100-year and Regional Storm (Hurricane Hazel) events
- Assess overland flow locations of concern from the PCSWMM modelling (roadways) for the 100-year and Regional Storm (Hurricane Hazel) events and develop risk mapping
- Prepare summary reporting outlining methodology and results, including other related graphics (drainage boundaries, etcetera)
- Incorporate potential spill flows from the Burlington Mobility Hub (refer to following section)

### **Burlington Mobility Hub**

As you are aware, a meeting was held between the City of Burlington, Conservation Halton, and Amec Foster Wheeler on August 23, 2017. A memorandum was presented at the meeting which outlined the proposed technical methodology to address concerns related to spills from the Hager-Rambo Diversion channel under the Regional Storm (Hurricane Hazel) event, and its potential impacts to the Downtown Mobility Hub. Comments were received in response to the proposed methodology from Conservation Halton on September 12, 2017. While some technical issues were raised, in general Conservation Halton did not indicate any fundamental concerns with the proposed approach. Based on this, and the direction from City staff, Amec Foster Wheeler is proceeding with the technical analyses accordingly. To summarize the ongoing work:

- Updating and verifying the existing hydrologic model for the Hager-Rambo diversion channel
  - Confirm updated flow rates under various conditions cited by Conservation Halton
  - Assess theoretical impact of removal of upstream flood control facilities (assessment only - not to be used as basis for decision-making, as per direction from City staff)

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- Updating the hydraulic (creek) model of the Hager-Rambo diversion channel system (HEC-GeoRAS)
  - Incorporating lateral structures within the model to quantify the magnitude (flow rates) of spill from the Hager-Rambo diversion channel during the Regional Storm
  - Updating and extending the extent of the model for the West Rambo Creek, which runs through the Burlington Mobility Hub (modelling is currently only available for the section adjacent to the Walmart plaza, not upstream of the railway tracks)
  - Developing updated floodplain mapping for Burlington Mobility Hub, and assessing areas of higher risk related to proposed development
- Separately, developing a two-dimensional (2D) hydraulic model downstream of the Hager-Rambo diversion channel
  - Assess spill pathways; areas at risk of overland flooding
  - Determine ultimate impact to Downtown Mobility Hub
  - Incorporate spill flows for Regional Storm into hydraulic modelling for Lower Hager and Lower Rambo creeks, and verify resulting impact to estimated floodplains (and associated proposed developments)

### **Closure and Next Steps**

Based on the preceding and attached, Amec Foster Wheeler is advancing the hydrologic/hydraulic modelling for both the Downtown and Burlington Mobility Hubs, using the direction offered by the City and Conservation Halton at the meeting of August 23, 2017 and the correspondence from Conservation Halton of September 12, 2017.

Given the current study focus, a priority will be given to assessing the Downtown Mobility hub first, followed by the impacts of spill from the Hager-Rambo Diversion Channel. Floodplain mapping for the open channels within the Hager-Rambo system (i.e. upper Hager and upper Rambo creeks) would be a relatively lower priority.

Reporting and associated drawings will be prepared for the planned TAC meeting on September 27, 2017. This material will also be used to support any questions or discussion at the subsequent City Council workshop on September 28, 2017.

Assessment of the other two (2) mobility hubs (Aldershot and Appleby) is also ongoing and would be completed following the work for the Downtown and Burlington Mobility Hubs.

Please do not hesitate to contact us should you wish to discuss further.

/Attached      Summary of Existing Conditions for Burlington Mobility Hub – Downtown Hub Station (Dillon Consulting, September 13, 2017)