



MTE Consultants

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February 21, 2024

MTE File No.: 54716-100

Laura Dewar
Supervisor, Development Planning
City of Cambridge
50 Dickson Street
Cambridge, ON N1R 5W8

Dear Laura:

RE: Peer Review of Preston Springs Preliminary Stormwater Management Report (Meritech, 2023)

MTE Consultants Inc. (MTE) was retained by the City of Cambridge to complete a Peer Review of the *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023).

The Preston Springs development (the Site) is 1.2 ha in area and is located at 134 and 144 Fountain Street North, 199 Abraham Street and 102 Fountain Street South, in the City of Cambridge. The Site was formerly the Preston Springs Hotel, with two single detached dwellings fronting Fountain Street, and a forested area to the west. The proposed development is three residential towers, ranging from 22 – 26 storeys, with commercial usage at the ground floor, 753 residential dwellings and underground parking. Site access will be off Fountain Street to the east and Abraham Street to the west. An amenity area is proposed to the west, adjacent to the Abraham Street single-family residential properties.

The *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023) was completed in support of Official Plan Amendment & Zoning By-Law Application OR 09/23 (OBA / ZBA). The Report aimed to demonstrate that the proposed stormwater management strategy will provide adequate water quantity control and water quality control for the proposed development, and that regulatory requirements will be achieved.

Intent of Peer Review

During the Peer Review MTE focused on the overall designed stormwater management strategy to ensure adequate consideration was given to Site surface water quantity and water quality control. Any design components requiring further clarification / detail to satisfy the stormwater management considerations typically expected during the OBA / ZBA design stage were noted.

The overall hydrologic modelling procedure was reviewed to ensure appropriate catchment parameterization and routing. The connection to downstream storm sewers were reviewed to ensure the downstream system has capacity for the development. The *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023) was assessed against the *City of Cambridge Engineering Standards and Development Manual* (City of Cambridge, September 2023), *Development Guidelines and Supplemental Specifications for Municipal Services* (Region of Waterloo, February 2022) and the *Stormwater Management Planning and Design Manual* (MOE, 2003).

To complete this Peer Review, MTE was provided with a copy of the *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023). This Peer Review represents the opinion of MTE and is to be used by the City of Cambridge to decide whether *Preston Springs Stormwater Management Report* (Meritech, 2023) was completed with adequate consideration of the appropriate technical standards and requirements. This Peer Review is for consideration purposes and is not intended to modify the Preston Springs stormwater management design.

Peer Review Comments

With respect to the Peer Review of the *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023), MTE offers the following comments for consideration:

Model Parameterization

- The pre-development minor / major target flows for the Site were established considering one outlet: the Fountain Street South storm sewer and major overland flow route south on Fountain Street South. Based on the *Preston Springs Concept Plan* and review of topography from the GRCA website, there are two minor / major flow outlets for the Site: 1) the existing 250 mm diameter storm sewer on King Street West with overland flow east on King Street West and 2) the existing 600 mm diameter storm sewer on Fountain Street South with overland flow south on Fountain Street South. Modelling the Site with one runoff outlet produced falsely high target flows that are not representative of the actual capacity of the downstream municipal infrastructure. Therefore, it is recommended that the pre-development catchments and pre-development hydrologic model be revised to consider the two separate outlets in existing conditions, such that the established target runoff flows may be re-established.
- The hydrologic parameters in the hydrologic model should be reviewed and revised as necessary. Specifically, the pre-development catchments were modelled with a pervious CN of 75, which does not represent the existing conditions forested area, as per Design Chart 1.09 of the *MTO Drainage Management Manual* (MTO, 1997). The slope of catchment 702 should be reviewed to ensure accurate representation of the proposed (steep) topography.
- The delineation of catchment areas used in the hydrologic model should be reviewed and revised, as necessary. Specifically, the extents of catchments 501 and 703 should be reviewed to ensure the entire proposed roof-top area is included in catchment 703.
- In the pre-development hydrologic model, the external catchment to the Site is 201, and in the post-development hydrologic model this external catchment is discretized into catchments 601 and 602. The discretization and parametrization of modelled external catchments should remain consistent between the pre- and post-development hydrologic models as in reality these external areas are not impacted by the proposed development. Flow routing would therefore be consistent in pre- and post-development conditions over the external drainage area.

Flow Routing

- It is noted that the minor and major flow (up to and including the 100-year storm event) over the rear amenity area is directed to the on-site catchbasins, with the events more than the 100-year storm directed to on-site swales and to the right-of way. Consideration should be given to overland flow routing during an emergency storm event and if the catchbasins are clogged. The grading and location of the on-Site swales should be reviewed and confirmed on the Preston Springs Concept Plan. The tie-in of these

proposed swales with the neighbouring properties should be reviewed to confirm that overland flow will not be directed onto neighbouring properties.

- The *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023) notes that on-site geotechnical and groundwater conditions were being investigated. It is recommended at this stage that the anticipated quantity of groundwater flow into the on-Site storm sewer system be confirmed, such that the interaction of the designed infrastructure with the surrounding environment be understood.

Water Quality Control

- The *Preston Springs Preliminary Stormwater Management Report* (Meritech, 2023) notes that the runoff on-site over the roof-top and amenity area is clean as it is not exposed to vehicular traffic and concludes that water quality control is not necessary. However, a portion of the Site includes driveway access to Fountain Street South and Abraham Street. It is recommended that water quality control over these two driveway drainage areas be considered.

Water Quantity Control

- The stormwater management strategy outlines inclusion of dead storage within the on-site water quantity control tank. The rationale and calculations for this dead storage volume are not provided. The rationale of dead storage inclusion in the stormwater management strategy should be clarified.
- It is noted that the dead storage will be pumped to the Fountain Street South after a rainfall event. However, pumping of dead storage requires more intensive infrastructure (electrical / mechanical components and a back-up system). If multiple storm events occur subsequently, or if the pump malfunctions, there would be a loss of available active storage and possibly back-flow of excess runoff to the Fountain Street South storm sewer. The implementation of a pump system should be reconsidered, and if deemed necessary, additional detail should be provided in the report.
- In the event of a major storm event the runoff in the Fountain Street South storm sewer may backflow into the water quantity control storage tank, as the tank outlet is at a similar elevation to the downstream storm sewer. In that event, the water quantity storage tank would have less capacity for active storage. Consideration should be given to raising the on-site water quantity control storage tank to mitigate backwater effects.

Recommendation

Based on our Peer Review, MTE recommends that a 2nd submission of *Preston Springs Preliminary Stormwater Management Report* be completed to consider the above-noted comments and refine / clarify the designed Preston Springs stormwater management strategy.

Yours truly,

MTE Consultants Inc.

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