



## Terms of Reference:

# Stormwater Management Report



### Study Description

The purpose of a Stormwater Management (SWM) Report is to identify the rate, quantity and quality impacts of stormwater discharge on existing infrastructure and/or downstream receivers, due to a change in existing conditions.

The SWM Report will also determine improvements to any private and/or public municipal servicing infrastructure to support a proposed level of development, where applicable and provide strategies for reducing or eliminating negative impacts through mitigation measures.

The report will evaluate the effects of the proposed development on the natural environment due to a change in peak flows, sediment loading and erosion and any other relevant impacts such as temperature and quality of the stormwater discharge. The management of stormwater is essential to the continued health of downstream receivers such as lakes, streams, ponds, fisheries, and habitats that make up our watershed.

A SWM Report is required to provide City staff with the necessary information to evaluate the effects of the proposed development on downstream stormwater and drainage infrastructure as well as the local hydrologic cycle and watershed. Promoting best practices in stormwater management is important to protect the watershed from excess erosion, fluctuation in flows, and flooding, while maintaining groundwater recharge and improving water quality.

### Purpose

The purpose of this Terms of Reference (“TOR”) is to establish clear expectations and requirements for the preparation of Stormwater Management Reports submitted to the City of Waterloo. Compliance with these guidelines will help to expedite review times and mitigate the need for further revisions and submissions. Failure to satisfy the requirements set out in this TOR may result in an application being deemed incomplete. If an application is deemed incomplete it will be returned to the applicant to satisfy the necessary submission requirements.

### When is it Required?

A Stormwater Management Report may be requested any time a proposed development will cause a change in existing conditions,



typically through an increase in imperviousness or a change of land use. A Stormwater Management Report is required for the following Planning Act applications:

- Official Plan Amendment
- Zoning By-law Amendment
- Draft Plan of Subdivision/Condominium
- Final Plan of Subdivision/Condominium
- Site Plan Control
- Any other development application as deemed appropriate by the City's Director of Engineering Services.

The need for a Stormwater Management Report as part of a complete application will be identified as part of the pre-application consultation review. In the instance where a planning application being advanced does not have a mandatory pre-application consultation process (e.g., Minor Variance), the applicant is encouraged to contact the City's Engineering Services Division to discuss the nature of the proposal and to determine if a Stormwater Management Report is required. Depending on the type of application and size of the development, the level of detail for the SWM Report will vary. For example, a report for a Plan of Subdivision will include more details than a report for a Zoning By-Law Amendment or Official Plan Amendment. The requisite information to be contained in the Functional Servicing report will be determined on a case-by-case basis at the sole discretion of the City, in consultation with any applicable external agencies through the pre-consultation process. The applicant is encouraged to discuss the need and scope for a report and design assumptions of the proposed servicing schemes with Engineering Services staff prior to preparing the report. An Environmental Impact Study may also be required to address the impact of development on water resources features or functions on and off site.

## Qualified Persons

The SWM Report should be prepared by a qualified Professional Engineer who must be licensed by the Professional Engineers Ontario as required by the Professional Engineers Act and must be working under a Certificate of Authorization allowing them to provide engineering services to the public. The firm should also be a member in good standing of the Consulting Engineers of Ontario. The engineer must be qualified and competent to design the proposed works and must also be acceptable to the City's Director of Engineering Services.

The SWM Report shall be prepared by a Licensed Professional Engineer qualified in municipal or water resources engineering. The report must identify and be signed by the author(s) and, where prepared under the direction of a qualified professional, the signature of the reviewer of the report. The qualified professional that has signed the report shall take professional responsibility for its contents and the accuracy of the information contained therein.

## Applicable Legislation

The authority to require or request information or material to evaluate and make a decision on proposed planning applications is provided by the Ontario *Planning Act*, the Provincial Policy Statement, and City of Waterloo Official Plan Section 12.2.14 (“Complete Applications”).

The *Ontario Water Resources Act*, *Fisheries Act*, *Lakes and Rivers Improvement Act*, and the *Conservation Authority Act* contain policies and legislation that apply to guaranteeing proper stormwater management practices. The Ontario *Planning Act* as well as the Provincial Policy Statement also outline policies related to stormwater management.

The Stormwater Management Report must be based on established municipal engineering design parameters and principles, applicable guidelines (e.g., Ministry of Environment, Conservation and Parks Stormwater Management guidelines), regulations and by-laws, and infrastructure information available from the City. As per the City of Waterloo’s Official Plan Section 5.2.7: “Stormwater Management planning, engineering and design studies and reports in support of development will be conducted and submitted to the City in accordance with the City’s specifications, guidelines and objectives as may be defined in the City’s Development Manual or other applicable specifications.” Particular attention should be paid to the City of Waterloo’s Development Manual and the Region of Waterloo and Area Municipalities Design Guidelines and Supplemental Specifications for Municipal Services (DGSSMS), and the requirements of the Grand River Conservation Authority.

## Report Contents

This TOR document sets out the minimum requirements that must be included in all reports, unless otherwise determined by City staff. The report must include sufficient details for City staff to determine the financial and infrastructure implications of servicing the proposed development. The submission must include reports, plans (e.g., storm servicing, pre and post development catchment areas, etc.),

computer modelling results and design calculations relating to the design. More specific scoping of the Stormwater Management Report may be identified by appropriate staff during the pre-application consultation process.

**A. Introduction**

- Site Background
- Reference Reports and Drawings

**B. Existing Information**

- Existing Topography and Land Use
- Geotechnical Conditions
- Environmental Impact Study
- Existing Storm Servicing
- Existing Stormwater Management Features
- Existing Subwatershed Studies
- Regulatory Flood Elevations (as applicable)

**C. Source Water Protection**

**D. Storm Servicing**

- Local Servicing
- Major Overland Flow
- Relevant Conveyance System
- Regulated Drainage Feature (If applicable)

**E. Stormwater Management**

- Stormwater Management Design Criteria
- Hydrologic Modelling
- Existing Conditions
- Proposed Conditions
- Design of On-Site Stormwater Controls
- Stormwater Management Preliminary Sizing
- Water Quality Control

- Water Quantity (Peak Flow) Control
- Water Balance
- LID Features

#### **F. Maintenance and Monitoring Requirements**

#### **G. Conclusions**

#### **H. Relevant Tables, Figures, Appendices, Modelling, Calculations, Drawings, Etc.**

The Stormwater Management Report can be combined with the Functional Servicing Report as long as all required contents are included.

Certain developments may require additional studies, such as a Fluvial Geomorphological Assessment and erosion thresholds, one-dimensional or two-dimensional hydraulic assessments for water bodies and/or reviews of safe access and egress in flood conditions. These elements may be discussed as part of the SWM Report, however, the terms of reference for the additional studies may require prior approval by the City and the Grand River Conservation Authority.

### **Additional Information**

*Note 1:*

If City staff consider the submitted Stormwater Management Report to be incomplete, unsatisfactory, inconsistent, insufficient, authored by an unqualified individual, or if it fails to satisfy the requirements set out in this TOR in any other manner, the associated development application may be deemed incomplete and returned to the applicant.

*Note 2:*

Deeming an application complete does not guarantee that the contents of the study are acceptable to City staff and/or that the application will be approved.

*Note 3:*

If a request for a Stormwater Management Report is not made at an earlier stage in the development process, this does not preclude the City from requesting a Stormwater Management Report at a later stage. Once an application has been deemed “complete”, the City may require additional information, reports, and/or studies following

a more detailed review to assess the implications of an application for approval.

*Note 4:*

The City of Waterloo is committed to complying with the Accessibility for Ontarians with Disabilities Act (AODA). In our everyday work with businesses institutions, and community partners we anticipate the same commitment to AODA compliance. Therefore, the Stormwater Management Report must be AODA compliant and must meet the current provincial standard for compliance.

*Note 5:*

The City reserves the right to request an updated study, or an addendum thereto, should staff determine that changes in the development proposal or changes to legislation warrant further/modified planning analysis.

*Note 6:*

City staff reserve the right to require a peer review of submitted materials by an appropriate agency or qualified professional, the cost of which will be borne by the applicant.

*Note 7:*

Documents and all related information submitted to the City as part of a complete development application are considered public documents once submitted.

*Note 8:*

The Stormwater Management Report shall be submitted in conjunction with the applicable development application(s), unless otherwise agreed to by the City.

*Note 9:*

This Terms of Reference document is intended to be used for guideline purposes only, and will be used to provide technical direction throughout the planning and development process. Completion of a report in alignment with the requirements of this Terms of Reference will not guarantee approval of the development application in question.

*Note 10:*

This TOR is relevant at the time of publishing and will be updated as necessary to reflect current policy, best practices, and accepted



standards. It is the applicant's responsibility to ensure the report is prepared in accordance with the most recent version of the TOR issued by the City.

*This Terms of Reference was prepared by a qualified external consulting firm. For clarification for any information contained within this document, please contact the City of Waterloo staff assigned to the pre-consultation process.*



## Stormwater Management Report Submission Requirements and Checklist

This checklist can be completed by the qualified Professional that prepared the SWM Report. Use of the form by the City of Waterloo is not to be construed as verification of engineering/servicing content.

<b>Stormwater Management Report Submission Requirements and Checklist</b>		
<b>A. Introduction</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Site Background (review of existing conditions, site location, historical uses etc.)		
Reference Reports and Drawings (any historical information relied upon)		
<b>B. Existing Information</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Existing Topography and Land Use (review existing drainage patterns, major overland flow routes, existing outlets, etc.)		
Geotechnical and Hydrogeological Conditions (provide an overview as applicable to servicing and stormwater management)		
Environmental Features (review proximity to environmental features such as wetlands, woodlots, creeks and/or other water bodies etc.) and summary of an Environmental Impact Study (if required)		
Existing Storm Servicing		
Existing Stormwater Management on site		
Existing Subwatershed Studies		
Regulatory Flood Elevations as applicable.		
<b>C. Source Water Protection</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Provide relevant verbiage discussing any water quality or water quantity source water protection that may be required. Specifically discuss the need for enhanced sewer construction, prohibition on stormwater management in certain areas of the site, requirements or prohibitions related to infiltration of stormwater or other measures required for meeting source protection requirements for the development.		
<b>D. Storm Servicing</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Describe the local servicing strategy for the development including any relevant design calculations.		
Define the major overland flow route as well as the relevant conveyance system.		
Describe the downstream receivers for the site, including the immediate receiver (e.g., drainage		





<b>Stormwater Management Report Submission Requirements and Checklist</b>		
feature or municipal infrastructure)		
<b>E. Stormwater Management</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Provide an overview of the proposed Stormwater Management Design Criteria for the site.		
Quantify the site in both existing and proposed conditions and explain any hydrologic modelling that was completed for the development.		
Describe the design and provide sizing of any on-site stormwater controls.		
Express how the Water Quality Control requirements are being met for the proposed development.		
Express how the Rate (Peak Flow) Control requirements are being met for the proposed development.		
Express requirements for Water Quantity and Water Balance and how the development achieves these objectives.		
Review proposed Low Impact Development features, specifically their design criteria and parameters, functional objectives and how they have been incorporated into the design.		
<b>F. Maintenance and Monitoring</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Identify on-going maintenance requirements to ensure that the functionality of the stormwater management features is maintained.		
Identify measures implemented to allow for monitoring quantity and quality of discharge, and any monitoring requirements proposed/imposed by the Authorities Having Jurisdiction.		
<b>G. Conclusions</b>	<b>Included in SWM Report (reference page number)</b>	<b>Report includes this information (City Staff Check)</b>
Summarize the contents of the report and identify any limitations.		

