Storm Water Management Report/Plan and/or update to an existing Storm Water Management Plan

PURPOSE:

This document provides guidance for the completion of a Storm Water Management Report/Plan and/or update to an existing Storm Water Management Plan, hereafter referred to as a Stormwater Management Report, which may be required for the submission of an application under the *Planning Act.* All Stormwater Management Reports shall follow the requirements referenced in this document.

A Stormwater Management Report provides information for a stand-alone document or can be prepared in conjunction with a Functional Servicing Report (FSR) for a proposed land use change or development. The Stormwater Management Report is an evaluation of the impacts a proposed development will have on existing storm infrastructure and/or the surrounding area.

The Stormwater Management Report should identify any necessary improvements to private and/or public servicing infrastructure to support the proposal and provide strategies for reducing negative impacts through mitigation measures.

A Stormwater Management Report is required to evaluate and address the impacts of stormwater runoff from a proposed development. The report is to highlight the Stormwater Management criteria and objectives for the proposed development and demonstrate that the proposed design will meet respective criteria and not impact the surrounding area and existing infrastructure.

A Stormwater Management Report may be required as part of the following development application types:

- Official Plan Amendment;
- Zoning By-law Amendment;
- Draft Plan of Subdivision/Condominium;
- Site Plan Control;
- Consent to Sever; and,
- Minor Variance.

PREPARED BY:

A Stormwater Management Report must be prepared by a consultant registered as a Professional Engineer (P.Eng.) in the province of Ontario. The consultant must affix their stamp and seal and specifically identify the engineer who prepared the work. The consultant is expected to be experienced in civil/water resources.

CONTENTS:

A Stormwater Management Report is based on established municipal engineering design principles, applicable guidelines, and regulations, as well as information available from the City. The developer's consulting engineer should contact the City of Hamilton Engineering department to obtain the appropriate Stormwater Management Report criteria and objectives for the subject site if not readily available online.

In general, the Stormwater Management Report should include the following information:

- Introduction and Existing Conditions (site location, background information, existing surrounding infrastructure and receiving system, drainage patterns, land use, existing natural hazards or wetlands on or adjacent to the site, existence of Master Drainage Plan and/or Watershed/Subwatershed Plan (if applicable);
- Design Criteria (quantity control, quality control, erosion control and infiltration requirements);
- Proposed Conditions (land use, drainage patterns, overland flow route, design approach);

- Modelling Approach and Analysis:
  - Modelling software schematic;
  - Site and external drainage catchment area figures and descriptions;
  - Model parameters and how they were determined;
  - Stormwater management calculations;
  - Digital model files;
  - Storm sewer hydraulic analysis; and,
  - Stage storage discharge curves for stormwater management facilities;
- Existing and proposed grading pans including vertical and horizontal datums, source of topography, development limits and constraint boundaries;
- Proposed stormwater facility drawings;
- Results (post-development flow rate with and without stormwater management versus allowable flow rate;
- Impacts, upgrade requirements, storage requirements; and,
- Conclusions and Recommendations.

Information in the Stormwater Management Report should be consistent with the findings and recommendations of other studies, such as geotechnical, hydrogeological, fluvial geomorphic, erosion, and water balance assessments.

Other Permit Requirements:

Typically, the Stormwater Management Report is submitted to the City of Hamilton for review. As such, the Proponent is responsible for obtaining and submitting all other necessary permits and approvals from some or all of the following agencies:

- Conservation Authorities (Hamilton, Grand River, Niagara Peninsula, or Halton);
- Ontario Ministry of Transportation;
- Ontario Ministry of the Environment, Conservation and Parks;
- Ontario Ministry of Natural Resources;
- Niagara Escarpment Commission;
- Federal Department of Fisheries and Oceans; and,

- Environment Canada (Federal).

Sample permit applications are available on the Hamilton Conservation Authority's website: https://conservationhamilton.ca/.

Scope Verification:

The applicant is encouraged to discuss the need, scope, and the proposed stormwater management concepts and design assumptions with City staff prior to preparing the report.

OTHER INFORMATION:

City of Hamilton – Comprehensive Development Guidelines and Financial Policies Manual (latest edition), Section G.8.1 – Documentation

https://www.hamilton.ca/build-invest-grow/planning-development/planning-policies-guidelines/comprehensive-development

Ministry of the Environment, Conservation and Parks (formerly Ministry of Environment) – Stormwater Management Planning and Design Manual (2019)

Conservation Halton Guidelines for Storm Water Management Engineering submissions (June 2024, as may be amended) Policies and Guidelines - Conservation Halton

REVIEWED AND APPROVED BY:

Development Planning, Planning and Economic Development Department

Development Approvals, Planning and Economic Development Department

Source Water Protection, Public Works

The Conservation Authority with regulatory authority over the subject lands, namely:

- Hamilton Conservation Authority

- Conservation Halton
- Niagara Peninsula Conservation Authority
- Grand River Conservation Authority

CONTACT:

Development Planning, Planning and Economic Development:

pdgening@hamilton.ca;

Development Approvals, Planning and Economic Development:

deveng@hamilton.ca;

Source Water Protection, Public Works:

sourcewater@hamilton.ca

Hamilton Conservation Authority

nature@conservationhamilton.ca

Conservation Halton

envserv@hrca.on.ca

Niagara Peninsula Conservation Authority

planninginfo@npca.ca

Grand River Conservation Authority

grca@grandriver.ca

APPENDICES:

Stormwater Management Report – Summary Checklist

Stormwater Management Report – Standard Format for Table of Contents

Stormwater Management Report – Summary Checklist

The form is to be completed by the Professional that prepared the Stormwater Management Report.

Use of the form by the City of Hamilton is not to be construed as verification of engineering/scientific content.

Refer to the Terms of Reference for the Stormwater Management Report: Link to Terms of Reference

If any of the requirements listed below have not been included in the stormwater management report, the study will be considered incomplete.

Study Information	Notes
Site Address	
Property Owner	
Project Description	
Land Use	
Date Prepared	
Prepared By	

Summary of Key Information:

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
1.	Is this a Preliminary or Final report?			
2.	Have the subject lands been clearly identified?			
3.	Has a Location Plan been included? Does the Location Plan clearly identify the property limits, owner(s), adjacent land uses and/or owner(s)?			
4.	References to documents or policies that govern the development			
5.	Have any relevant Master Drainage Plans and/or Watershed/Subwatershed Plans been discussed and/or used?			
6.	Has a list of all reference reports and/or documents been provided?			
7.	Any consultation with the City of Hamilton regarding site specific issues and constraints?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
8.	Have the appropriate SWM criteria been used? Has the information been provided by the City?			
9.	Has a Topographic Survey been completed by a qualified professional recently for the subject land?			
10.	What existing storm infrastructure is available within the municipal right-of-way?			
11.	Is there existing external drainage to/from neighboring properties or the municipal right-of-way to/from the subject land?			
12.	Classification of site and downstream aquatic habitat per DFO / MNR / MECP guidelines.			
13.	Does the subject property drain to an existing downstream stormwater management facility. If so, has the relevant Stormwater Management Reports been referenced?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
14.	Is the development entitled to outlet to the Head water drainage feature/ watercourse traversing private lands, which may or may not be a regulated feature?			
15.	Are the downstream landowners obligated to allow the proposed storm outlet to accommodate upstream development?			
16.	Are there existing SWM controls on site?			
17.	Is there an existing watercourse on or in proximity to the subject land? If so, has a hydraulic analysis been completed to determine the flood hazard? Is the proposed development within the flood hazard?			
18.	Are watercourse or flood hazard alterations proposed as part of the development? Has supporting design calculations been provided?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
19.	Is the subject lands within a regulated area?			
20.	If the site is within a regulated area, any consultation with appropriate authority regarding site specific issues and constraints?			
21.	Have regulation limits for the site been finalized, and approved by the Conservation Authority?			
22.	Under proposed conditions, is the site drainage fully contained or is there proposed uncontrolled drainage? If there is uncontrolled drainage, where?			
23.	Has an existing conditions and proposed conditions drainage area plan been provided?			
24.	Has a table summarizing existing and proposed conditions catchment areas been included?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
25.	What method/modelling software was used to determine the existing and proposed flow rates for each relevant storm event?			
26.	Have sensitivity analysis details for identifying governing temporal distribution (Chicago/SCS, duration) of design storm (if applicable) been provided?			
27.	Model calibration and validation details (if applicable) been provided?			
28.	Discuss how the model parameters were determined.			
29.	What design storms were used to prepare the proposed conditions model?			
30.	Recommending use of the design storm time series data provided in City's current Comprehensive Development Guidelines and Financial Policies Manual.			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
31.	Has a table summarizing pre-development condition flow rates for all storm events (2 to 100-year), including regional storm event (if applicable for the site) been provided?			
32.	Has a modelling schematic been provided?			
33.	How many storm outlets are proposed and where?			
34.	Is an outlet proposed to a watercourse? If so, is the outlet designed to prevent erosion? Is the outlet invert located at, or above the normal low flow water elevation of the natural watercourse?			
35.	If within a regulated area and outletting to a watercourse, has a permit from the respective Conservation Authority been provided or has an application been made for a permit?			
36.	Is an easement required over the private downstream lands?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
37.	Are the required SWM quantity, erosion & quality control criteria and infiltration requirements met?			
38.	Is a stormwater management facility proposed on-site?			
39.	Any proposed flow controls? Where and what?			
40.	Have the stage/ storage/ discharge relationships for the proposed stormwater management practices been provided?			
41.	Any proposed quality controls? Where and what?			
42.	Any Oil/Grit Separators proposed? If so, are sizing documentations provided from a qualified manufacture.			
43.	If an Oil/Grit Separator is proposed, is the model shown on the servicing plan?			
44.	Is a treatment train for quality control proposed?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
45.	What are the on-site storage approaches?			
46.	If surface ponding is proposed, is the ponding depth maximum 0.25m within parking lot areas and 0.30m depth within loading bay areas?			
47.	Has a table summarizing the storage for each relevant storm event been provided?			
48.	Does surface ponding occur during the minor storm events? At what elevation does the stormwater pond to within the 5-year storm event? 100-year storm event? Is the 100-year ponding extent shown on the grading plan?			
49.	Where is the major overland flow route proposed to outlet to? Is the major overland flow route clearly illustrated on supporting drawings/report?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
50.	Define/specify emergency spillway location from the site/facility to receiving system.			
51.	Was the minor storm drainage system designed to convey stormwater runoff from the one in five year return period? Has a storm sewer design sheet been provided?			
52.	Have design details for the minor and major system conveyance (storm sewer, channel, swale ditch, etc.) been included (if applicable)?			
53.	Sufficient inlets (CB,DCB, DI etc.) to capture design storm runoff provided?			
54.	Has a table comparing the existing and post-development peak flows for all storm events (2–100-year), including Regional storm event (if applicable to site) and volumes at all outlets been provided?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
55.	Has a Geotechnical Report been discussed or used?			
56.	Any proposed Low Impact Development measures proposed on site?			
57.	Are sizing calculations and supporting documentation for proposed green infrastructure Low Impact Development been provided?			
58.	Any infiltration measures proposed on site?			
59.	What is the underlying soil type? Does the report include in-situ percolation test results?			
60.	What is the seasonal high groundwater table elevation?			
61.	Has a hydraulic grade line analysis been provided?			
62.	Has an erosion and sediment control plan been provided?			
63.	Are there foundation drains connected to the storm sewer or combined sewer where present?			

Item	Study Information	Notes	Page # & Section # of Report	Report Includes this Information. City Staff (Check)
64.	Are roof leaders discharged to the surface, sewers or soakaway pits?			
65.	Has the rainfall volume used for each storm been provided (2–100-year)?			
66.	Has the Report been sealed by a licensed Professional Engineer?			
67.	Has a digital copy of all modeling files been included?			

Qualified Professional who completed this report summary:

Name:_____

Email:_____

Phone:_____

Date:_____

Signature and Stamp:_____

Guideline for Applicants completing the Summary Checklist for Stormwater Management Plan

Site Address: Provide municipal address, or lot and concession

Owner: Provide company name if applicable and name of key contact person

Project Description: provide brief description – e.g. 20 Ha residential subdivision.

Land Use: e.g. Residential, industrial, commercial/ mixed use residential and commercial

Prepared By: provide name of consulting firm that completed the study.

1. **Is this a Preliminary or Final report?**
   Indicate whether this is a Preliminary or Final report. If Final, also list the date of the Preliminary report.

2. **Have the subject lands been clearly identified?**
   Ensure the property is properly and adequately described in the Introduction.

3. **Has a Location Plan been included? Does the Location Plan clearly identify the property limits, owner(s), adjacent land uses and/or owner(s)?**
   Ensure a Location Plan is included, which clearly identifies the items listed above. Ensure the description in the text matches what is shown in the figure.

4. **References to documents or policies that govern the development**
   List all relevant Municipality, Agency, Conservation Authority, etc. policies and/or reports that may be relevant to the design and/or property.

5. **Have any relevant Master Drainage Plans and/or Watershed/Subwatershed Plans been discussed and/or used?**
   If the subject lands are located within the study area of any Master Plan/Watershed/Subwatershed Plan, has it been used and adequately described in the opening sections of the report.

6. **Has a list of all reference reports and/or documents been provided?**
   List all relevant reports and and/or documents that were referenced within the duration of the project.

7. **Any consultation with the City of Hamilton regarding site specific issues and constraints?**
   If yes, list application number and if there are site specific issues and constrains (list all).

8. **Have the appropriate SWM criteria for quantity, quality, flooding and erosions control been used? Has the information been provided by the City?**
   Ensure it is clear to the reader what SWM criteria is being used and how they were obtained. If the information is not provided by the City, confirmation from the City may be required to ensure the appropriate SWM criteria and data is used.

9. **Has a Topographic Survey been completed by a qualified professional recently of the subject land?**

List drawing title, qualified professional and date of Topographic Survey and ensure that the proposed submission materials incorporates the lasted Topographic Survey.

10. **What existing storm infrastructure is available within the municipal right-of-way?**

    List all existing storm infrastructure available with the municipal right-of-way adjacent to the subject site (eg. Size, slope, material and type of infrastructure)

11. **Is there existing external drainage to/from neighboring properties or the municipal right-of-way to/from the subject land?**

    If there is external drainage, clearly illustrate location and area of external drainage to/from subject site and reference figure/section in the published report that discusses the external drainage and how it was accounted for in the overall SWM design.

12. **Classification of site and downstream aquatic habitat per DFO / MNR / MOE-CC guidelines.**

    List all known downstream aquatic habitat per DFO / MNR / MOE-CC guidelines.

13. **Does the subject property drain to an existing downstream stormwater management facility. If so, has the relevant Stormwater Management Reports been referenced?**

    If there is an existing stormwater management pond downstream of the subject site, clearly illustrate the location of the pond and reference any relevant Stormwater Management Reports related to the stormwater management pond. Ensure the proposed SWM design incorporates any relevant information from the existing SWM controls into the proposed SWM design.

14. **Is the development entitled to outlet to the Head water drainage feature/ watercourse, traversing private lands, which may or may not be a regulated feature?**

    Yes of no. If yes, is the outlet a regulated feature?

15. **Are the downstream landowners obligated to allow the proposed storm outlet to accommodate upstream development?**
    Yes or no. If yes, has permission from the downstream landowner been granted?

16. **Are there existing SWM controls on site?**
    Yes or no. If yes, clearly identify the where and what the existing SWM controls are on site and where this information was obtained from.

17. **Is an existing watercourse on or adjacent to the subject land? If so, has a hydraulic analysis been completed to determine the flood hazard for major flow elements? Is the proposed development within the major flow flood hazard?**
    Yes of no. If yes, clearly identify location and name of natural watercourse. Ensure a hydraulic analysis has been completed or reasoning to why a hydraulic analysis has not been completed. Ensure that the proposed development is not within the major flow flood hazard or reasoning/explanation as to why proposed features are within the flood hazard and if those proposed features have a safety risk to the environment of public civilians.

18. **Are watercourse or floor hazard alterations proposed as part of the development? Has supporting design calculations been provided?**
    Yes or no. If yes, clearly identify drawing number, title, published date and section of published report that discuss the proposed alterations and all supporting calculations.

19. **Is the subject lands within a regulated area?**
    Yes or no. If yes, clearly identify which regulated area(s) and associated authority(ies)

20. **If the site is within a regulated area, any consultation with appropriate authority regarding site specific issues and constraints?**
    List application number or include communication with the authority(ies) within the submission and clearly indicate where record of communication can be found for the reader. List any relevant site specific issues and constrains.

21. **Have regulation limits for the site been finalized, and approved by the Conservation Authority?**
    Yes or no.

22. **Under proposed conditions, is the site drainage fully contained or is there proposed uncontrolled drainage? If there is uncontrolled drainage, where?**
    Clearly illustrate if the site drainage is fully contained or if there is uncontrolled drainage. If there is uncontrolled drainage, illustrate location, size and description of catchment area and make reference to section in published report that discusses the uncontrolled drainage catchment and how it was incorporated into the overall SWM design for the reader.

23. **Has an existing conditions and proposed conditions catchment area plan been provided?**
    Reference to the figure/drawing number and where the reader can locate the plans.

24. **Has a table summarizing existing and proposed conditions catchment areas been included?**
    Reference to the Table number in the published report for the reader.

25. **What method/modelling software was used to determine the existing and proposed flow for each relative storm event?**
    Ensure that an appropriate method or modelling software is used to determine the existing and proposed flows for each relative storm event. Clearly illustrate the type of method and modelling software use in the analysis.

26. **Have sensitivity analysis details for identifying governing temporal distribution (Chicago/SCS, duration) of design storm (if applicable) been provided?**
    Yes or no. If yes, reference location of analysis within the published report for the reader.

27. **Model calibration and validation details (if applicable) been provided?**

Yes or no. If yes, reference location of details within the published report for the reader.

28. **Discuss how the model parameters were determined.**
Clearly illustrate how the model parameters were derived.

29. **What design storms were used to prepare the proposed conditions model?**
Ensure that the appropriate design storm was used and it is illustrated within the published report. If a modelling software is used, include both the input and outlet file (PDF version) within the published report.

30. **Recommending use of the design storm time series data provided in City's current Comprehensive Development Guidelines and Financial Policies Manual.**
Provide the recommended use of the design storm time series data as per the City's current Comprehensive Development Guidelines and Financial Policies Manual.

31. **Has a table summarizing pre-development condition flow rates for all storm events (2 to 100-year), including regional storm event (if applicable for the site) been provided?**
Reference to the Table number in the published report for the reader.

32. **Has a modelling schematic been provided?**
For both existing and proposed conditions, ensure a modelling schematic has been included for the reader's review. Schematic to include but not limited to; catchment IDs (controlled and uncontrolled), orifices, overflow from orifices, connectivity of site SWM features, and overall outlet for the subject site.

33. **How many storm outlets are proposed and where?**
Clearly indicate number of outlets, provide description of proposed catchment drainage areas going to each outlet and location of outlet. Ensure that the published report discusses all proposed outlets.

34. **Is an outlet proposed to a watercourse? If so, is the outlet designed to prevent erosion? Is the outlet invert located at, or above the normal low flow water elevation of the watercourse?**

Yes or no. If yes, ensure that the appropriate erosions prevention has been proposed and that the proposed outlet invert is strategically proposed at or above the normal low flow water elevations of the watercourse. Ensure where the normal low flow water elevation was obtained from/calculated.

35. **If within a regulated area and outletting to a natural watercourse, has a permit from the respective Conservation Authority been provided or has an application been made for a permit?**

Ensure that associated correspondence/permits with Conservation Authority is included in submission package.

36. **Is an easement required over the private downstream lands?**

Yes or no. If yes, is the easement shown on the grading and servicing plan?

37. **Are the required SWM quantity, erosion & quality control criteria, and infiltration requirements met?**

Yes or no. If no, explain why?

38. **Is a stormwater management facility proposed on-site?**

Yes or no. If yes, clearly indicate location and type of stormwater management facility. Ensure that the proposed stormwater management facility is discussed within the published report and shown on the design drawings.

39. **Any proposed flow controls? Where and what?**

Yes or no. If yes, clearly illustrate type of control(s) and location of control(s). Ensure that the proposed flow control(s) are discussed within the published report and shown on the associated design drawings.

40. **Have the stage/ storage/ discharge relationships for the proposed stormwater managements practices been provided?**

Ensure that the appropriate stage/ storage/ discharge relationships are included in the published report and incorporated into the overall SWM design.

41. **Any proposed quality controls? Where and what?**
Yes or no. If yes, clearly illustrate type of control(s) and location of control(s). Ensure that the proposed quality control(s) are discussed within the published report and shown on the associated design drawings.

42. **Any Oil/Grit Separators proposed? If so, are sizing documentations provided from a qualified manufacture.**
Ensure the sizing parameters and sizing calculations/documentation from a qualified manufacturer is included in the published report. In addition, include the operation and maintenance recommendations for the associated oil/grit separator.

43. **If an Oil/Grit Separator is proposed, is the model shown on the servicing plan?**
Ensure the model for the OGS unit is shown on the servicing plan.

44. **Is a treatment train for quality control proposed?**
Yes or no. If yes, illustrate SWM features within the treatment train and section of the published report that includes detailed calculations to support the treatment train.

45. **What are the on-site storage approaches?**
List all relevant on-site storage approaches (Eg. Surface ponding, underground storage, on-site SWM facility)

46. **If surface ponding is proposed, is the ponding depth maximum 0.25m within parking lot areas and 0.30m depth within loading bay areas?**
Ensure the proposed ponding depths do not exceed the reference depths and include ponding areas within the associated design drawings.

47. **Has a table summarizing the storage for each relative storm event been provided?**

Ensure a detailed table that includes all proposed storage vs. required storage for each relevant storm event is included in the published report for the reader's review.

48. **Does surface ponding occur during the minor storm events? At what elevation does the stormwater pond to within the 5-year storm event? 100-year storm event? Is the 100-year ponding extent shown on the grading plan?**

    Ensure that the 5-year ponding and 100-year ponding elevation is illustrated in the published report. Include the ponding surface area for the 100 year event within the associated design drawings.

49. **Where is the major overland flow route proposed to outlet to? Is the major overland flow route clearly illustrated on supporting drawings/report?**

    Clear illustrate where all the proposed overland flow routes are proposed to outlet to and ensure the associated design drawings include the overland flow route.

50. **Define/specify emergency spillway location from the site/facility to receiving system.**

    Clearly illustrate where the emergency spillway is proposed from the site to the receiving system.

51. **Was the minor storm drainage system designed to convey stormwater runoff from the one in five year return period? Has a storm sewer design sheet been provided?**

    Yes or no. If no, explain why?

52. **Have design details for the minor and major system conveyance (storm sewer, channel, swale ditch, etc.) been included (if applicable)?**

    Yes or no. If yes, reference location of details within the published report for the reader.

53. **Sufficient inlets (CB,DCB, DI etc.) to capture design storm runoff provided?**

Yes of no. If yes, reference location of details/calculations within the published report/drawings for the reader.

54. **Has a table comparing the existing and post-development peak flows for all storm events (2–100-year), including Regional storm event (if applicable to site) and volumes at all outlets been provided?**
Ensure a detailed table that includes existing allowable flows vs. proposed peak flows for each relevant storm event and Regional storm (if applicable) is included in the published report for the reader's review.

55. **Has a Geotechnical Report been discussed or used?**
Yes or no. If yes, ensure relevant information is used from the Geotechnical Report and reference the latest Geotechnical Report within the SWM Report.

56. **Any proposed Low Impact Development measures proposed on site?**
Yes or no. If yes, list all Low Impact Development measures proposed on site. Ensure that the published report discusses the Low Impact Development measures and how they were incorporated into the overall SWM design.

57. **Are sizing calculations and supporting documentation for proposed green infrastructure Low Impact Development been provided?**
Yes or no. If yes, reference location of details/calculations within the published report and/or drawings for the reader.

58. **Any infiltration measures proposed on site?**
Yes or no. If yes, list all infiltration measures proposed on site. Ensure that the published report discusses the infiltration measures and how they were incorporated into the overall SWM design.

59. **What is the underlying soil type? Does the report include in-situ percolation test results?**
Ensure the published SWM report discusses the type of underlying soil type and where the respective information was obtained from.

60. **What is the seasonal high groundwater table elevation?**

List the groundwater table elevation and associate monitoring well that this information was obtained from. Ensure the published SWM report includes the reported groundwater table elevation for the subject site.

61. **Has a hydraulic grade line analysis been provided?**

Yes or no. If no, explain why?

62. **Has an erosion and sediment control plan been provided?**

Ensure an erosion and sediment control plan is included within the published report and associated design drawings and conforms to the Erosion & Sediment Control Guideline for Urban Construction (2006) and the City of Hamilton standards.

63. **Are the foundation drains connected to the storm sewer or combined sewer where present?**

Yes or no. If yes, illustrate where the foundation drains are connected to and what the foundation drains are connected to.

64. **Are roof leaders discharged to the surface, sewers or soakaway pits?**

Yes or no. If yes, clearly illustrate where the roof leaders are discharged.

65. **Has the rainfall volume used for each storm been provided (2 – 100-year)?**

Yes or no. If yes, illustrate where the rainfall volumes are located within the submitted report.

66. **Has the Report been sealed by a licensed Professional Engineer?**

Yes or no. If no, explain why?

67. **Has a digital copy of all modeling files been included?**

Yes or no.