Hamilton

Subwatershed Study (Phase 1) (Urban Boundary Expansion)

PURPOSE:

This document explains the process for the completion of a Subwatershed Study (Phase 1) which is a requirement for the submission of an urban boundary expansion application under the *Planning Act*. The Terms of Reference for this Study is based upon the Technical Memo titled City of Hamilton Review of Urban Area Expansion Criteria, prepared by Dillon Consulting and dated July 26, 2024. A Subwatershed Study (Phase 1) shall follow the requirements referenced in this document unless further scoped through a Formal Consultation prior to the submission of the application. For each Subwatershed Study (Phase 1), the City requires the applicant to develop a Terms of Reference that outlines how they will fulfil the requirements of this document, in consultation with the applicable Conservation Authority. In addition, the applicant should consult with and consider input from Indigenous communities on the proposed Terms of Reference. That Terms of Reference will need to be approved by the City prior to initiation of the study.

The Subwatershed Study (Phase 1) Terms of Reference is specific to urban boundary expansion proposals and takes a phased approach as contemplated in the Provincial Subwatershed Planning Guide (2022) and focuses on existing conditions as an initial impact assessment. Should an urban boundary expansion application be approved, the findings of the Phase 1 study would be incorporated into subsequent Phase 2 and 3 work for the Subwatershed Study completed through Secondary Planning. Phase 2 of the Subwatershed Study focuses on the development of a preferred land use scenario and more refined impact assessment. Phase 3 of the Subwatershed Study focuses on the implementation of the Subwatershed recommendations and management strategies.

The Subwatershed Study (Phase 1) may be submitted in place of an Environmental Impact Study where the subwatershed planning process was carried out as part of a comprehensive planning process to the satisfaction of the City in consultation with the applicable Conservation Authority.

PREPARED BY:

A Subwatershed Study (Phase 1) must be prepared by a qualified expert in fields relevant to the natural environment and civil engineering, including an ecologist,

biologist, hydrogeologist, arborist/forester, or geologist, depending on the area of expertise required. In some cases, expertise in storm water management, geology, aquatic ecology, terrestrial ecology, hydrogeology, or fluvial geomorphology will be required.

CONTENTS:

The Subwatershed Study (Phase 1) shall include the technical studies below which are interrelated and must provide recommendations that considers all technical information:

- Hydrogeology;
- Hydrology and Hydraulics;
- Stream Morphology;
- Surface Water Quality; and,
- Terrestrial and Aquatic Ecology.

While the contents of a Subwatershed Study (Phase 1) may be scoped on a site-by-site basis, the general content incorporated into this Study will include identification of existing conditions and an initial impact assessment, including:

- Confirmation of objectives for the Subwatershed Study (Phase 1);
- Review of the Subwatershed boundaries within the study area taking into consideration broader water resources and natural heritage systems within the watershed;
- Identification and mapping of existing natural features, hydrologic features and hazard lands including the related hydrologic functions and conditions;
- Completion of existing conditions hydrologic modelling. The **detailed hydrologic model** shall be developed and calibrated for the subwatersheds' existing condition for all relevant rain events.
- A **hydrogeology** study should be completed to establish a geological conceptual model for the subwatershed(s), determining the key characteristics of the bedrock and overburden systems, in addition to their functions in terms of controlling groundwater movement, availability, and quality in these subwatersheds. An integral component is to assess the interactions between the groundwater system and the surface water system, and to determine the overall role or function of these interactions in an ecosystem context.
- A **water balance model** shall be developed based on the output of the hydrologic model and hydrogeology of the area. The water budget shall include an estimate of precipitation, evapotranspiration, runoff, and infiltration, including groundwater recharge / discharge estimations. The present low flow status shall be evaluated, and the constraints associated to water takings and land use changes shall be identified.
- A **stream morphology study** shall assess the morphological and fluvial character of the streams, identify physical habitat attributes (e.g., pools, riffles etc.) and diversity and fluvial processes (e.g., bed load transport, energy

reduction through sinuosity, etc.) with the overall objective to prevent increases in erosion and deposition through the maintenance of the hydrological regime.
- The Subwatershed Study (Phase 1) shall undertake an existing conditions **erosion potential analysis**, based on the erosion data collected to understand the erosion processes, and to identify areas which are highly prone to erosion, where erosions are occurring, or where structures may be at risk.
- Identification of existing land uses.
- Based on a preliminary land use scenario, completion of an initial assessment of the potential impact of development on the water resource and natural systems (including the associated hydrological and ecological functions) in the Subwatershed Study Area based on a preliminary land use scenario.

Consistent with the City of Hamilton's approved Environmental Impact Statement Guidelines, if field studies have been conducted more than five years before the Subwatershed Study (Phase 1) is submitted, updated field work will be required.

Environmentally Significant Areas Impact Evaluation Group (ESAIEG)

The Environmentally Significant Areas Impact Evaluation Group (ESAIEG) is a voluntary technical group established to advise the Planning and Economic Development Department on the impacts on proposed development within or adjacent to Core. Areas. Their mandate is to provide advice to Planning Division staff on whether the technical information provided is adequate to address impacts, whether the proposal should proceed, and if so, what mitigation measures are needed.

Planning Division staff may refer all or part of a Subwatershed Study (Phase 1) to ESAIEG for review. Where ESAIEG has reviewed, a summary of key feedback from City staff and ESAIEG will be issued by City staff following the ESAIEG meeting. This summary and a summary of any subsequent changes made to the proposal to address the comments is required as part of a resubmission of the Subwatershed Study (Phase 1).

OTHER INFORMATION:

- City of Hamilton Environmental Impact Statement Guidelines
- City of Hamilton Green Standards and Guidelines for Site Servicing (Stormwater)
- City of Hamilton Comprehensive Development Guidelines
- City of Hamilton Linkage Assessment Guidelines (March 2015)
- City of Hamilton Tree Protection Guidelines (revised October 2010)
- Ministry of Environment, Conservation and Parks DRAFT Subwatershed Planning Guide (January 2022)
- Six Nations of the Grand River – Environmental Levy Policy

REVIEWED AND APPROVED BY:

- Natural Heritage staff, Planning and Economic Development Department.
- Growth Management staff, Planning and Economic Development Department.
- Environmentally Significant Areas Impact Evaluation Group (ESAIEG).
- Applicable Conservation Authority.

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Conservation Halton: https://www.conservationhalton.ca/
Grand River Conservation Authority: https://www.grandriver.ca/en/index.aspx
Niagara Peninsula Conservation Authority: https://npca.ca/