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BLOCK SERVICING STRATEGY

FRUITLAND WINONA SECONDARY PLAN
BLOCK 3

TERMS OF REFERENCE

City of Hamilton

Hamilton Conservation Authority

Project #: 12-062W

Amended September 2016

Urbantech West, A Division of Leighton-Zec West Ltd.
2030 Bristol Circle, Suite 201, Oakville, Ontario L6H 0H2
TEL: 905.829.8818
www.urbantech.com

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1. INTRODUCTION

1.1. Background

The Stoney Creek Urban Boundary Expansion Subwatershed Study (SCUBESS) provided the management and implementation strategy for the Fruitland-Winona Secondary Plan area. The Secondary Plan area includes four parcels: SCUBE West, SCUBE Central, SCUBE East -Parcel A and SCUBE East -Parcel B. The limits and bounding streets of the parcels are shown in Figure 1.1. The City of Hamilton has also provided a Block Servicing Schedule for this area (Map B.7.4-4 - Fruitland-Winonna Secondary Plan-Block Servicing Strategy Area Delineation).

The SCUBESS aims at preserving a sustainable Natural Heritage System (NHS) for preserving landscape diversity within an urban context. It has provided recommendations for management of natural heritage and stream systems. There are certain lands, including water courses that are restricted from development and have specified limitations or constraints. During the Phase 1 study, investigations were carried out to identify environmental constraints and opportunities for natural resources. A management strategy was developed to protect and enhance significant natural features at the Phase 2 study level. This strategy also provided requirements with regard to stormwater management, land use policies and servicing. The Phase 3 study has been completed to introduce an implementation plan for this strategy.

1.2. Purpose

The Branthaven Corporation lands consist of entire SCUBE Central parcel of Fruitland-Winona Secondary Plan and Block 3 of Map B.7.4-4. This document provides the Terms of Reference (TOR) for the servicing strategy of this block/ proposed development. The Block Servicing Strategy (BSS) will be completed in accordance with the SCUBE Subwatershed Study. The objectives for the block servicing study are as follows:

- Demonstrate how the requirements illustrated in the subwatershed study are fulfilled in all the Draft plans for the proposed development.
- Provide sufficient level of conceptual design to implement NHS components and infrastructure in accordance with SCUBESS.
- Ensure servicing requirements are met.
- Identify detailed development constraints or conflicts and the ways to resolve them.
- Supply implementation details if required.
- Streamline the Draft Plan approval process.
- Facilitate the development of Draft Plan conditions.

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- Demonstrate consultation and general landowner support for lands within the subject Block Servicing Strategy area.

2. APPROACH

2.1. Overview

The block servicing strategy for Block 3 will meet the requirements of policy B.7.4.14 of the Fruitland Winona Secondary Plan. A comprehensive technical analysis and design concept will be necessary for the study. The TOR will provide guidance for analyses, design concepts and report preparation. The overall approach will be discussed in the following sections:

- Land Use;
- Stream system, terrestrial and aquatic features;
- Grading, Drainage and Servicing;
- Stormwater Management;
- Hydrogeology;
- Air Drainage Analysis.
- Transportation

2.2. Agencies

The Block serving strategy and draft plans will be reviewed by the following agencies as related to their respective jurisdictions:

- City of Hamilton
- Hamilton Conservation Authority

It is understood that the proponents can liaise with the agencies as necessary as part of this study.

3. STUDY REQUIREMENTS

3.1. Land Use

The land use within SCUBE Central is regulated by a combination of provincial plans and municipal official plans, all of which must be consistent with provincial plans. The study area is outside the Niagara Escarpment plan and Greenbelt plan areas. According to the Hamilton-Wentworth Official Plan, there are no Environmentally Significant Areas or other Core Natural Areas within Block 3. The Town of Stoney Creek Official Plan and the Urban Hamilton Official Plan identified no core areas or linkages in Block 3.

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The proposed land use for Block 3 is primarily residential and supporting retail, schools, parks and community services. The Block Servicing Study will reflect the Secondary Plan land uses (Map B.7.4-1). Further land use details will be provided in the corresponding draft plans.

3.2. Cores and Linkages

The Secondary subwatershed study identified no core areas in SCUBE Central/Block 3. There are no high or medium constraint areas in SCUBE Central.

3.3. Stream Systems, Aquatic and Terrestrial features

The SCUBE study delineated stream reaches through the Fruitland-Winona Secondary plan area based on channel characteristics, functions and processes. The SCUBE Central lands outlet to Watercourse 9 (Reach 9-1) through the ditch along Lewis Road. The City of Hamilton is currently constructing an engineered ditch along Lewis Road for capacity improvements. WC 9 exhibits primarily engineered channels north of Canadian National Railway (CNR), ultimately outletting to Lake Ontario. Upstream of the CNR, the engineered channel extends east, along the south side of the tracks to a storm sewer. Other roadside and railside ditches contribute to WC9 from the west. The following tasks will be performed with respect to stream reaches:

3.3.1. Fluvial Geomorphology

- Confirm delineation of stream reaches with the Subwatershed Study.
- Based on historic evaluation of changes in land use and channel configuration over time, identify erosion hazards along reaches where mitigation should be considered;
- Delineate meander belt width on a reach basis;
- Investigate feasibility and or potential to divert watercourse 9.1 t0 7.2;
- Perform field investigations and geomorphic assessment to confirm meander belt width on a reach by reach basis.

3.3.2. Regulatory Floodplain

The Subwatershed Study provided a detailed hydrologic and hydraulic analysis for the Secondary Plan area. The 100 year flood is defined as the Regulatory flood. It will be ensured that the proposed development does not encroach into the 100 year floodplain. Stormwater measures will be provided to preserve the existing hydrology, minimize the runoff rates; and provide required quality and quantity control.

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3.3.3. Fish Habitat

The streams in the Secondary Plan area are identified as warmwater in the SCUBE study. WC 9 outletting Block 3 is identified as a "permanent" stream and as "indirect" fish habitat. Under HCA regulations a 15m Vegetation Protection Zone will be assigned to this stream.

3.3.4. Terrestrial features

The lands east of Lewis Road are identified as potential Bobolink Habitat, which is now given the status of "Threatened", and thus protected by the Ontario Endangered Species Act. These lands are currently designated as an Area Specific Policy Area (ASPA) pending Ministry of Natural resources (MNR) development of a species-specific regulation for Bobolink protection. Further details will be provided in the Block Servicing Study.

3.3.5. Vegetation

Vegetation communities that are found will be described in accordance with Ecological Land Classification (ELC) for southern Ontario (Lee et al., 1998 and Lee, 2008) and mapped. A two season survey will be carried out and species lists will be compiled. The spring survey will be carried out between the beginning of May and June; the summer survey will be carried out in late August/early September. The species list will include federal, provincial rankings and local status. Non-native species will be identified Vegetative screening will be completed for all species and all field date sheets will be included in the BSS.

3.3.6. Breeding Bird Survey

All birds seen or heard during site visits will be recorded. A breeding bird survey will be carried out in accordance with the Ontario Breeding Bird Atlas protocols. Two surveys will be carried out, the first one between May 24 and June 6 and the second between June 16 and July 10, 2015.

3.3.7. Species at Risk

ARCADIS will carry out a Species at Risk screening. Records of Species at Risk will be obtained from the Ministry of Natural Resources and Forestry (MNRF) and the Natural Heritage Information Centre (NHIC). The presence of Species at Risk, if any, will be noted and included in the EIS report.

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3.3.8. Wildlife

Incidental observations of mammals, amphibians, reptiles and insects during the site visits will be recorded. Observations will include direct sightings and indirect evidence such as calls, tracks, scat, burrows, dens and browse. The species list will include federal, provincial rankings and local status.

3.3.9. Draft Outline of EIS Report

The following is the proposed draft outline of the EIS Report which will be incorporated into the overall BSS.

1.0 Introduction
  1.1 Policy Review
    1.1.1 Provincial Policy Statement
    1.1.2 Fruitland Winona Secondary Plan
    1.1.3 Hamilton Conservation Authority Policies
  1.2 Background Information Review
2.0 Field Inventories Methodology
3.0 Existing Conditions
  3.1 Site description
  3.2 Vegetation Surveys
  3.3 Wildlife Surveys
    3.3.1 Breeding Birds
    3.3.2 Incidental Wildlife
  3.4 Species at Risk Screening
4.0 Description of Proposed Development
5.0 Identification and Assessment of Impacts
6.0 Mitigation Measures
7.0 Recommendations

3.4. Grading, Drainage and Servicing

The overall serviceability of the Block 3 lands will be addressed, to determine the grading required to service the lands and to ensure integration with neighbouring lands, cores, linkages and receiving watercourses.

3.4.1. Topography and Grading

In order to provide the details for grading and servicing design, the following additional work will be required to upgrade the existing information:

- Topographic mapping that meets City of Hamilton and Hamilton Conservation Authority requirements.

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- Detailed survey information for proposed watercourse crossings, core or linkage crossings for services and roads, if any.
- Field investigation to further delineate wetland limits and topographic depressions.

3.4.2. Preliminary Grading and Drainage Plan

- Refine the Block 3 limits based on the updated topographic mapping and survey work.
- Design a conceptual grading plan for Block 3 to ensure servicing functionality.
- Prepare a preliminary grading plan for the proposed development area/Block 3. Develop a conceptual storm drainage network including storm trunk sewer plans and profiles, the major and minor system and SWM facilities.
- Provide grading and servicing details in support of stream alteration, if any.
- Design conceptual erosion and sedimentation control plans according to City of Hamilton Guidelines.

3.4.3. Servicing

- Integrate information from the Subwatershed Study and the Secendary Plan to the proposed development area. Analyze the information needs.
- Collect detailed data on the proposed land use of the development application related to population, housing form, schools, road pattern, open space and imperviouness for engineering analysis.
- Provide phasing details within Block 3. Phasing of development will be according to City`s Staging of Development Report as approved by the Council.
- Conduct a sanitary servicing assessment to:
  - Calculate the servicing requirement based on future system wastewater flows.
  - Propose several sanitary servicing options and recommend the preferred external, internal and potential phasing option.
  - Provide interim servicing solutions where feasible.
  - Evaluate site specific infrastructure locations for crossings of streams, linkages and cores, if any.
  - Determine consistency with Fruitland-Winonna Secondary Plan, define and explain the differences (if any).

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- Complete a water servicing assessment to:
  - Determine the servicing requirements according to future system demands.
  - Complete a water model update for the Study Area including an analysis of existing and ultimate pressure districts.
  - Water model update is to include an inventory listing of building heights and materials and assumptions regarding low-high density built form including a reasonable build out time frame.
  - Select preferred water servicing option in consideration of external and internal infrastructure, pressure zones and potential future phasing.
  - Assess crossing locations, construction practices and mitigation measures to minimize impacts to the NHS (if any).
  - Determine consistency with Fruitland-Winona Secondary Plan, define and explain the differences (if any).
- Collect the road design requirements and road locations as identified in the Secondary Plan.
- Finish a road concept design. Provide details of local road pattern and trail system.
- Assess road locations and designs for crossing of Watercourse 9.0.
- Provide recommendations on preferred crossing locations and configurations and mitigation measures to minimize impacts to the NHS.

3.5. Stormwater Management

Analysis and/or modelling will be provided for:

- SWM facility location and sizing.
- Floodplain mapping.
- Flow analysis for drainage system design (sewer sizing in accordance with municipal standards.

3.5.1. SWM Facility Sizing

The Subwatershed Study provided a detailed hydrologic analysis for the SCUBE Central area. The study provided unit storage target rates for quantity control (for post to pre); erosion and quality control criteria for SWM measures. The conceptual pond locations are also defined. Block 3 is supposed to have two SWM ponds: pond 9-2 and pond 9-3, that outlet to the Lewis Road ditch and convey flows to WC9. Normal (Level 2) level of quality control is recommended for these ponds. Traditional Source controls are recommended for catchment areas less than 5 ha.

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The ultimate location of the SWM ponds will be evaluated based on the following factors:

- Development phasing/timing;
- Topography and proposed subdivision grading;
- Road layouts/grades;
- Storm sewer outlets and elevations.

Furthermore the following options will be analysed to meet the quality, erosion and flood control criteria described in the Subwatershed Study:

a) Implementation of Low Impact Development (LID) techniques in the proposed development, which will provide water quality benefits and reduce the quality control requirement for the downstream SWM ponds. These may result in a smaller pond block.
b) Apart from ponds 9-2 and 9-3, a SWM pond 9-4 is proposed for WC9 catchment areas northwest of Barton Street and Lewis Road. The option of consolidating these three ponds into one pond will be evaluated.

The City of Hamilton and Hamilton Conservation Authority will be consulted to determine the stormwater management approach, as an initial step of the Block Servicing Study.

3.5.2. Regulatory Floodplain Mapping

It will be ensured that no development will encroach the floodplain. Any refinement of the regulatory floodplain will be consulted with the agencies.

3.5.3. Water Balance

The Subwatershed study characterized SCUBE Central areas with moderate to low recharge potential. An isolated area of sand and gravel deposits is located within the southwest portion of the SCUBE lands, near Highway No. 8, between McNeilly Road and Lewis Road. The study included water budget for existing conditions as well as for future land uses (as per Map B.7.4-1). Due to development, recharge deficit and surface water runoff increase are reported, as expected. Analysis will be performed to:

- Verify the water balance component for Block 3.
- Design Low Impact Development (LID) techniques to mitigate any potential infiltration deficit and increased surface runoff.

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- Ensure that LIDs are designed according to the Subwatershed Study requirements.

3.5.4. Flow Analysis for Drainage System Design

- Calculate the servicing requirements based on the proposed development.
- Design a storm sewer network for major and minor flows (using City of Hamilton guidelines), ensuring no effect on the downstream drainage system.

3.6. Hydrogeology

The SCUBE study prepared in support of the Fruitland-Winona Secondary Plan provided a detailed hydrogeological study and the Hamilton-Wentworth Official Plan provided recommendations for further hydrogeological investigation for the proposed development/Block 3. The following items will be covered in this study:

- Confirm the regional geological setting.
- Assess groundwater levels and flow path; and the impact of proposed development on these.
- Identify significant recharge and discharge zones (if any); and how they are supposed to be affected by the proposed development.
- The foundation drain flow rate based on groundwater and severe wet weather conditions.
- A recommendation for an appropriate sump pump design (if required).
- A contingency plan to ensure that an appropriate mitigation strategy can be implemented where:
    a) An aquifer is breached during construction.
    b) Groundwater is encountered during construction.
    c) Continuous running of sump pump occurs;
    d) Negative impacts on the water supply and sewage disposal system or any surface and groundwater related infrastructure.

3.7. Air Drainage Analysis

A scoped Air Drainage Analysis Brief will be prepared by a qualified engineer, climatologist, and agrologist as per the requirements of City of Hamilton and Ontario Ministry of Agriculture, Food and Rural Affairs or successor Ministry. The analysis will include the following:

- Overview of the existing conditions, including air photos, topography, thermal conditions, climate and air movement down the Niagara Escarpment and towards Lake Ontario, to evaluate the effects of the proposed development on the existing microclimate and airflow.

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- Where appropriate, proposed road layout and development patterns that maximize air drainage in a north/south alignment to minimize potential negative impacts on the tender fruit area to the south.

4. TRANSPORTATION

A detailed Transportation analysis will be provided as part of the Block Servicing Study, in support of Draft Plans for the proposed development, in accordance with City of Hamilton guidelines.

The analysis will study the following intersections as agreed to with the City of Hamilton

Highway 8 and McNeilly Road;
Highway 8 and Lewis Road;
Barton Street and McNeilly Road;
Barton Street and Lewis road and;
Barton Street and Escarpment Drive

Traffic counts will be collected processed and reviewed at all study intersections. Study horizon years are to be existing conditions, buildout and 5 year build out utilizing a background growth rate of 2 %.

Non – automobile modal split and trip distribution throughout the study road network is to be gathered from 2011 TTS data and existing travel patterns.

5. MONITORING

A detailed environmental monitoring plan will be provided as part of the Block Servicing Study, in support of Draft Plans for the proposed development, in accordance with City of Hamilton guidelines.

6. REPORTING REQUIREMENTS

A detailed report will be prepared integrating the analysis, findings and recommendations covered in the study Terms of reference.

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