

# TERMS OF REFERENCE

## SOUTH FERGUS MASTER ENVIRONMENTAL SERVICING PLAN AND SECONDARY PLAN

(Updated January 2021)

### OVERVIEW

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The following Terms of Reference ("TOR") have been prepared to direct preparation of a Master Environmental Servicing Plan ("MESP") and Secondary Plan for the South Fergus Secondary Planning Area.

The Study Area consists of lands outside the Built Boundary of the Fergus Urban Area that are located to the east and west of Highway 6 and north of Second Line. The Study Area has an area of approximately 152 hectares and is known as the South Fergus Secondary Planning Area. **Appendix A** to these TOR illustrates the extent of the Study Area.

The purpose of the MESP and Secondary Plan are to:

- a. Identify and categorize natural features and functions;
- b. Determine natural areas to be maintained, restored and/or enhanced;
- c. Delineate potential development areas and protection areas;
- d. Define the limits of natural heritage features;
- e. Recommend buffers and mitigation measures necessary to maintain or improve ecological sustainability of the area;
- f. Identify stormwater management facility locations and quantity/quality control recommendations;
- g. Identify phasing of development based on infrastructure opportunities and constraints and the availability of community services in accordance with a complete community approach;
- h. Provide input to the preparation of a Secondary Plan which, including the completion of the following:
  - Stormwater Management Plan
  - Transportation Plan
  - Environmental Impact Assessment
  - Servicing Strategy
  - Urban Design Guidelines
  - Fiscal Impact Study, including Development Charges Study
  - Development Phasing Study
  - Parks Concept Plan
  - Archaeological Assessment
  - Cultural Heritage Resource Evaluation & Assessment
  - Hydrogeological and Groundwater Impact Assessment;
- i. Establish a land use plan and implementing policies for the South Fergus area to be implemented through an Official Plan Amendment; and,
- j. Provide specific direction to more detailed reports to be prepared in support of future planning and development applications.

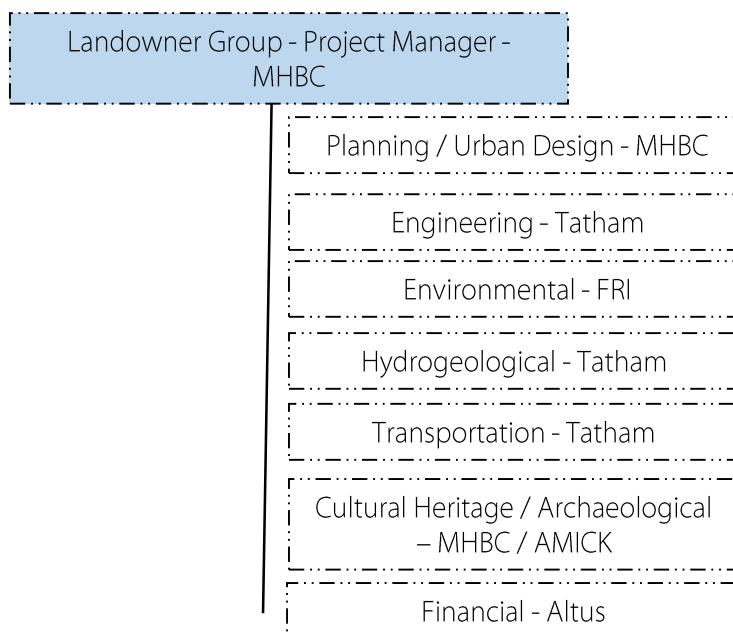
The MESP Study will address issues related to natural heritage, natural hazards, servicing and stormwater management and will be prepared in accordance with Section D.11, E11 and E.1.3 of the Township of Centre

Wellington Official Plan. Consideration will also be given to the County of Wellington Official Plan policies 4.6, 4.9, 9.2.5 as well as GRCA policy documents (i.e. Grand River Fisheries Management Plan, 1998) and complementary Implementation Plan (2001).

The Secondary Plan will address the policies of the Official Plan related to the detailed planning of the South Fergus Secondary Planning Area in order to facilitate its orderly development. The Secondary Plan will address the mix, arrangement, and density of land uses; recommended street pattern; the size and location of neighbourhood parks and school sites and the location of major services. The Secondary Plan will provide a conceptual framework for the area and will provide the basis for the preparation of future *Planning Act* applications. The Secondary Plan will be prepared in accordance with the policies of the Township of Centre Wellington Official Plan.

The MESP and Secondary Plan are to be completed in coordination with the County, Township and GRCA in the context of a Technical Advisory Committee ("TAC") process, including public consultation, agency input and approval. The TAC will be established prior to approval of the Terms of Reference and will include County, Township and GRCA staff, at a minimum. A Study Process Flowchart is included as **Appendix B**.

The following project team has been retained by the property owners to complete the MESP and Secondary Plan:



Key project team information is included in **Appendix C**.

The Project Team has prepared this TOR for review and acceptance to establish and confirm the scope of work associated with the various studies required to complete the MESP and Secondary Plan, including identified field work associated with the TOR.

A Public Consultation Process has been outlined in this TOR to occur in accordance with the requirements of the Township of Centre Wellington Official Plan and the Planning Act. Public consultation is intended for the purposes of obtaining public input and comment to inform the Secondary Plan.

## BACKGROUND REVIEW AND EXISTING CONDITIONS

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### Study Context

The purpose of this section is to define the project objectives and to provide an initial description of the existing conditions (physical, social and regulatory) for the Study Area and surrounding lands. This information provides a context for the MESP and Secondary Plan and background for the anticipated targets and guidelines required for areas that may be suitable for development.

The background document will include a review of: the Wellington County Official Plan, Township of Centre Wellington Official Plan, Nichol Drain No. 2 Subwatershed Study and other environmental reports. This section will highlight key issues to be assessed based on the information collected through pre-consultation discussions with various groups.

Tasks include:

- a. Review existing/available background information and documents.
- b. Review/summarize existing policies that are applicable to the Study Area
- c. Prepare base plans (topographic mapping) and aerial photographs of the Study Area for use throughout the study. Current aerial photography available from the County and GRCA will be reviewed as well as topographic data from Northway-Photomap Inc. Detailed topographical survey information may be used to establish critical key locations such as intersections, existing pipe or culvert inlets, watercourse elevations, etc.

### Existing Condition Study

The intent of this Section is to present a detailed summary of the various physical characteristics of the Study Area. To obtain this data, a review of previous reports and documentation, as well as undertaking additional field work to update or obtain necessary information not included within previous studies is proposed.

The topics to be evaluated and tasks to be undertaken include:

#### 1. Natural Environment

The following describes the proposed Natural Environment component of the Study. This study is intended to result in an Environmental Impact Assessment. **Appendix D** to this TOR includes Survey Station Locations.

- a. Background Review
  - Review existing biological information from a variety of sources including: wildlife atlases, the Grand River Conservation Authority (GRCA), and Ministry of Natural Resources and Forestry (MNR) and MECP files.
  - Review previously completed studies for the Study Area and surrounding lands.
  - Review aerial photography for the Study Area.
  - Review relevant policies and regulations, including Wellington County Official Plan, Township of Centre Wellington Official Plan and GRCA Regulations
  - Prepare GIS field maps.

This information will be used to inform the baseline monitoring program.

- b. Wetland Boundary Review
  - There are no Provincially Significant Wetlands (PSWs) present on or within 120m of the Study Area. However, the Speed-Lutteral-Swan Creek Wetland Complex is a large system that bisects the Study Area. The features and functions of this wetland system will be evaluated and assessed.
- c. Significant Woodlands Review

- There are no significant woodlands identified within the Study Area.
  - Any woodland areas observed will be evaluated and assessed to determine if they qualify as a significant woodland feature.
- d. Species at Risk and Habitat Assessment
- Review of the available background information for endangered and threatened species at risk for the area has been conducted. A copy of this screen is attached as **Appendix E**.
  - The Natural Heritage Information Centre database confirms three observations of threatened species for the one-kilometre squares that overlap the Study Area. Two of the observations are for Eastern Meadowlark and one is an observation of Barn Swallow. A background check with the Ministry of Environment, Conservation and Parks will be completed to confirm any other species at risk observations for the Study Area and initiate consultation.
  - Based on the ecosites present, species at risk will be screened using a habitat-based approach and where required, targeted surveys will be conducted to determine presence or absence of and species at risk.
- e. Significant Wildlife Habitat Review
- Four categories of significant wildlife habitat will be considered during field investigations, including: seasonal concentration areas, rare vegetation communities and specialized habitat for wildlife, habitat of species of conservation concern, animal movement corridors.
  - These investigations will be guided by the Significant Wildlife Habitat Technical Guide, Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E.
  - Those species at risk designated 'special concern' are considered under the significant wildlife habitat framework.
- f. Fish Habitat Review
- A tributary to Swan Creek drains in a southwest direction through the Study Area. Investigations will determine the thermal regime, fish community and sensitivities.
  - Any potential impacts that may require a review by Fisheries and Oceans Canada will be documented in a Request for Review.
- g. Field Investigations
- The field program includes the following components:
- Leaf-off field investigations including cavity tree surveys (bats, barn swallows, chimney swift, stick nests)
  - Identify and map vegetation (Ecological Land Classification)
  - Significant wildlife investigations (e.g. amphibian surveys)
  - Ecological Land Classification (habitat) determination; species at risk habitat investigations
  - Forest bird monitoring
  - Fish habitat thermal regime
  - Reptile basking surveys – turtles and snakes (SAR and SWH)
  - Reptile nesting surveys
  - Significant Wildlife Habitat surveys, forest bird monitoring
  - Passive acoustic monitoring equipment deployment (bats & birds)
  - Fish habitat assessment;
  - Map existing features, assignment of direct/indirect habitat classification
  - Targeted backpack electro-fisher fish community sampling
  - Retrieve passive acoustic monitoring equipment and analyze recordings
- h. Analysis
- Define environmental constraint areas
  - Evaluate impacts and develop mitigation strategies
  - Prepare and submit DFO Request for review (if required)

- Prepare and submit MECP Review (if required)
- Prepare and submit Environmental Impact Study Report to form component of MESP and Secondary Plan
- Prepare recommendations related to the boundaries of the natural heritage system and associated buffer and guidelines for buffer management, biological monitoring and environmental stewardship.

## **2. Functional Servicing Report and Servicing Strategy**

The Functional Servicing Report will inform the MESP and future Secondary Plan. The following tasks will be completed in the preparation of the FSR:

- Establish the development build-out time-frames and associated population and employment levels for each, to be used as a basis for evaluating the future infrastructure requirements.
- Establish the development phasing/triggers for the various external infrastructure improvements.
- Undertake an initial review for sanitary servicing the entire Study Area including an assessment of major external infrastructure (eg., trunk sewers, sewage pumping stations, forcemains, wastewater treatment plant, etc.) premised on existing information and studies, in anticipation of future growth.
- Municipal watermains are available along the north limit of the Study Area for future connections. Review water modelling completed by Triton Engineering for the Township of Centre Wellington for the urban boundary of Fergus in order to identify any servicing issues with respect to municipal water supply, storage and distribution.
- Contact the utility providers (gas, electrical, and communications) to establish what existing facilities are available in the area, and what improvements are required to adequately service the development plan.
- Prepare conceptual plans demonstrating the serviceability of the subject lands, including their relationship to road grades, grading, wetlands/woodlots and environmental features, including:
  - Cut/fill analysis of the site to determine the quantity of material to be imported or exported from the site, and identification of the locations where significant filling or cutting.
  - Consideration of groundwater depths.
  - Preliminary grading, in consultation with the environmental recommendations, to establish road grades at accesses, boundary grades and buffer considerations.
  - Identification of “major” overland flow routes directed to downstream stormwater management facilities.
  - General road network arrangement for accommodation of transportation, servicing and development needs.
- Establish projected time of need for infrastructure improvements in consideration of the development horizons.

## **3. Surface Water Resources & Stormwater Management Strategy**

The South Fergus Secondary Plan Study Area is within the Nichol Drain No. 2 Subwatershed. A Subwatershed Study was completed in 1996 to assess impacts to the subwatershed as a result of development at the south end of Fergus. An update to this study will be completed as a component of the MESP and in support of the Secondary Plan.

The preliminary stormwater management strategy will form part of the MESP and include: a review of relevant on site information; a review the recommendations of the earlier subwatershed study; a review of the catchment areas and the locations of the proposed stormwater management facilities; preparation of a

hydrologic model reflecting proposed conditions; completion of preliminary design calculations and drawings; preparation of a water budget analysis; and, preparation of the preliminary stormwater management strategy and associated drawings. Surface Water Monitoring Locations are shown on **Appendix F**.

The following tasks are proposed:

- a. Confirm the study limits from a hydraulics and floodplain mapping perspective
- b. Undertake erosion assessment
- c. Initiate discussions with the MNRF regarding wetlands 2, 3 and 5 and potential PSW, coordinated with the environmental analysis
- d. Impact assessment for the downstream watercourse. The extent of this assessment will be established through a review of the flow/structure conditions at road crossings.
- e. Determine the need for and extent of modifications to the floodplain in order to improve the system quality and manage the floodplain to a constant corridor width, including consideration of channelization and staging of development works in accordance with GRCA policies.
- f. Temperature and flow monitoring

The Stormwater Management Strategy will include:

- a. Update watershed and catchment mapping based on current topographic information and land use.
- b. Determine watershed modelling parameters, as required.
- c. Prepare existing conditions event-based hydrologic model (GAWSER) for the two-year through Regional storm events for the creek system. A continuous simulation model will also be prepared
- d. Install and maintain continuous flow gauges to assist in model verification.
- e. Install and maintain rain gauge and air temperature monitoring station for local meteorological data collection for non-winter months only. Winter data will be obtained from closest Environment Canada gauge.
- f. Validate and/or refine the hydrologic model representation of subwatershed results using the gauged data (local or EC data) and updated hydrologic model.
- g. Review potential best management practices with respect to previously established watershed and subwatershed targets in other locations and current regulations and standards.
- h. Conduct a technical meeting with GRCA to finalize existing hydrology and initiate stormwater management criteria and concepts.
- i. Prepare proposed conditions hydrologic models and preliminary stormwater management facility/infrastructure design.

The stormwater management strategy will provide appropriate levels of quality, quantity and water balance controls, in keeping with the intent of the subwatershed study. The stormwater management strategy will include a combination of management techniques with stormwater management measures implemented at three levels: lot-level, conveyance and end of pipe.

#### **4. Hydrogeological and Groundwater Impact Assessment**

The hydrogeological analysis will describe the regional geological setting, onsite geological and hydrogeological conditions, groundwater levels, groundwater flow contours and flow direction. In addition, the hydrogeological investigation will describe how local features in the Study Area are connected to the water table. Monitoring well locations are shown on **Appendix G**.

The hydrogeological investigation will assist in the design of the stormwater management facilities and include the following:

- a. Review background studies, the Lake Erie Region Source Water Protection Plan, local Ministry of Environment (MOE) water well records, quaternary geological mapping and the Ontario Geological Survey model in order to confirm understanding of the surficial geologic conditions of the area.
- b. Pre-consult with the Wellington County Risk Management Official regarding updates to the Lake Erie Region Source Water Protection Plan currently ongoing.
- c. Door to door well survey, as necessary.
- d. Install of monitoring wells to complete hydraulic conductivity testing.
- e. Measure and monitor of groundwater levels, groundwater temperature and surface water flow for a period of one year.
- f. Determine horizontal and vertical gradients across the subject land.
- g. Assess groundwater flow direction and hydrogeological conditions of the site.
- h. Measure hydraulic conductivity of the unsaturated and saturated zones of the geologic strata to estimate the vertical and horizontal soil permeability, hydraulic conductivity and travel times.
- i. Collect groundwater samples (two events) to document pre-development groundwater quality.
- j. Assess development of the proposed site on the local Regional groundwater supply aquifer and comment on potential for impacts to existing wells and recommended mitigation measures.
- k. Complete preliminary hydrogeological calculation of mounding and impacts of proposed end-of-pipe solutions in the stormwater management plan.
- l. Install data loggers for long term monitoring of groundwater levels and temperature to capture seasonal fluctuations, including high and low groundwater elevations.
- m. Provide comment regarding potential high groundwater to effect basements and servicing.

## **5. Floodplain Hydraulics**

A floodplain delineation study is to be completed for the extent of the Nichol Drain No. 2 watercourse and will include:

- a. Technical meeting(s) with the GRCA to discuss the initial modeling and review the floodplain study limits.
- b. Obtain available drain crossing information from the Township and complete a topographic survey of existing drain conditions. The 0.5m contour interval topographic mapping prepared by Northway-Photomap will be used to prepare model cross sections through the Study Area. This topographic information will be supplemented with topographic survey data of low-flow channel sections in order to complete the hydraulic modeling.
- c. Determine and confirm of watershed modeling parameters (HEC-RAS).
- d. Prepare of ultimate conditions for HEC-RAS model.
- e. Map floodplain for Nichol Drain No. 2.

## **6. Fluvial Geomorphology and Erosion Assessment**

The following assessment is to be completed for the extent of a watercourse (e.g. Nichol Drain No. 2 or Nichol Drain No. 13 watercourse):

- a. Characterization Report – including summary of background literature, characterization, summary of major issues, concerns and constraints and a summary of opportunities for improvement and/or enhancement
- b. Impact Assessment – including assessment of impacts of future land uses on natural environment and development of subwatershed management strategy by:
  - Finalize characterization of the drain using Rosgen Characterization (width/depth ratio, enhancement ratio and cross sectional measurements)
  - Complete cross sectional local long profile slope surveys and substrate sampling for the completion of the Rosgen Assessment and erosive/tractive force assessment
  - Determine the critical shear strength

- Prepare Erosion Potential Analysis to understand processes, identify erosion prone areas, identify structure at risk and determine threshold flows for erosion at strategic points
- Input to flow exceedance analysis using continuous hydrographs to determine impacts to development over a range of scenarios and conditions
- Establish of stormwater management criteria to ensure no increase in downstream erosion potential or flood risk
- Outline the criteria and process framework to evaluate future development proposals
- Preparation of a Stage 2 Report

## **7. Channel Design Implementation and Monitoring Plan**

- Undertake natural channel designs using principles on previously altered channels, potential development land channels proposed for reconstruction and determine where enhancements are required.
- Develop an implementation and monitoring plan to ensure compliance with the subwatershed management strategy.
- Determine timing, future studies, operation and maintenance responsibilities and monitoring plan to ensure compliance with the subwatershed study.

## **Supplementary Reports/Analysis**

In support of the Secondary Plan, the following additional reports, studies and guidelines are proposed in order to inform the policies of the Secondary Plan.

### **1. Transportation Plan**

The purpose of this study is to assess the existing road network, determine the location and suitability of new roads and assess the overall impact of the Secondary Plan on the existing and proposed road network. The plan includes:

- Establish the development build-out time-frames and associated population and employment levels for each, to be used as a basis for evaluating the future infrastructure requirements.
- Identify and inventory the surrounding external road system (which is to consist primarily of Highway 6, McQueen Boulevard, Millburn Boulevard, Scotland Street, Guelph Street and 2<sup>nd</sup> Line) and their respective intersections. The inventory will address jurisdiction, number of lanes, cross-sections, speed limits, intersection configurations, vertical and horizontal alignment constraints, etc
- Compile traffic data from the appropriate road jurisdictions for the subject road sections and intersections.
- Conduct additional traffic counts as may be required to address data gaps and ensure traffic data represents current conditions. It is noted that due to the COVID-19 pandemic, travel demands have changed significantly and thus any new counts completed at this time may not be representative of typical conditions. This will be further reviewed and resolved with the road authorities and an appropriate course of action resolved (eg. use historic growth, apply factors, etc.). For purposes of this proposal, we have allowed for 7 new intersection traffic counts (to be completed at the major boundary road intersections).
- Complete an assessment of the existing road system traffic operations and establish any system needs based on existing conditions. Reference will be made to the Township's Transportation Master Plan relating to identified existing needs external to the Secondary Plan area.
- Establish traffic projections for the future horizon years (to correspond to full build-out, 10 years beyond build-out and 2 interim horizon years to consider a phased development approach). In addition to historic growth, consideration will be given to other development in the immediate and surrounding areas that could have a bearing on future traffic volumes.

- g. Identify the future road system, considering any planned road improvements or developments that would otherwise occur independent of the Secondary Plan. Reference will be made to the Township's Transportation Master Plan and any identified external needs.
- h. Complete an assessment of the future road system traffic operations (prior to consideration for the Secondary Plan development) and establish any system needs based on future background conditions. This could include road widenings, provision of turn lanes, traffic signal and/or roundabout control, etc.
- i. Establish and review potential road system connection points to the existing system and related receiving system capacities, including consideration for any growth-related upgrades planned or underway.
- j. Advance the initial transportation concepts for the study area in conjunction with the proposed conceptual plans, providing input to road layout, classification (local or collector), cross-sections, provision of active transportation facilities, provision of public transit, intersection locations and configurations, etc. Identify any major constraints to the provision of a contiguous transportation system (eg. topography, environmental features, etc.). Reference will be made to the Township's Transportation Master Plan, including consideration for traffic calming and a complete streets approach to road design, and the Township's Development Manual (2018, as revised) to ensure conformity.
- k. Based on the development concepts, estimate the volume of traffic that will be generated by each. This will be based on the *ITE Trip Generation Manual 10<sup>th</sup> Edition* with consideration for the proposed land uses and development sizes.
- l. Confirm the number and location of external road connections to ensure the Secondary Plan area can be appropriately serviced. Consult with MTO regarding any new proposed municipal road connections to Highway 6 and the form of intersection control (with consideration for stop, signal and roundabout control).
- m. Determine the anticipated distribution of traffic in context of the Secondary Plan and surrounding areas, and assign such to the road system considering the proposed road system, major intersections and connections to Highway 6.
- n. Evaluate the serviceability of the conceptual plans from a road system and traffic operations perspective.
- o. Identify potential improvements to the external road system required to service the development concepts. Give due consideration for the implementation of roundabouts as an alternative intersection control, particularly on the major boundary roads, recognizing their benefits relating to traffic operations, safety and opportunity for a gateway feature.
- p. Identify development triggers relating to transportation system improvements.

## 2. Urban Design Guidelines and Parks Concept

The intent of the Urban Design Guidelines is to promote an appropriate built form within the Secondary Plan area. The Urban Design Guidelines will result in a set of principles for new development which encourages a high standard of urban design and the incorporation of common design elements within the Secondary Plan Area. These guidelines will ultimately inform the urban design policies of the Secondary Plan. The proposed Urban Design Guidelines include:

- a. Review of Community Design policies contained in the Township of Centre Wellington Official Plan
- b. Design context and vision for the Secondary Plan area, including key design features and design consideration for specific locations (views, vistas, gateways);
- c. Design guidelines for the public realm including roads, streetscape, parks, trails, stormwater management facilities and the natural system

- d. Design guidelines for the private realm as direction for the development of future plans of subdivision
- e. Recommendation on park location and design criteria
- f. Recommendations for community safety principles
- g. Recommendations for landscaping as direction for future landscape plans

### **3. Fiscal Impact Study**

The purpose of this study is to assess the fiscal impact of the proposed development of the Secondary Plan on the Town's finances. The proposed report includes:

- a. Estimate the ongoing revenues that will be generated by the development of the Secondary Plan Area, including property taxes, non-tax revenues and water/waste water fee revenues
- b. Estimate the additional annual operating and maintenance costs the community may incur as a result of the development of the Secondary Plan, such as net operating costs, water, wastewater, and road operating and lifecycle maintenance costs;
- c. Estimate the development charges that the build-out of the Secondary Plan would generate, at current DC rates;
- d. Identify the potential capital costs arising from the development, including those eligible to be funded by development charge revenues.

### **4. Archaeological Assessment**

The Archaeological Assessment will be conducted for the entire Study Area. The assessment will be undertaken in accordance with provincial requirements for archaeological investigations (Standards and Guidelines for Archaeological Consultants, Ministry of Tourism and Culture, 2011).

### **5. Cultural Heritage Evaluation & Assessment**

This assessment will consist of an overview of the Township's cultural heritage resources within the Secondary Plan area, if any. Any identified heritage resources will be mapped for identification in the Secondary Plan. Recommendations for future Heritage Impact Assessments within the Secondary Plan Area will be provided, in the event that cultural heritage resources in the Study Area are identified.

## **IMPACT ASSESSMENT, IMPLEMENTATION AND MANAGEMENT PLAN AND RECOMMENDATIONS**

An assessment of potential impacts to the Study Area and surrounding areas will be provided in this section. Impacts of the proposed land use, infrastructure and trails will be discussed in terms of groundwater recharge and quality, surface water quality and quantity, and the integrity of the surrounding environmental features, including ecological connectivity and recommendations for restoration.

The results of the data and analysis will provide for the completion of the MESP and recommendations for the Secondary Plan, including:

- a. Final natural feature limits and constraint areas
- b. Prepare hydrologic model for proposed conditions
- c. Review stormwater management practices and identify which are applicable within the Study Area
- d. Evaluate the effectiveness of alternate stormwater management strategies
- e. Recommend stormwater management criteria including consideration of LID principles and practices to mitigate proposed condition impacts for the Study Area relating to:
  - Water quality control (TSS, DO, phosphorous)

- Water quantity control
  - Erosion assessment (channel and from development areas)
  - Surface water balance and ground water balance
  - Chloride assessment
  - Drainage constraints such as external drainage areas, outlet/discharge locations and changes in drainage conditions
- f. Update floodplain model for future development conditions
  - g. Identify enhancement and restoration opportunities
  - h. Review potential direct and indirect impacts to natural environment features/systems according to:
    - Potential impact
    - Proposed mitigation measures
    - Residual effects
  - i. Identify natural heritage feature enhancement and restoration opportunities to mitigate impacts of development

This will include coordination meeting with the project team and landowners and meetings with the Township and/or Technical Advisory Committee (The "TAC"). The meetings are anticipated to occur following the Background Review and Existing Conditions Analysis, following identification of Development Constraints and Opportunities and identification of options to determine the preferred land use plan; and prior to Council approval of the Secondary Plan.

## **Management Plan**

This section summarizes the management plan for the Study Area, based on the information provided in the previous sections of these Terms of Reference. Specifically, the management plan will be separated into components that apply to the Natural Heritage System, stormwater management measures and monitoring.

Tasks include:

### **1. Natural Heritage System**

- a. Delineate the Natural Heritage System and associated buffers
- b. Recommend guidelines for developing a buffer management and stewardship strategy
- c. Identify opportunities for enhancement and/or restoration, including strengthening/restoring of existing linkages, where appropriate, or mitigate impacts of development
- d. Identify areas where site specific EIS studies may be required for the review of development applications.
- e. Develop a biological monitoring strategy including locations for monitoring activities.

### **2. Stormwater Management**

- a. Identify stormwater management facility locations
- b. Identify stormwater management measures required throughout the Study Area. These measures are required to maintain or enhance the quality, quantity and distribution of stormwater including infiltration measures, and minimize stormwater runoff volumes and contaminate loads.
- c. Consider use of LID practices wherever feasible

### **3. Monitoring Plan**

- a. Prepare a Monitoring Plan for the Study Area that follows established municipal standards/requirements and includes biological, groundwater and surface water components
- b. Monitoring locations will be shown in the MESP

- c. Monitoring Plan will confirm performance standard and measures, including the duration or monitoring activities, timing of monitoring events and protocols.

#### **4. Implementation Plan**

- a. Provide guidelines for the implementation of recommendations (requirements) through the development process.
- b. Establish preliminary phasing plan for development based on recommendations associated with stormwater management facilities. and the availability and capacity of infrastructure (water, wastewater, roads).

### **SECONDARY PLAN**

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The Secondary Plan will provide the land use vision and policy framework for the Study Area by establishing specific direction of the development of South Fergus. The Secondary Plan will be based on the findings of the background review and input received through the public consultation process. The Study will form the basis of an Official Plan Amendment to implement the Secondary Plan. This amendment will direct the preparation and approval of future Planning Act applications to facilitate the development of the Study Area.

The contents of the Secondary Plan will include the following:

- a. The physical context, opportunities and constraints for the Study Area
- b. The overall context for the Study Area, including relevant policies
- c. The vision and objectives for the development of the Study Area
- d. Land use designations and implementing policies for the various designations within the Secondary Plan
- e. Urban design policies for the Secondary Plan Area
- f. Transportation plan which includes a network of streets and active transportation facilities and policies to implement the transportation plan
- g. Servicing and stormwater management strategy for the Secondary Plan area which includes consideration of existing and planned capacity and phasing of development
- h. Natural heritage network identifying features within the Study Area, recommended buffers and policies related to the preservation and enhancement of the natural heritage network.
- i. Policies related to implementation of the Secondary Plan for future site-specific applications

### **PUBLIC CONSULTATION**

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The MESP and Secondary Plan processes require public consultation to ensure that subwatershed, resident and stakeholder issues are incorporated into the Study. The public will have opportunity to review and provide comment to the subwatershed plan at various stages of the process. It is anticipated Public Open Houses will be held following approval of the Terms of Reference, following preparation of the preliminary development constraints and opportunities plan and prior to Council approval of the Secondary Plan. The timing, format and venue for the Public Open Houses will be determined in consultation with Township staff and the Technical Advisory Committee and will be coordinated with secondary plan process.

# APPENDIX A

Location Plan  
South Fergus Secondary  
Planning Area

Town of Fergus  
Township of Centre Wellington

- LEGEND
- South Fergus Secondary Planning Area
  - Parcel Fabric\*
  - Environmental Features  
(Core Greenlands, Wetlands, & Floodplain)
  - Floodplain (GRCA)
  - Wetlands (GRCA)

Sources

- Imagery: Northway/Photomap/Remote Sensing Ltd., 2020
- Floodplain and Wetland data: GRCA Open Data 2018
- Core Greenlands digitized from Township of Centre Wellington Official Plan Schedule A-1 Land Use Plan - Fergus, Elora 2016

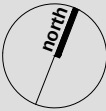
\*Parcel fabric digitized from GRCA web mapping and is approximate in size and location

Date: December 21, 2020

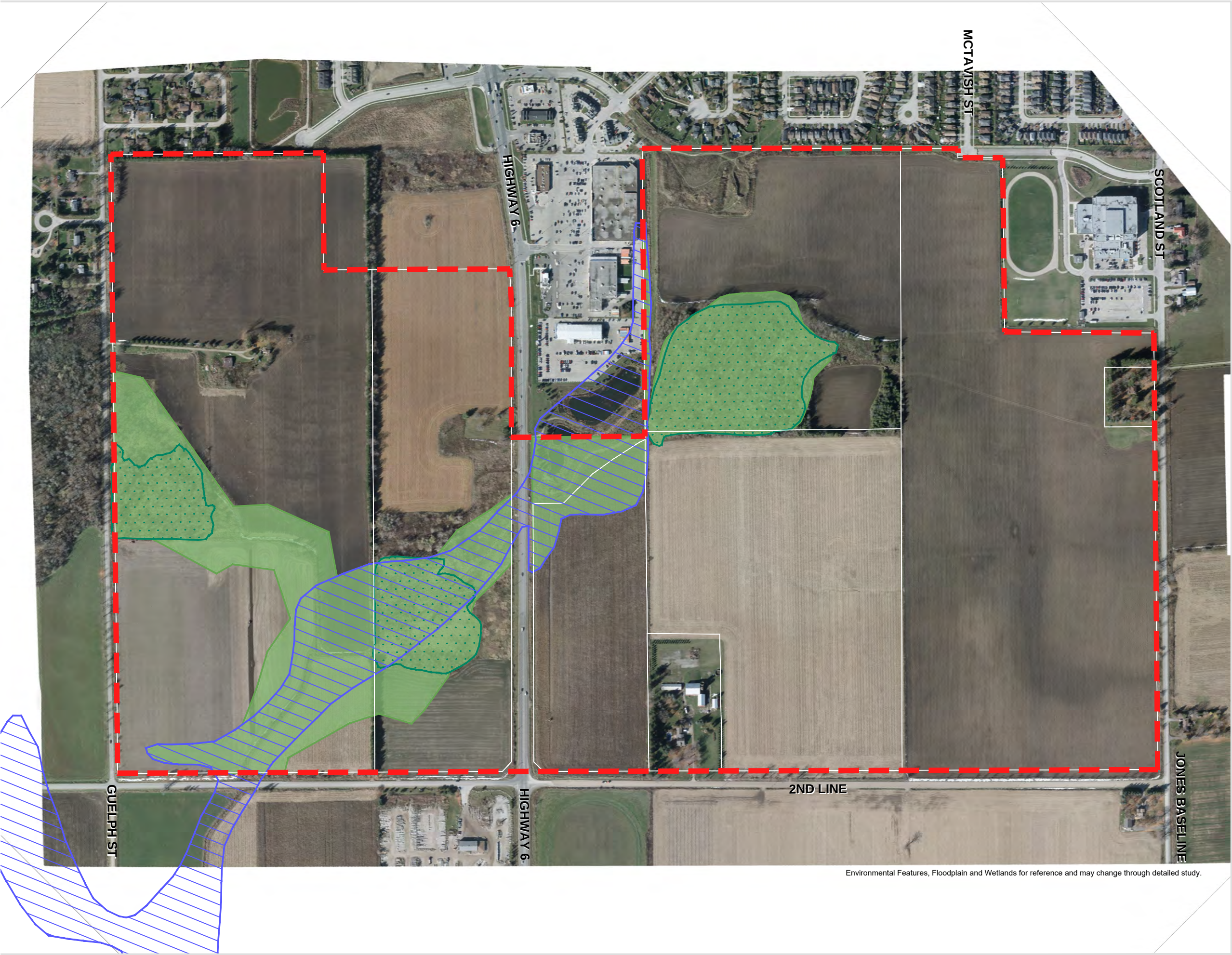
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PLAN\_21DEC2020.DWG



Environmental Features, Floodplain and Wetlands for reference and may change through detailed study.

## APPENDIX B

SOUTH FERGUS MESP & SECONDARY PLAN

STUDY PROCESS FLOWCHART

| TASK                                                               | 2020     |         | 2021    |         |          |          |          |         | 2022    |         |          |          |
|--------------------------------------------------------------------|----------|---------|---------|---------|----------|----------|----------|---------|---------|---------|----------|----------|
|                                                                    | Sept/Oct | Nov/Dec | Jan/Feb | Mar/Apr | May/June | July/Aug | Sept/Oct | Nov/Dec | Jan/Feb | Mar/Apr | May/June | July/Aug |
| TERMS OF REFERENCE APPROVAL                                        |          |         |         |         |          |          |          |         |         |         |          |          |
| MESP & SECONDARY PLAN INITIATED                                    |          |         |         |         |          |          |          |         |         |         |          |          |
| NOTICE OF STUDY COMMENCEMENT                                       |          |         |         |         |          |          |          |         |         |         |          |          |
| BACKGROUND REVIEW & EXISTING CONDITIONS                            |          |         |         |         |          |          |          |         |         |         |          |          |
| COMPLETION OF EXISTING CONDITION STUDIES                           |          |         |         |         |          |          |          |         |         |         |          |          |
| UNDERTAKE EXISTING CONDITION STUDIES / FIELD INVESTIGATIONS        |          |         |         |         |          |          |          |         |         |         |          |          |
| NATURAL ENVIRONMENT (work initiated & partially completed in 2020) |          |         |         |         |          |          |          |         |         |         |          |          |
| HYDROGEOLOGY                                                       |          |         |         |         |          |          |          |         |         |         |          |          |
| HYDROLOGY                                                          |          |         |         |         |          |          |          |         |         |         |          |          |
| FLOODPLAIN HYDRAULICS                                              |          |         |         |         |          |          |          |         |         |         |          |          |
| EROSION ASSESSMENT                                                 |          |         |         |         |          |          |          |         |         |         |          |          |
| NATURAL SYSTEM LINKAGES & FUNCTIONS                                |          |         |         |         |          |          |          |         |         |         |          |          |
| IDENTIFY MANAGEMENT OBJECTIVES AND TARGETS                         |          |         |         |         |          |          |          |         |         |         |          |          |
| TRAFFIC ANALYSIS                                                   |          |         |         |         |          |          |          |         |         |         |          |          |
| CULTURAL HERITAGE EVALUTION                                        |          |         |         |         |          |          |          |         |         |         |          |          |
| ARCHAEOLOGICAL ASSESSMENT                                          |          |         |         |         |          |          |          |         |         |         |          |          |
| COMPLETE BACKGROUND & EXISTING CONDITIONS REPORT                   |          |         |         |         |          |          |          |         |         |         |          |          |
| IMPACT ASSESSMENT & SCREENING OF MANAGEMENT PRACTICES              |          |         |         |         |          |          |          |         |         |         |          |          |
| IDENTIFY STORMWATER MANAGEMENT AND SERVICING APPROACH              |          |         |         |         |          |          |          |         |         |         |          |          |
| PREPARE PRELIMINARY LAND USE PLAN AND SECONDARY PLAN POLICIES      |          |         |         |         |          |          |          |         |         |         |          |          |
| IDENTIFY LAND USE OPTIONS AND SERVICING                            |          |         |         |         |          |          |          |         |         |         |          |          |
| DETERMINE PREFERRED LAND USE PLAN AND SERVICING                    |          |         |         |         |          |          |          |         |         |         |          |          |
| URBAN DESIGN GUIDELINES                                            |          |         |         |         |          |          |          |         |         |         |          |          |
| FISCAL IMPACT ANALYSIS                                             |          |         |         |         |          |          |          |         |         |         |          |          |
| PHASING PLAN                                                       |          |         |         |         |          |          |          |         |         |         |          |          |
| SUBMIT DRAFT MESP & SECONDARY PLAN                                 |          |         |         |         |          |          |          |         |         |         |          |          |
| AGENCY CIRCULATION OF DRAFT MESP & SECONDARY PLAN                  |          |         |         |         |          |          |          |         |         |         |          |          |
| FINALIZE AND SUBMIT MESP & SECONDARY PLAN                          |          |         |         |         |          |          |          |         |         |         |          |          |
| MESP & SECONDARY PLAN CONSIDERED BY TOWNSHIP COMMITTEE             |          |         |         |         |          |          |          |         |         |         |          |          |
| TOWNSHIP COUNCIL CONSIDERATION OF MESP & SECONDARY PLAN            |          |         |         |         |          |          |          |         |         |         |          |          |
| NOTICE OF STUDY COMPLETION                                         |          |         |         |         |          |          |          |         |         |         |          |          |
|                                                                    |          |         |         |         |          |          |          |         |         |         |          |          |
| PROJECT MANAGEMENT MEETINGS WITH TOWNSHIP STAFF                    | *        |         | *       |         | *        |          | *        |         | *       | *       |          |          |
|                                                                    |          |         |         |         |          |          |          |         |         |         |          |          |
| TECHNICAL ADVISORY COMMITTEE (TAC) MEETINGS                        |          |         |         |         | *        |          | *        |         |         |         |          |          |
|                                                                    |          |         |         |         |          |          |          |         |         |         |          |          |
| PUBLIC CONSULTATION                                                |          |         |         | *       |          | *        |          | *       |         | *       |          |          |

## APPENDIX C



**MHBC Planning has been delivering a full range of planning services to the public and private sector since 1973. MHBC is owner operated, has 19 Partners and a full complement of Associates, Planners, Landscape Architects, Cultural Heritage Experts, Agricultural Experts, Urban Designers and Technical Support Staff. Our six offices are well positioned in Ontario to provide a wide range of services to public and private sector clients.**

At MHBC we provide exceptional service and leadership by combining professional experience, innovative problem solving skills, and a thorough knowledge of policy and legislation to provide our clients the best possible advice and product.

MHBC understands the need for a wide range of expertise to facilitate complex projects and assemble the best team for each project. We work closely with professionals from numerous disciplines and are well known for our ability to manage complicated projects within tight timelines and budgets.

Successful completion of hundreds of projects across Ontario has resulted in strong working relationships with many government agencies and professionals. MHBC has earned a reputation as trusted professionals.



## Our Services Include:

Municipal Plans and Studies  
Urban Design  
Community Planning  
Brownfields  
Infill Development  
Mixed Use Planning  
Commercial Planning  
Landscape Architecture  
Mineral Aggregate Planning  
Alternative & Renewable  
Energy Planning  
Recreational & Tourism Planning  
Due Diligence  
Project Management  
Peer Reviews  
Agricultural Impact Assessments  
Visual Impact Assessments  
Cultural Heritage  
Landscape Assessments  
Tree Preservation Plans /  
Certified Arborists  
LEED Design  
Expropriation  
Expert Evidence  
Mediation /Facilitation  
Site Plans  
Autocad & GIS Mapping  
Site Searches

## PARTNERS:

Ian F. MacNaughton, MA, FCIP, RPP  
Bernard P. Hermesen, MUDS, MCIP, RPP  
Paul R. Britton, BES, MCIP, RPP  
W. Brent Clarkson, MA, MCIP, RPP  
James D. Parkin, BES, MCIP, RPP  
Carol M. Wiebe, BES  
Kris Menzies, BES, BED, MCIP, RPP  
David A McKay, MSC, MCIP, RPP  
Brian A. Zeman, BES, MCIP, RPP  
Dave W. Aston, MSC, MCIP, RPP  
Nick A. Miele, BLA, OALA, MALA, CSLA, ISA  
Jim Dyment, BES, MCIP, RPP  
Pierre Chauvin, MA, MCIP, RPP  
Dan Currie, MA, MCIP, RPP  
Debra Kakaria, MBA, MCIP, RPP  
Oz Kemal, BES, MCIP, RPP  
Eldon Theodore, MUDS, MCIP, RPP, LEED AP  
Dana Anderson, BA, MA, MCIP, RPP  
Jaime Robinson, BES, MCIP, RPP

### KITCHENER

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### WOODBRIIDGE

t: 905.761.5588  
f: 905.761.5589

### LONDON

t: 519.858.2797  
f: 519.858.2920

### KINGSTON

t: 613.348.7067  
f: 613.384.8959

### BARRIE

t: 705.728.0045  
f: 705.728.2010

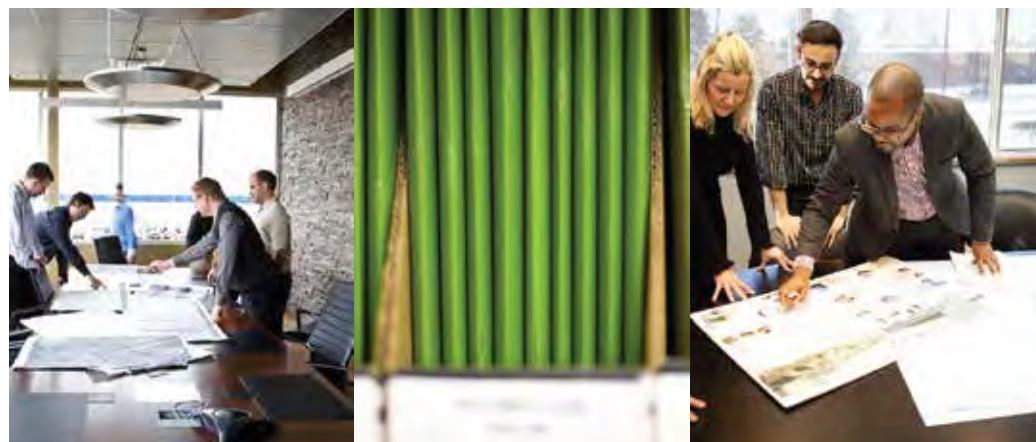
### BURLINGTON

t: 416.518.8394  
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## We are affiliated with:

American Planning Association  
American Society of Landscape Architects  
Architectural Conservancy of Ontario  
Barrie Homebuilders Association  
Building Industry and Land Development Association  
Canadian Association of Heritage Professionals  
Canadian Society of Landscape Architects  
Canada's Technology Triangle  
Canadian Institute of Planners  
Canadian Bottled Water Association  
Canadian Land Reclamation Association  
Canadian Urban Institute  
Canadian Wind & Energy Association  
Canadian Association of Certified Planning Technicians  
Georgian Triangle Development Institute  
Greater Toronto Home Builders Association  
Green Roofs for Healthy Cities  
Guelph Development Association

Heritage Canada  
ICOMOS Canada  
International Society of Arboriculture  
Lambda Alpha  
Manitoba Association of Landscape Architects  
National Association of Olmsted Parks  
National Charette Institute National Trust for Historic Preservation  
Ontario Association of Landscape Architects  
Ontario Expropriation Association  
Ontario Professional Planners Institute  
Ontario Stone, Sand & Gravel Association  
Society for the Study of Architecture in Canada  
The Alliance of Historic Landscape Preservation  
University of Waterloo Pragma Council  
Urban Land Institute  
Vaughan Chamber of Commerce  
Waterloo Region Home Builders



## We are involved in numerous municipal committees and engage in many professional activities including:

Canadian Institute of Planners –  
Past National Council Member & Chair of Membership  
Canadian Land Reclamation Association –  
Past Ontario Chapter President  
Canada's Technology Triangle –  
Board of Directors  
City of Barrie, Business Improvement Association –  
Board of Directors  
City of Kitchener Downtown Business Association  
City of Kitchener Economic Development Committee  
City of Kitchener Mayor's Task Force on Downtown Revitalization  
City of Kitchener Industrial Re-Use Committee  
City of Waterloo Uptown Vision Committee  
Congress for the New Urbanism  
Homewood, Board of Directors  
Kitchener and Waterloo Chamber of Commerce –  
Past Board of Directors

Ontario Professional Planners Institute  
(Toronto / Southwestern / Lakeland District) –  
Various positions including Past Chairs  
Ontario Expropriation Association –  
Past Board of Directors  
Ontario Stone, Sand & Gravel Association –  
Special Advisor and Various Committees  
Region of Waterloo Economic Development Corporation –  
Board of Directors  
Rotary Clubs (Barrie, Conestoga, Kitchener)  
Town of Collingwood Downtown Business Improvement –  
Special Advisor  
Waterloo North Hydro Commission  
University of Toronto Alumni Committee  
University of Waterloo Planning Alumni –  
Past Chair & Board of Directors  
Waterloo Region Home Builders

To learn more, visit and follow us at [www.mhbcplan.com](http://www.mhbcplan.com)





## EDUCATION

2000

Masters of Science Degree (M.Sc)  
School of Rural Planning and  
Development, University of Guelph

1998

Honours Bachelor of Arts Degree  
(BA Hons.), Geography  
Laurentian University

.

## CONTACT

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# CURRICULUM VITAE

## David Aston, MSc, MCIP, RPP

David Aston joined MHBC Planning in 2004 after holding various positions with the Niagara Escarpment Commission, the Regional Municipality of Waterloo and the Regional Municipality of Peel. Mr. Aston provides a variety of planning services for the public and private sectors.

Mr. Aston's public sector experience is balanced between land use planning and policy review and development. Mr. Aston has a wide range of experience in urban and rural development related issues and direct experience in the coordination of planning projects, including municipal review and approval, project team member for Subwatershed Studies, and involvement on technical committees for Class Environmental Assessments.

Mr. Aston is a Registered Professional Planner and is actively involved in the planning profession, including the Ontario Professional Planners Institute as a member of the Recognition Committee. He is a past member of the Policy Development Committee, past Chair of the Economic Development Working Group, and an examiner for the Professional Planner designation. Mr. Aston has given numerous professional presentations and guest lectures.

## PROFESSIONAL ASSOCIATIONS

Full Member, Canadian Institute of Planners (CIP)

Full Member, Ontario Professional Planners Institute (OPPI) and Registered Professional Planner (RPP)

Member, Recognition Committee, OPPI, Past Chair, Economic Development Working Group, Past Director, OPPI Policy Development Committee

Chair, Cambridge Municipal Liaison Committee, Waterloo Region Homebuilders Association

Member of Board of Directors, Waterloo Region Homebuilders Association

## PROFESSIONAL HISTORY

|              |                                                                                      |
|--------------|--------------------------------------------------------------------------------------|
| 2010-Present | Partner,<br>MacNaughton Hermesen Britton Clarkson Planning Limited                   |
| 2004 - 2006  | Senior Planner / Associate<br>MacNaughton Hermesen Britton Clarkson Planning Limited |
| 2004 - 2004  | Principal Planner,<br>Regional Municipality of Peel                                  |
| 2001-2004    | Planner / Principal Planner<br>Regional Municipality of Waterloo                     |
| 1999 - 2000  | Community Planner,<br>Niagara Escarpment Commission                                  |



## CURRICULUM **VITAE**

**David Aston**, MSc, MCIP, RPP

### SELECTED PROJECT EXPERIENCE

#### GROWTH MANAGEMENT STRATEGIES, OFFICIAL PLANS AND ZONING BY-LAWS

City of Brantford Growth Management Study and Official Plan Update  
City of Kawartha Lakes Growth Management Study  
City of Kawartha Lakes - Places to Grow Conformity Exercise Official Plan Update  
City of Brantford Economic Development Strategy  
City of Owen Sound - New Comprehensive Zoning By-law  
City of Owen Sound - Community Improvement Plan  
Township of Guelph/Eramosa – Hazard Lands Zoning By-law Update

#### LAND DEVELOPMENT AND APPROVALS

Direct experience in the coordination and supervision of planning projects and negotiation of conditions of approval and agreements, including the review and approval of applications for minor variance, severance, site plan, zone change, plan of subdivision, plan of condominium, and local and Regional Official Plan amendments

Project manager and team member for Subwatershed Studies, Class Environmental Assessment Studies

Qualified Planning Expert - Ontario Municipal Board Appeals

Preparation of planning studies and reports to assess impact of expropriations, evaluate land use alternatives and identify development potential

Coordination and review of technical requirements for development applications, noise impact assessments, record of site conditions

Project planner for City of Owen Sound and Township of Guelph/Eramosa

#### FACILITATION AND COMMUNICATIONS

Numerous Facilitated Workshops and Focus Groups that involved public and private stakeholders and community members

Presentations at Public Meetings and Public Information Sessions

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# CURRICULUM VITAE

Emily Elliott, BES, MCIP, RPP

## EDUCATION

2007  
Bachelor of Environmental Studies  
Honours Urban and Regional  
Planning  
University of Waterloo

Emily Elliott joined MHBC as a Planner in 2014. Prior to joining MHBC Ms. Elliott worked as an in-house land use planner at a Toronto-based law firm.

Ms. Elliott provides urban and regional planning, analysis and research support for all aspects of the firm's activities. Ms. Elliott provides planning consulting services to municipalities and private sector client and prepares planning assessment and evaluation reports. She also has experience in obtaining development approvals, project coordination and preparation of Ontario Municipal Board hearing documents.

Ms. Elliott is a provisional member of the Canadian Institute of Planners and Ontario Professional Planners Institute.

## PROFESSIONAL HISTORY

|               |                                                                    |
|---------------|--------------------------------------------------------------------|
| 2014- Present | Planner,<br>MacNaughton Hermesen Britton Clarkson Planning Limited |
| 2011-2014     | Land Use Planner,<br>Aird & Berlis LLP                             |

## PROFESSIONAL SERVICE

Provisional Member, Canadian Institute of Planners

Provisional Member, Ontario Professional Planners Institute

## SELECTED PROJECT EXPERIENCE

- Project Planner providing services to the Township of Guelph / Eramosa related to the review of Planning Act applications.
- Preparation of planning assessments to identify development potential of properties for a range of residential and non-residential clients.

## CONTACT

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## CURRICULUMVITAE

Emily Elliott, BES, MCIP, RPP

- Research, preparation and co-ordination of reports / applications under the Planning Act (Minor Variance, Severance, Zoning By-law Amendment, Official Plan Amendment), Niagara Escarpment Planning and Development Act.
- Research and preparation of reports/evidence for hearings before the Ontario Municipal Board.
- Research and analyse emerging policies and guidelines and provide strategic advice to public and private sector clients.
- Research related to employment lands, and employment land conversions.
- Review of Provincial documents and policy for various clients.

### CONTACT

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www.mhbcplan.com

## CURRICULUM VITAE

### Dan Currie, BA, BES, MA, MCIP, RPP, CAHP

#### EDUCATION

2006

Masters of Arts (Planning)  
University of Waterloo

1998

Bachelor of Environmental Studies  
University of Waterloo

1998

Bachelor of Arts (Art History)  
University of Saskatchewan

Dan Currie, a Partner with MHBC, joined MHBC Planning in 2009, after having worked in various positions in the public sector since 1997 including the Director of Policy Planning for the City of Cambridge and Senior Policy Planner for the City of Waterloo.

Dan provides a variety of planning services for public and private sector clients including a wide range of policy and development work. Dan has experience in a number of areas including strategic planning, growth plan policy, secondary plans, watershed plans, housing studies and downtown revitalization plans. Dan specializes in long range planning and has experience in growth plans, settlement area expansions and urban growth studies. He has provided expert planning evidence to the Local Planning Appeals Tribunal and heritage planning evidence to the Conservation Review Board.

Dan holds a Masters degree in Planning from the University of Waterloo, a Bachelors degree (Honours) in Planning from the University of Waterloo and a Bachelor of Arts degree from the University of Saskatchewan. He is a registered Professional Planner and a Member of the Canadian Institute of Planners and a Professional Member of the Canadian Association of Heritage Professionals.

#### PROFESSIONAL ASSOCIATIONS

Full Member, Canadian Institute of Planners  
Full Member, Ontario Professional Planners Institute  
Professional Member, Canadian Association of Heritage Professionals  
Past Board Member, Town and Gown Association of Ontario

#### PROFESSIONAL HISTORY

|                |                                                                    |
|----------------|--------------------------------------------------------------------|
| 2013 – Present | Partner,<br>MacNaughton Hermsen Britton Clarkson Planning Limited  |
| 2009 – 2013    | Associate<br>MacNaughton Hermsen Britton Clarkson Planning Limited |
| 2007 - 2009    | Director, Policy Planning, City of Cambridge                       |

#### CONTACT

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www.mhbcplan.com

## CURRICULUM **VITAE**

**Dan Currie**, BA, BES, MA, MCIP, RPP, CAHP

|             |                                     |
|-------------|-------------------------------------|
| 2000 - 2007 | Senior Planner, City of Waterloo    |
| 1999 - 2000 | Planner, City of Waterloo           |
| 1997 - 1998 | Research Planner, City of Kitchener |

### SELECTED PROJECT EXPERIENCE

#### MASTER PLANS, GROWTH MANAGEMENT STRATEGIES AND POLICY STUDIES

Township of West Lincoln, Smithville Northwest Quadrant Secondary Plan  
 Township of Tiny Growth Management Strategy and Urban Expansion Analysis  
 Niagara-on-the-Lake Mary Street Streetscape Study  
 Richmond Hill, Bond Crescent Intensification Strategy  
 City of Cambridge Climate Change Adaptation Policy  
 Ministry of Infrastructure Pilot Test of Growth Plan Indicators Study  
 Cambridge West Master Environmental Servicing Plan  
 Township of Tiny Residential Land Use Study  
 Township of West Lincoln Settlement Area Expansion Analysis  
 Port Severn Settlement Area Boundary Review  
 City of Cambridge Green Building Policy  
 Township of West Lincoln Intensification Study & Employment Land Strategy  
 Ministry of the Environment Review of the D-Series Land Use Guidelines  
 Meadowlands Conservation Area Management Plan  
 City of Cambridge Trails Master Plan  
 City of Kawartha Lakes Growth Management Strategy  
 City of Cambridge Growth Management Strategy  
 Cambridge GO Train Feasibility Study  
 City of Waterloo Height and Density Policy  
 City of Waterloo Student Accommodation Study  
 Uptown Waterloo Residential Market Study  
 City of Waterloo Land Supply Study  
 City of Kitchener Inner City Housing Study

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## CURRICULUM **VITAE**

**Dan Currie**, BA, BES, MA, MCIP, RPP, CAHP

### HERITAGE PLANNING

Port Credit Heritage Conservation District  
 Town of Cobourg Heritage Master Plan  
 Municipality of Chatham-Kent Rondeau Heritage Conservation District Plan  
 City of Markham Victoria Square Heritage Conservation District Study  
 City of Kingston Barriefield Heritage Conservation District Plan  
 Burlington Heights Heritage Lands Management Plan  
 Township of Muskoka Lakes, Bala Heritage Conservation District Study and Plan  
 Municipality of Meaford, Downtown Meaford Heritage Conservation District Plan  
 City of Guelph Brooklyn and College Hill Heritage Conservation District Plan  
 Niagara Peninsula Conservation Authority St John's Master Plan  
 City of Toronto Garden District Heritage Conservation District Study and Plan  
 City of London Western Counties Cultural Heritage Plan  
 City of Cambridge Heritage Master Plan  
 City of Waterloo Mary-Allen Neighbourhood Heritage District Study  
 City of Waterloo Rummelhardt School Heritage Designation  
 Other heritage consulting services including:

- Heritage Impact Assessments
- Requests for Designations
- Alterations or new developments within Heritage Conservation Districts

### DEVELOPMENT PLANNING

Provide consulting services and prepare planning applications for private sector clients for:

- Draft plans of subdivision
- Consent
- Official Plan Amendment
- Zoning By-law Amendment
- Minor Variance
- Site Plan

### CONTACT

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Enhancing our communities



## What we do

Tatham Engineering is a team of multi-disciplinary project managers, engineers, technical staff and industry professionals who have been challenged to provide consulting engineering, design and construction services relating to the fields of land development, municipal infrastructure, structural, transportation, water resources and water & wastewater engineering.

Originally established in Collingwood, where our head office remains, we also operate through offices in Barrie, Bracebridge, Orillia and Ottawa.

## How we do it

Employee-owned and community-driven, we are invested in each project regardless of whether it is large or small, in its infancy or nearing completion, simple or complex.

Our goal, for each and every project, is to not only meet but exceed client expectations through project execution and delivery. In doing so, we draw from our 30 years of experience and our valued relationships with approval authorities, agencies and stakeholder groups to maintain project momentum and ensure solutions are cost effective, readily achievable and amenable to all.

# Our services

Originally established as C.C. Tatham & Associates Ltd. in 1988 and rebranded as Tatham Engineering Limited in 2019, we provide engineering and advisory services to public and private sector clients in a wide range of civil engineering disciplines. From conceptual and preliminary design, through to construction and implementation, we recognize that each project and client partnership is unique.

For each, project delivery must balance client needs and wants, site and environmental constraints, approval requirements, project timelines and project budgets. Our approach to achieving this balance is consistent – through commitment, quality and resolve. Our clients appreciate this and have rewarded us with repeat opportunities – many of our client relations span 20+ years.



## Land Development

- Site plans & approvals
- Grading & drainage
- Site servicing
- Septic systems
- Residential subdivisions
- Industrial parks
- Servicing studies & reports
- Erosion & sediment control

## Municipal Infrastructure

- Infrastructure renewal & reconstruction
- Watermain, sanitary & storm sewer systems
- Stormwater management
- Road design & reconstruction
- Streetscape improvements
- Boat launch & docks
- Development charge studies
- Engineering standards review
- Peer review
- Class environmental assessment

## Structural

- Bridges & culverts
- Buildings
- Foundation & roof design
- Holding tanks, wet wells, pump houses & reservoirs
- Retaining walls
- Code compliance reviews
- Condition assessments & inspections
- Dam safety studies & rehabilitation

### Transportation

- Road widening & improvements
- Intersection improvements
- Roundabouts
- Pavement markings & signage plans
- Parking analysis & design
- Traffic impact studies & briefs
- Traffic operational reviews
- Site access reviews
- Transportation master plans
- Environmental assessments
- Active transportation
- Road & bridge rationalization studies

### Water Resources

- Hydrologic & hydraulic modeling
- Stormwater management planning
- Water quality & quantity control
- Low impact development features
- Natural channel designs
- Flood control, mapping & assessments
- Riverbank & shoreline remediation
- Shoreline hazard & setback assessment
- Erosion & sediment control
- Stormwater master planning
- Class environmental assessments
- Surface water & groundwater monitoring

### Water & Wastewater

- Water supply, treatment, storage & pumping
- Wastewater collection, pumping & treatment
- Effluent disposal, including subsurface disposal beds
- Hydraulic modeling
- Compliance & performance reporting
- Servicing studies & master plans
- Class environmental assessments
- Flow monitoring & inflow/infiltration control studies
- Operations & maintenance manuals

### Coastal

- Coastal process modelling
- Shoreline hazard studies and setback assessments
- Shoreline protection structures (revetments and walls)
- Permitting support

### Survey & Construction

- Topographic & as-built surveys
- Construction control & staking
- Contract & tender documentation
- Tender administration & evaluation
- Contract administration & construction inspection
- Shop drawing reviews
- Construction certification

### Asset Management

- Reserve fund studies
- Road needs studies
- Road condition assessments
- Infrastructure inventories
- OSIM inspections
- Life cycling cost
- Funding applications for government programs



## Career Highlights

Michael is currently the Vice President of Head Office Operations for Tatham Engineering Limited. overseeing all head office operations, in addition to transportation and municipal engineering and development projects. Chairs the Tatham Quality Control Committee, responsible for the development and implementation of the corporate program.

Prior to Tatham, Michael was the Manager of Transportation Planning for Consult Maunsell responsible for all such projects within the Gulf Region. He was also the General Manager of Consult Tatham Transportation Consultants, a joint venture operation focussing on all aspects of transportation engineering and planning, during which time he was responsible for the development of a successful transportation department in a new market area.

In these roles, Michael has been responsible for managing teams of engineering professionals, consultation and negotiations with a wide range of stakeholder groups and delivery of programs and projects in the traffic and transport sector. He has regularly provided strategic and business advice to governments, transport infrastructure providers, operators and private developers. More specifically, this experience includes land use/transport studies, demand forecasting, route planning, public transport studies, parking studies, traffic impact assessments, access and circulation reviews and environmental assessments.

## Detailed Experience

### Municipal Engineering & Infrastructure Renewal

#### 8th Street East Reconstruction, Owen Sound

Responsible for quality review and traffic engineering for reconstruction of 450m of 8th Street including replacement of sanitary sewers, storm sewers, combined sewers (west end) and watermain, and reconstruction of a two lane paved road platform with significant grade challenges. Various road cross sections have been explored in consideration of steep side slopes, property impacts and the desire to accommodate active transportation (sidewalks and bike lanes).

#### Engineering Services Support, Town of The Blue Mountains

On-going provision of consulting engineering services for the Town involving peer review of development applications, design services for municipal infrastructure projects and advice related to municipal design standards and the development review and approval process.

#### Hoover Lane/Teskey Drive & Arlberg Crescent Sanitary Servicing, Town of The Blue Mountains

Responsible for engineering services for the provision of wastewater servicing to the above noted residential roads and service areas, including service laterals. Work will include 3 low pressure forcemain systems and restoration of all area roads, totally approximately 1600m.

#### Sanitary Sewer Renewal Program Ph. 2, Collingwood

Project Director relating to the replacement and/or relining of approximately 3.3 km of existing sanitary sewer and associated water main throughout Collingwood. The project also includes local drainage improvements and storm sewer design to eliminate existing catch basins connected to the sanitary sewer.

**Michael Cullip, P.Eng.**  
**Vice President**  
**Head Office Operations**

## Qualifications

|      |                                                                         |
|------|-------------------------------------------------------------------------|
| 1994 | Bachelor Engineering & Management, McMaster University, Hamilton, ON    |
| 1996 | Master of Engineering (Transportation) McMaster University Hamilton, ON |

## Professional Designations, Licences, Registrations

- Professional Engineers Ontario

## Professional Affiliations

- Institute of Transportation Engineers
- Transportation Association of Canada

## Professional Experience

|                 |                                                                                          |
|-----------------|------------------------------------------------------------------------------------------|
| 2008 to Present | Tatham Engineering/C.C. Tatham & Associates Ltd. Collingwood, ON                         |
| 2006 to 2007    | Consult Maunsell Limited Dubai, UAE<br>Manager, Transportation Planning                  |
| 2001 to 2005    | Consult Tatham Transportation Consultants Collingwood, ON<br>General Manager             |
| 1997 to 2001    | Consult Limited Markham, ON<br>Transportation Planner                                    |
| 1996 to 1997    | Centre for Research on Transportation & Society Borlänge, Sweden<br>Principal Researcher |
| 1996            | Waylaw Technical Services Paris, ON<br>Survey Crew Chief                                 |
| 1994 to 1996    | McMaster University Hamilton, ON<br>Teaching Assistant                                   |

**State of City Infrastructure, Owen Sound**

Project Director for the detailed inventory assessment of the City's road, water and storm sewer networks. Established inventory and assessment protocol for curb, sidewalk and guiderail systems and oversaw development of the database containing 13,000 data entries for the 135 km road system, 75 km storm sewer system and 140 km watermain system. The database is the foundation for the City's Asset Management Plan and infrastructure renewal program.

**Traffic Impact Studies/Assessments**

Involved in over 100 traffic impact studies/assessments to address operations and traffic impacts associated with new development, including external and internal road circulation, parking assessment and site access review. Wide range of land uses have been addressed (residential, retail, office, landfills, quarries, vacation, institution, mixed-use) with peak hour trips ranging from 100 to 100,000.

**Planning Studies & Reviews****Barrie Transit Strategic Operating Plan**

Study addressed the existing and future operations of the Barrie Transit system. Study addressed route structures, fare policies, strategies for future development and interim recommendations. Conducted travel surveys and ridership counts to address current ridership levels.

**Comprehensive Transportation Strategic Plan, Town of The Blue Mountains**

In conjunction with AECOM, prepared a transportation strategic plan for the Town of The Blue Mountains, to review their existing transportation system and provide recommendations to meet future travel demands. The study also included a detailed review of traffic operations in several key areas, the development of an access management plan for Highway 26 with the Town and input to the Town's Development Charge study for applicable improvements.

**Georgian College Access, Parking & Circulation Review, Barrie**

This study addressed the transportation impacts associated with the proposed expansion of the Georgian College Barrie campus to accommodate up to 15,000 students. The existing parking system and opportunities to improve these facilities were addressed, as were associated parking rates and strategies to reduce overall demands. Vehicular access to the campus was reviewed and based on traffic operations, recommendations made for improvement, including consideration for additional access.

**Speed Limit Review, Township of Oro-Medonte**

Study established and documented guidelines and criteria to review road sections with the Township and determine the appropriateness of the existing speed limit, as well as the need for additional measures. Following a review of select road sections, on which speeding was considered prevalent, recommendations for improvements were provided. Consideration was given to road geometry and alignment, adjacent

development, other road users and the need for increased enforcement.

**Town of Collingwood Transportation Study**

Study reviewed the Town's road system network and operations, and outlined existing, medium and long-term recommendations including improvements to the road network and identification of potential new arterial routes to ensure future travel demands can be adequately accommodated. While it is acknowledged that several modes of travel are available within the Town, the primary focus was on addressing vehicular travel by road and the infrastructure necessary to accommodate such.

**Town of Midland Transportation Master Plan**

To assist the Town with the future planning and development of their road system, this study reviewed the existing network and operations, and identified road system improvements necessary to accommodate future travel demands. Traffic projections, based on historic growth and considering new development, were prepared for a 20 year planning horizon.

**York Region Transportation Master Plan**

Assisted in the development of a Transportation Master Plan for York Region. Key areas of involvement include: development of background policy papers addressing travel demand management, air quality and goods movement; identification of key issues and strategic options for the transportation system.

**Sandy Plains Road Traffic Calming, Seguin Township**

The study reviewed and assessed a variety of traffic calming measures for Sandy Plains Road to address excessive speeds along this rural road, particularly in summer months when tourist traffic increases.

**Simcoe Road 90 Transportation Needs Assessment**

This study defined the long-term needs of County Road 90 from the City of Barrie to Angus (13 km). Responsible for traffic data collection, development of future traffic estimates, and identification of future road and intersection improvements and associated costs.

**Parking Studies & Reviews**

Completed numerous studies to address parking requirements of specific developments, which included a review of parking supply and requirements, operations, capacity, geometrics and circulation.

Completed studies addressing existing and future parking requirements with municipal downtown, waterfront and development areas. These included completion of occupancy and duration counts to establish existing parking patterns, estimation of future demands, assessment of parking supplies, recommendations for improvements, review of parking fees and review of municipal parking rates and by-laws.

The following studies have been completed:

- 200 Anglo Street Condominium, Bracebridge
- Barrie Waterfront Parking Study
- Collingwood Downtown Parking Study

- Collingwood Parking Rate Review
- Cranberry Marina Development, Collingwood
- Pine Street Campus, District of Muskoka
- Urban Commercial Core Parking Study, Alliston, Beeton & Tottenham

### Road Needs Studies

Road needs studies have been prepared for various municipalities and agencies to provide an inventory and assessment of their existing road system, and provide recommendation with respect to future improvements, costs, and priorities. Studies have also included an assessment of bridges and culverts, sidewalks, municipal infrastructure and equipment, and housing, and valuation for PSAB 3150 purposes.

Studies have been completed for:

- Chippewas of Rama
- Municipality of Magnetawan
- Township of Georgian Bay
- Town of Innisfil
- Township of Muskoka Lakes
- Township of Ramara
- Township of Severn

### Environmental Assessments

Responsible for Class Environmental Assessments (EAs) to identify and evaluate transportation system improvements. In accordance with MEA guidelines, improvement options were identified and evaluated in consideration of impacts to existing development, the natural environment, socio-economics, engineering feasibility, associated costs, and input received from the public, stakeholder groups, and government agencies.

Environmental Assessments have been completed for:

- 5 Points Intersection, Barrie
- Concessions B & C Truck Haul Route, Ramara
- District Road 25 Realignment, District of Muskoka
- District Road 50 Realignment, District of Muskoka
- Grey Road 19/21 Intersection, Grey County
- Hurst Drive Widening, Barrie
- Huronia Road Widening, Barrie
- Leslie Drive Extension, Innisfil
- Salmon Avenue Extension, Bracebridge
- Slabtown Community Access, Blue Mountains
- Simcoe Road 10 Improvements, Springwater Twp
- Simcoe Road 21 Widening, Innisfil
- Simcoe Road 27 & 90 Intersection, Essa Township
- Simcoe Road 43 & Wilson Drive Intersection, Springwater Township
- Simcoe Road 45 Improvements, Ramara Twp
- Simcoe Road 54 & 21 Intersection, Innisfil
- Sunnyside Drive/Harbourview Drive/Fuller Avenue Corridor Improvements, Midland

### Road & Highway Design

Responsible for road design to address various road and intersection improvements. Where required, construction specifications and contract documents were prepared for tendering of the design works.

Design works have been completed for the following:

- 20th Sideroad Reconstruction, Innisfil
- 27/28 Sideroad Reconstruction, Clearview Twp
- Batteaux Creek Intersection, Clearview
- Blue Shores & Highway 26 Intersection, Collingwood
- Collingwood Regional Airport Pavement Resurfacing
- Cyprus Lake Road Upgrades, Tobermory
- District Road 169 Widening & Intersection Improvements, Muskoka
- Fuller Avenue Preliminary Design, Midland
- Grey Road 30 Resurfacing, Grey Highlands
- Grey Road 31 Improvements, Grey Highlands
- Highway 26 Resurfacing, Collingwood
- Highway 60 & Centre Street Intersection, Huntsville
- Mill Street Improvements, Blue Mountains
- Monarch Drive/Wal-Mart Access Signalization, Orillia
- Poplar Sideroad Reconstruction, Collingwood
- Simcoe Road 4 & 10<sup>th</sup> Line Signalization, Innisfil
- Simcoe Road 21 & 5 Sideroad Intersection, Innisfil
- Simcoe Road 22 & Fox Farm Road, Simcoe County
- Simcoe Road 27 & 21 Intersection, Simcoe County
- Simcoe Road 27 & 90 Intersection, Simcoe County
- Simcoe Road 29 & Conc 3 Intersection, Tiny Twp
- Western Commercial Node Road Improvements & Signalization, Collingwood

## Career Highlights

Daniel specializes in the field of water resources engineering. He has completed many studies related to stormwater management and is skilled in stormwater management design, bridge and culvert replacements, natural hazard (flood and erosion) assessments, hydrologic and hydraulic analysis, surface water monitoring and water balance calculations. Daniel has been involved in the preparation of Master Drainage Plans, Environmental Assessments, and Comprehensive Stormwater Management Master Plans and is highly knowledgeable about water resources regulatory requirements.

Daniel has completed natural channel designs, site plans in support of Aggregate Resource Act licence applications, and stormwater retrofit designs. Daniel has advanced projects from inception to completion, participating in preliminary designs, securing approvals, preparing final designs, conducting construction inspection and contract administration.

## Detailed Experience

### Modelling Capabilities

Daniel is proficient with a number of hydrologic and hydraulic computational models including VISUAL OTTHYMO, SWMHYMO, PCSWMM, PCSWMM.NET, GAWSER and HEC-RAS. He has completed advanced hydraulic and hydrologic modeling courses in HEC-RAS, GAWSER and PCSWMM.

### Hydrologic & Hydraulic Studies

Involved in hydrologic and hydraulic investigations undertaken in conjunction with planning and proposed development activity. These studies have evaluated existing sewer capacities, hydraulics, replacement requirements and priority, determined floodplain or fill limits, culvert and bridge sizing, preliminary stormwater management constraints and assessed pond and dam works.

Daniel has participated in such studies for:

- The Blue Mountains TRIP SWM Need Study
- Barrie City Wide Minor/Major SWM Model Development Project
- 27<sup>th</sup>/28<sup>th</sup> Sideroad Road Improvements Project
- Poplar Sideroad Road Improvements Project
- Tenth Line Road Improvements Project
- Lackies Bush Pond Hydraulic Analysis
- Kidd's Creek Hydraulic Analysis
- Little Lake Sub-Watershed Drainage System Analysis
- Hewitt's Creek Hydraulic Analysis
- Simcoe County North River Bridge Hydraulic Analysis
- Ramara Township Concession Road 1 Bridge Hydraulic Analysis
- Municipality of Arran Christie Bridge Replacement
- Municipality of Arran Proud Bridge Replacement
- Summerhaven Windfarm Hydrologic/Hydraulic Analysis
- Town of Bracebridge McCutcheon Bridge Hydraulic Analysis
- North Bay Lakeshore Drive Bridge Replacement
- Huron Haven Village Storm Outfall Hydraulic Analysis

**Daniel Twigger, P.Eng.**  
**Senior Engineer, Group Leader**

## Qualifications

2005 Bachelor of Science in  
Engineering (Water  
Resources)  
University of Guelph  
Guelph, ON

## Professional Designations, Licences, Registrations

- Professional Engineers Ontario

## Professional Experience

2005 to Present Tatham Engineering Limited  
/C.C. Tatham & Associates  
Ltd.  
Collingwood, ON

### Stormwater Management Plans

Involved in the design of preliminary and detailed stormwater management plans for a variety of development scenarios including residential subdivisions, industrial and commercial sites and highway development. Specific duties have included the development of hydrologic models, water balance calculations, hydraulic grade line analysis, design of stormwater management facilities and report preparation.

Projects Daniel has participated in extensively include:

- Plateau East, The Blue Mountains
- Second Nature, The Blue Mountains
- Windfall Development, The Blue Mountains
- Founder's Village Subdivision, Wasaga Beach
- Osprey Quarry, Grey Highlands
- Mair Mills Village Subdivision, Collingwood
- New England Village Development, Wasaga Beach
- Springwater Meadows Subdivision, Springwater Township
- Richvale Athletic Field, Richmond Hill
- Stonebridge on the Bay Development, Wasaga Beach
- Windrose Valley Estates Subdivision, Clearview Township
- 11 Bay Street Condominium Development, The Blue Mountains
- MacDonald Street Self Storage Development, Collingwood
- Trillium Forest North Development, Wasaga Beach
- Barrie BMW/Mini Dealership, Barrie
- River's Edge Subdivision, Wasaga Beach
- Wolf Steel Warehouse Facility, Oro-Medonte
- Zenetec Collision Centre, Collingwood
- Welland Retirement Centre, Welland
- Wyldewood Trailside Condos, Collingwood
- Wyldewood Cove, Collingwood
- Huron Have Village, Goderich

### Master Drainage Plans, Environmental Assessments and Comprehensive Master Plans

The technical Guidance Documents provide municipalities an opportunity to establish short and long term strategies for effective stormwater management within existing and expanding settlement areas. The documents provide an opportunity to identify, prioritize and implement SWM improvements within existing settlement areas and SWM requirements for planned developments.

Projects Daniel has participated in extensively include:

- Drainage Master Plan, Barrie
- Sophia Creek Watershed and Mulcaster Drainage Area EA Update, Barrie
- Thornbury West Drainage Master Plan, The Blue Mountains
- Osler Bluff Secondary Plan, The Blue Mountains
- Airport Heights SWM Pond Class EA, North Bay
- Sophia Creek West Branch Drainage and Infrastructure Improvements Class EA, Barrie
- Sophia Creek Master Drainage Plan Class EA Update, Barrie
- Leslie Street Extension Environmental Assessment, Innisfil
- Lovers Creek, Hewitts Creek and Annexation Lands Study Area CSWM Master Plan, Barrie
- Barrie Creeks Study Area CSWM Master Plan, Barrie

### Water Quality/Quantity Monitoring

Involved in water quality/quantity monitoring for the purpose of Permit to Take Water, Certificate of Approval compliance, I/I studies and hydrologic/hydraulic model calibration. Daniel has undertaken the specific responsibilities of field investigations and sample collection, stream gauging, data logger installation/maintenance, water quality data collection, statistical analysis and interpretation of results, technical support and reporting.

Projects Daniel has participated in extensively include:

- Collingwood Sanitary Sewer Renewal Program
- Devil's Glen PTTW Compliance Monitoring
- Osler Bluff Ski Club PTTW Compliance Monitoring
- OslerBrook Golf and Country Club PTTW Compliance Monitoring
- Castle Glen Development Area
- Blue Mountain Resorts PTTW/ECA Compliance Monitoring
- Osprey Quarry ECA Compliance Monitoring
- Reeb Quarry ECA Compliance Monitoring
- Hewitt Quarry ECA Compliance Monitoring
- Barrie Creek Flow Monitoring
- Alliston Aggregates Sand and Gravel Pit, Surface Water Monitoring
- Beaver Valley Ski Club, Surface Water Monitoring
- Hockley Valley Ski Club, PTTW
- Nelson Aggregates, Burlington Quarry, PTTW Compliance Monitoring

## PTTW, ECA and ARA License Applications

Daniel has completed the following Permit to Take Water (PTTW), Environmental Compliance Approval (ECA), and Aggregate Resources Act (ARA) applications in support of agricultural, commercial and industrial developments:

- Botden Orchard PTTW
- Devil's Glen Ski Club PTTW
- Osler Bluff Ski Club PTTW
- Quality Sod Farm PTTW
- Thornbury Horse Park PTTW
- Sutherland Quarry Expansion ECA
- Blue Mountain Resorts ECA
- Nelson Waynco Wash Pond ECA
- Hamilton Brothers Works Yard ECA
- Georgian Triangle Anglers Association PTTW
- Alliston Aggregates Sand and Gravel Pit ARA License
- Osprey Quarry ECA/PTTW and ARA License
- Nelson Aggregates Burlington Quarry PTTW
- Beaver Valley Ski Club PTTW

## Natural Hazard Assessments

Natural hazard assessments undertaken in conjunction with planning and proposed development activity generally establish the flood hazard, meander belt width, and/or erosion hazards and consequently the allowable development limits on a property.

Projects Daniel has participated in extensively include:

- Huron Haven Village Gully Erosion Hazard Assessment
- Huron Park Flood and Erosion Hazard Assessment
- Violet Hill Pit Erosion Hazard Assessment
- Devil's Glen Escarpment Brow Delineation
- Windfall Flood and Erosion Hazard Assessment
- Alliston Aggregates Flood and Erosion Assessment
- Sunnidale Trails Flood and Erosion Hazard Assessment
- Monterra Phase 2 Natural Hazard Assessment

# ROD BILZ

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Environmental Specialist

1875A Seymour Street, North Bay ON P1A 0C7 | 705-476-0085 | [rod.bilz@fricorp.com](mailto:rod.bilz@fricorp.com)

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## PROFESSIONAL SUMMARY

Mr. Bilz has an extensive background in natural resource management and natural environment assessment studies. His career has included posts in both the public and private sector over the past 35 years. His areas of specialization include fish habitat assessment, species at risk, wetland evaluation and natural heritage studies.

He has been directly involved with more than 150 Ministry of Transportation assignments and numerous and diverse development projects in the private and municipal sector. The elements of these assignments typically involve obtaining background information, conducting field investigations, analyzing and evaluating impacts, developing mitigation, obtaining permits and approvals, construction administration and post-construction monitoring.

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## PROFESSIONAL EXPERIENCE

- Environmental Specialist: FRi Ecological Services, 1996 – Present
  - Resource Technician: Ministry of Natural Resources and Forestry  
1984 – 1996
  - Resource Technician: Toronto and Region Conservation Authority  
1982-1984
- 

## EDUCATION

- Fish & Wildlife Technician Diploma: Sir Sandford Fleming College  
1980-1982
  - Environmental Laws and Regulations: Niagara College – The Centre for Environmental Training  
1998
- 

## KEY SKILLS AND EXPERIENCE

- Conducting Environmental Impact Studies
- Species-specific surveys & monitoring; species at risk assessment and habitat delineation
- Extensive experience developing and negotiating Endangered Species Act (ESA) authorizations including 17(2)(c) Permits, Agreements (Avoidance, Development & Aggregate) as well as Mitigation and Overall Benefit Plans
- Recognized by the Ministry of Environment, Conservation and Parks as a Qualified Professional to deliver species at risk training

- Wetland evaluator – Ontario Wetland Evaluation System (OWES) Certified
- Expert witness at more than 30 Ontario Municipal Board and Local Planning Appeal Tribunal hearings
- Member in good standing with the Canadian Environmental Certification Approvals Board as an Environmental Professional

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## RELEVANT EXPERIENCE

### Port Severn Heights, Residential and Commercial Development, Port Severn

#### Project Description:

- A phased residential and commercial development including approximately 375 residential units and two large commercial blocks

#### Responsible For:

- Consolidation of previous environmental impact works and reporting
- Inventory and assessment of natural heritage features consistent with *Provincial Policy Statement, 2014* (PPS) and the *Planning Act* (1990) – environmental impact study
- Original field investigations including species-specific surveys for species at risk and habitat; assessment of impacts to endangered species and habitat including 9 threatened or endangered species
- Obtaining approvals for avoidance strategies and two Overall Benefit Permits under the ESA (2007)

### Huntsville Highlands Estate, Residential Development, Town of Huntsville

#### Project Description:

- A phased residential development including approximately 325 residential units

#### Responsible For:

- Consolidation of previous environmental impact works and reporting
- Inventory and assessment of natural heritage features consistent with *Provincial Policy Statement, 2020* (PPS) and the *Planning Act* (1990) – environmental impact study
- Original field investigations including species-specific surveys for species at risk and habitat; assessment of impacts to endangered and threatened species and
- Obtaining approvals for avoidance and Overall Benefit Permits under the ESA (2007)

### Bradford Cemetery, Institutional Development, Town of Bradford/West Gwillimbury

#### Project Description:

- A 14.55ha agricultural site to be developed as a multi-denominational cemetery on lands that include agricultural uses, coldwater streams, wetlands, regulated floodplains and species at risk

#### Responsible For:

- Lead role in the Natural Heritage investigations and reporting;
- Liaison with the Nottawasaga Valley Conservation Authority, Town of Bradford/West Gwillimbury and coordinate with related disciplines such as Landscape Architect, Fluvial Geomorphologist, Geotechnical Engineering and Land Use Planner;
- Obtain clearance from the Ministry of Environment, Conservation and Parks under the Endangered Species Act and Fisheries and Oceans Canada;

- Develop landscaping component of a natural channel design in consultation with Fluvial Geomorphologist.

Environmental Services on Retainer, Highway 69 Corridor, from Severn River northerly to Sudbury  
Assignment Number: 5015-E-0017, Northeastern Region

Project Description

- Provide multi-year professional environmental services to MTO for Hwy 69 Corridor

Responsible For:

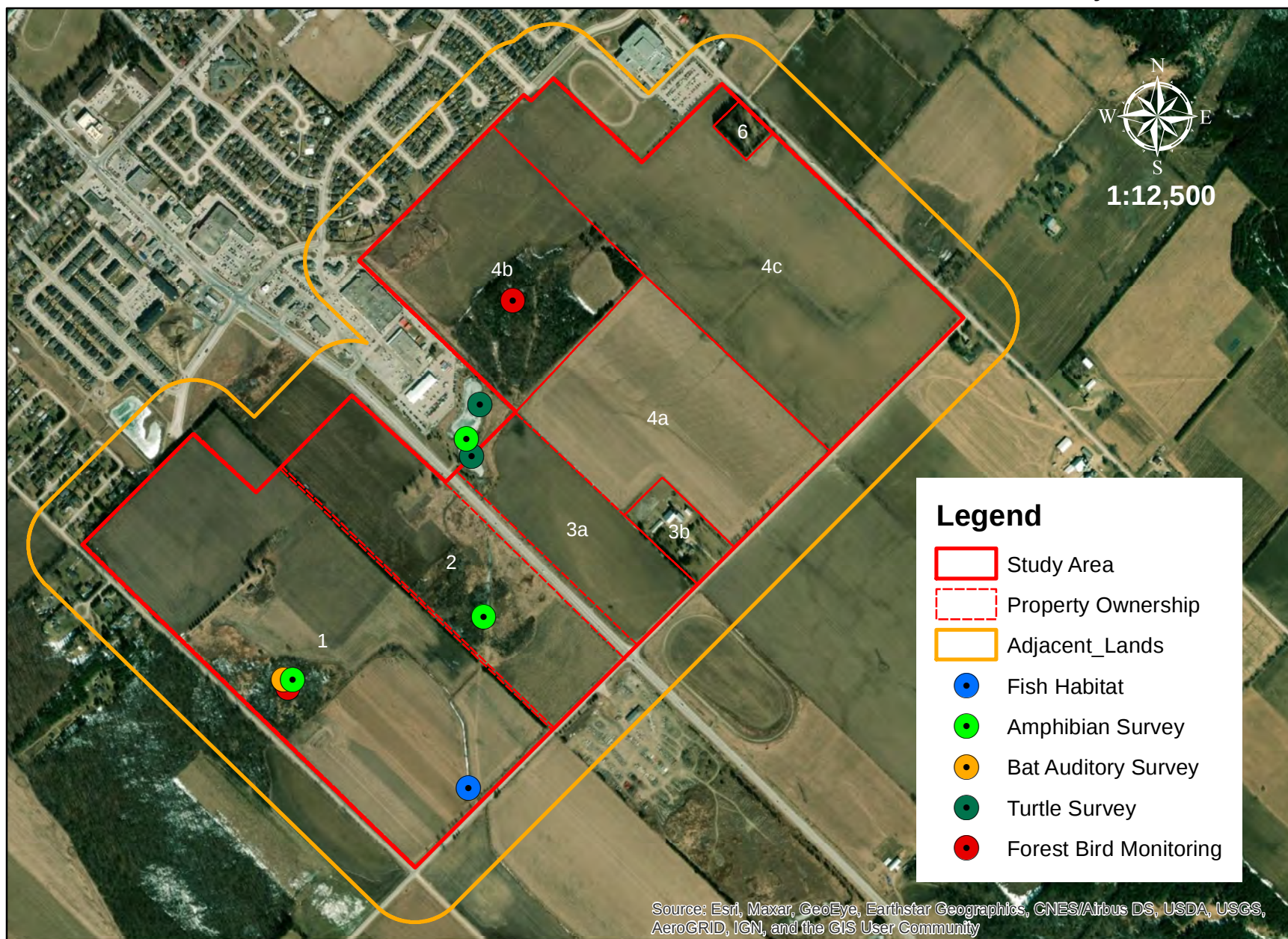
- Inventory and assessment of natural sciences/terrestrial existing conditions consistent with MTO's Environmental Standards, policies and guidelines
- Species-specific surveys for species at risk e.g. Massasauga, SAR bats and habitat; assessment of impacts to endangered species and habitat
- Post-construction monitoring of reptile exclusion fencing and ecopassages, road mortality surveys
- Assisting MTO with ESA permitting negotiation and agency approval by providing mitigation measures for construction activities and identification of appropriate long-term actions to provide benefit to impacted species and habitat

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PROFESSIONAL ASSOCIATIONS AND CERTIFICATIONS

- Ontario Wetland Evaluation System Certificate
- Provincial Ecological Land Classification Course
- Canadian Certified Environmental Professional (Canadian Environmental Certifications Approvals Board)
- Erosion & Sediment Control – Application of Best Management Practices (Vancouver Island University)
- Electrofishing Crew Leader (First Class)
- Lakeshore Capacity Assessment (Ontario Ministry of Environment)
- MTO/DFO/OMNR Fisheries Protocol Training for Fisheries Specialists
- ARCGIS II: Essential Workflows (ESRI)
- PADI Open Water Certification (SCUBA)

## APPENDIX D



## APPENDIX E

## Preliminary Screening for Species at Risk

To: Ministry of Environment, Conservation and Parks

From: Rod Bilz

Date:

Subject: South Fergus Master Environmental Servicing Plan, Proposed Development  
Township of Centre Wellington

As per the Client's Guide to Preliminary Screening for Species at Risk I am providing some background information to the ministry to determine if there are any potential SAR concerns and whether the client is required to proceed to Phase 1: Information Gathering. The following information follows the checklist in Section 4.0 of the guidance document.

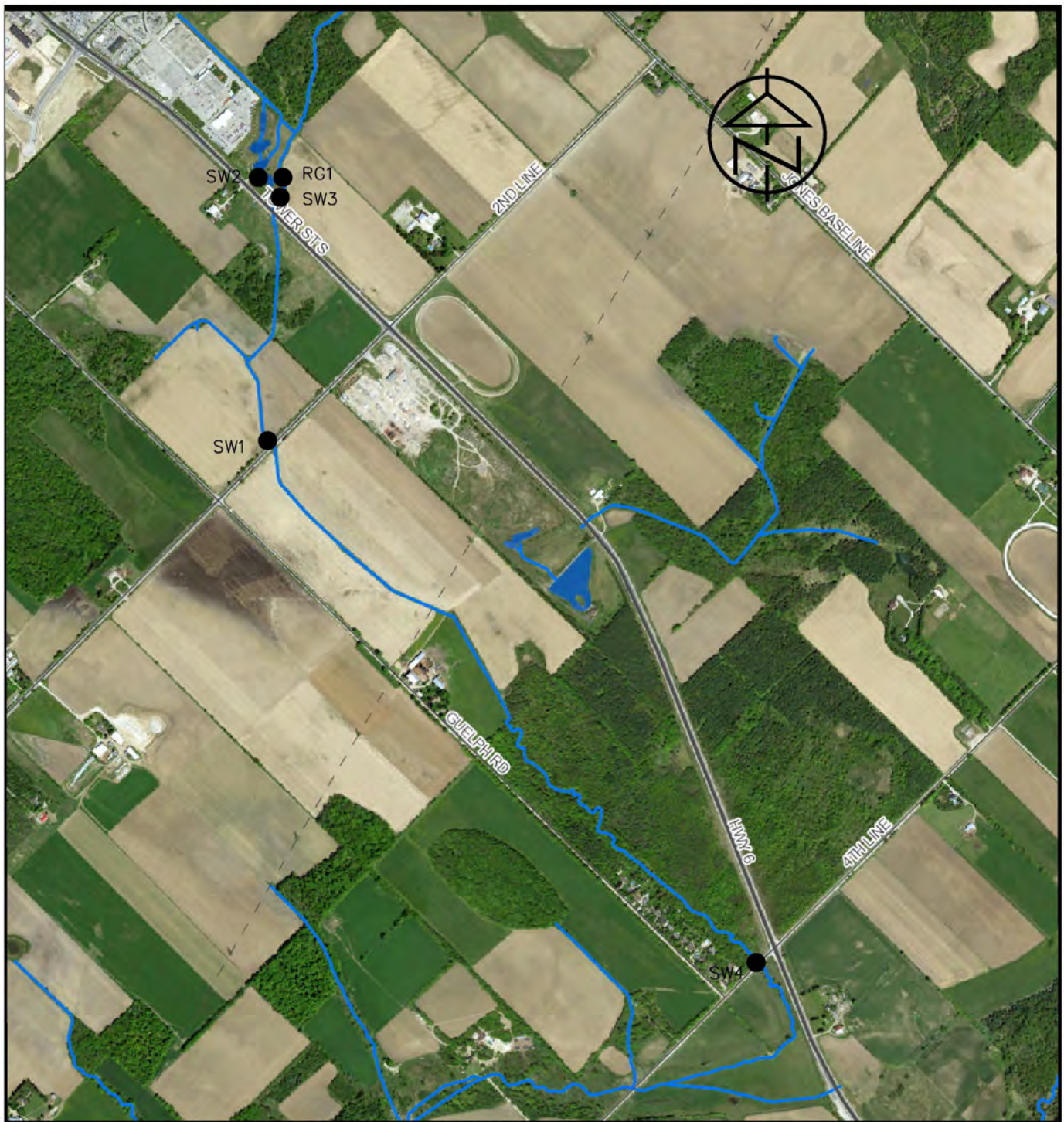
1. **Land Information Ontario (LIO):** The information from LIO is mirrored on the NHIC Natural Heritage Make-A-Map.
2. **Natural Heritage Information Centre(NHIC):** The study area is overlapped by six 1km squares.

| Atlas Square | OGF Id. | Element Type | Common Name                                     |
|--------------|---------|--------------|-------------------------------------------------|
| 17NJ5038     | 957442  | Natural Area | Grand River                                     |
| 17NJ5138     | 957452  | Natural Area | Speed Lutteral<br>Swan Creek<br>Wetland Complex |
|              | 957452  | Species      | Barn Swallow                                    |
| 17NJ5238     | 957462  | Natural Area | Speed Lutteral<br>Swan Creek<br>Wetland Complex |
|              | 957462  | Species      | Eastern<br>Meadowlark                           |
|              | 957462  | Species      | Eastern<br>Meadowlark                           |
|              | 957462  | Species      | Barn Swallow                                    |

|          |        |              |                                                 |
|----------|--------|--------------|-------------------------------------------------|
| 17NJ5037 | 957441 | Natural Area | Speed Lutteral<br>Swan Creek<br>Wetland Complex |
| 17NJ5137 | 957451 | Natural Area | Speed Lutteral<br>Swan Creek<br>Wetland Complex |
| 17NJ5237 | 957461 | Species      | Eastern<br>Meadowlark                           |
|          | 957461 | Natural Area | Speed Lutteral<br>Swan Creek<br>Wetland Complex |

3. **The Breeding Bird Atlas:** The site occurs within square 17NJ53. Eastern Whip-poor-will (threatened); Chimney Swift (threatened); Bank Swallow (threatened); Barn Swallow (threatened); Bobolink (threatened); Eastern Meadowlark (threatened).
4. **eBird:** No data for the study area.
5. **iNaturalist:** There are a number of documented observations but none are of threatened or endangered species.
6. **Ontario Reptile and Amphibian Atlas:** No data for the study area.
7. **Conservation Authority:** GRCA
8. **Local Naturalist Groups:** None locally
9. **Indigenous Communities:** None contacted
10. **Non-Governmental Organizations:** None contacted
11. **Field Studies Conducted:** Forest bird monitoring, passive bird and amphibian recorders. Barn Swallows have been confirmed foraging over the study area.
12. **Likely Impacts of Your Activity:**

## APPENDIX F



## LEGEND

- SW SURFACE WATER MONITORING LOCATION
- RG PRECIPITATION/AIR TEMPERATURE MONITORING LOCATION



## SOUTH FERGUS MESP AND SECONDARY PLAN CENTRE WELLINGTON SURFACE WATER MONITORING LOCATIONS

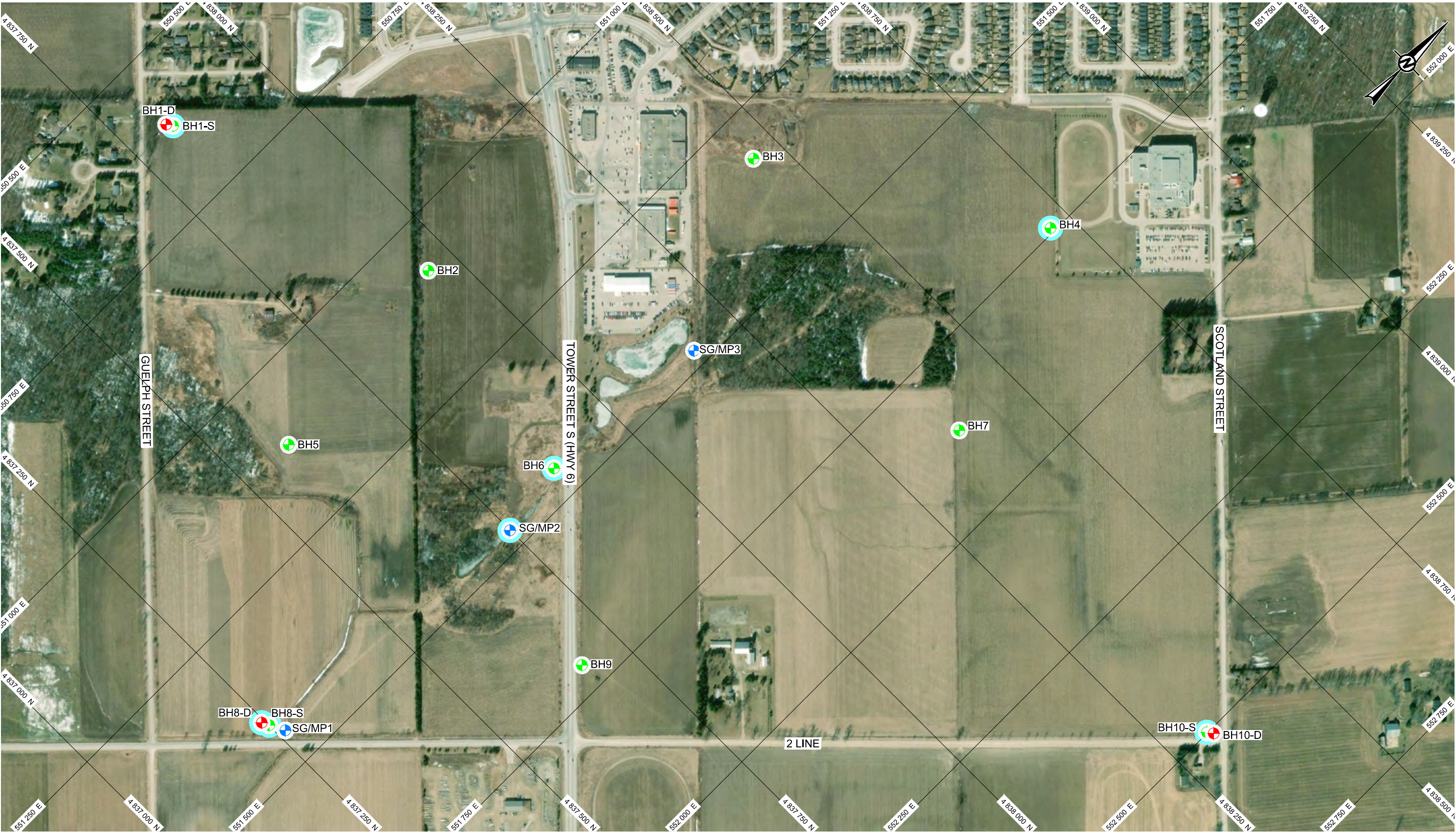
SCALE: N.T.S.

DATE: SEPT/2020

DWG NO. FIG-1

## APPENDIX G

Path: \\golder\golder\barre\Complex\data\GIS\MapClients\CC\_Tatham\South\_Fergus\_Line\2014\_1301\2014\_1301\400\_0001\_CH-0001.dwg | File Name: 20141301-0001-CH-0001.dwg | Last Edited By: jregier Date: 2020-09-17 Time: 9:24:19 AM | Printed By: JRegier Date: 2020-09-17 Time: 9:36:02 AM



PLAN LEGEND

DEVELOPMENT BOUNDARY

SHALLOW MONITORING WELL

DEEP MONITORING WELL

STAFF GAUGE / MINI-PIEZOMETER

EQUIPPED WITH LOGGER  
(INSTALL BARO-LOGGER IN BH8-S, UPLOAD LAST)

MAP KEY

ALL MAPPED LOCATIONS ARE APPROXIMATE AND NOT TO SCALE

ALIGNMENT OF ORTHOGRAPHIC IMAGERY IS APPROXIMATED TO SELECT FEATURES ON DATUM. AWAY FROM POINTS OF ALIGNMENT THE ORTHOGRAPHIC IMAGE MAY BE DIMENSIONALLY SKEWED OR PROJECTED OFF THE MAP DATUM PLANE.

0120240360

1:6000

0120240360

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PROJECTION IS UTM NAD 83 ZONE 17

CLIENT  
TATHAM ENGINEERING LIMITED

CONSULTANT

YYYY-MM-DD  
2020-09-17

DESIGNED

PREPARED  
JPR

REVIEWED  
JG

APPROVED  
JAP

PROJECT  
SOUTH FERGUS  
HYDROGEOLOGICAL INVESTIGATIONS

TITLE  
PROPOSED DRILL PLAN

PROJECT NO.  
20141301

CONTROL  
0001

REV.  
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FIGURE  
1

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B