

# Appendices

## **Appendix A**

### **Project Terms of Reference (BHI, April 14, 2015)**

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**ERIN SSMP – WATER  
COMPONENT CLASS EA  
MUNICIPAL WATER SUPPLY  
ASSESSMENT AND UPGRADES  
TERM OF REFERENCE**

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Prepared for:  
The Town of Erin

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Prepared by:  
Blackport Hydrogeology Inc.  
April 14, 2015

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MUNICIPAL WATER SUPPLY ASSESSMENT AND UPGRADES  
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## **1.0 Background**

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### **1.1 SERVICING AND SETTLEMENT MASTER PLAN**

A Servicing and Settlement Master Plan (SSMP) was initiated by the Town of Erin in 2008 as part of the Town of Erin Official Plan (OP) to address long-term municipal infrastructure and servicing of municipal water and wastewater in the Town of Erin. The goal of the SSMP is to develop appropriate strategies for planning and municipal servicing consistent with provincial, county and local municipal planning policies.

The SSMP followed the Master Plan approach as defined in the province's Municipal Class Environmental Assessment (Class EA) document, dated October 2000 and amended in 2007 and 2011. The Master Plan was conducted at a broad level of assessment and identified specific projects that require more detailed investigations, at different levels of assessment, following a specific set of criteria or Schedules:

- Schedule A - generally includes normal or emergency operational activities and the environmental effects of these activities are usually minimal and as result these types of projects are pre-approved;
- Schedule A+ - introduced in 2007, these projects are pre-approved; however the public is to be advised prior to project implementation, and the manner in which the public is advised is to be determined by the proponent;
- Schedule B – generally includes improvements and minor expansions to existing facilities, and as a result there is the potential for some adverse environmental impacts and the proponent is required to proceed through a screening process including consultation with those who might be affected;
- Schedule C – generally includes construction of new facilities and major expansions to existing facilities with these projects proceeding through the environmental planning process as outlined in the Class EA.

The SSMP completed the first two phases of the Municipal Class EA process as required by the Master Plan approach, with Phase 1 being the data collection and background study phase (B. M. Ross and Associates, 2012). As part of the Phase 1, a summary of existing conditions, including hydrogeology, water supply and water quality was presented (Credit Valley Conservation et al, 2011). The Phase 2 work focused on the development and evaluation of solutions to address various components of growth in the Town of Erin over a 25 year planning horizon and presented in the Servicing and Settlement Master Plan Final Report (B. M. Ross and Associates, August 2014).

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**1.2 ANTICIPATED CLASS EA REQUIREMENTS – WATER SUPPLY  
COMPONENT**

As presented in the SSMP, several deficiencies in the municipal water system were identified, which need to be addressed, beyond the requirements to expand the water supply system to meet future supply and storage demands, as summarized in Section 7 of the SSMP Final Report (B. M. Ross and Associates, August 2014). The following is a list of potential Class EA requirements, related to water supply, which were identified in the SSMP:

- Installing a water main in Erin and Hillsburgh to connect existing unconnected properties to the existing distribution system: **Schedule A+**, establish, extend or enlarge a water distribution system and all the works necessary to connect the system to an existing system or water source, provided all such facilities are either in an existing road allowance or utility corridor. If all facilities are not in a road allowance or utility corridor, the project is subject to **Schedule B**.
- Redeveloping the existing Bel-Erin well supply may be a **Schedule A** undertaking: install new or replacement wells or deepen existing wells or increase pumping capacity of existing wells, at an existing municipal well site, where the existing municipal yield will not be exceeded. It becomes a **Schedule B** undertaking if the existing rated yield is exceeded.
- Adding additional wells at new locations to provide for new growth is a **Schedule B** undertaking: establish a well at a new municipal well site. This Class EA would be looking at potential new sites with available yields and acceptable water quality.
- Adding new water storage facilities to support existing and new growth would be a **Schedule B** undertaking: establish new or expand/replace existing water storage facilities.
- In order to consider and possibly implement a connected water system from both villages, a Class EA process would need to be initiated. Possible routing could include county roads or the Cataract trail system. The resultant project is probably a **Schedule B** undertaking: establish, extend or enlarge a water distribution system and all the works necessary to connect the system or water source, where such facilities are not in either an existing road allowance or an existing utility corridor. This would include any water pumping stations required for pressure purposes.

Based on the finding of the of the SSMP, related to water supply, the following work plan has been developed to address deficiencies in the existing source water supply and to address future source water supply requirements.

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## **2.0 Summary of Background Information**

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### **2.1 PREVIOUS STUDIES**

Considerable hydrogeological information is available from previous investigations and studies conducted for the Town of Erin and/or Credit Valley Conservation (CVC). The following summarizes the primary sources of information, and type of information in each report, available to aid in assessing potential areas to target for additional municipal groundwater supplies:

- West Credit Subwatershed Study – Characterization Report, prepared by CVC, November 1997. This includes information on general geology, hydrogeology recharge/discharge conditions and baseflow.
- West Credit Subwatershed Study Draft – Impact Assessment Report Phase II, prepared by CVC, January 2001. Additional baseflow data was collected and a groundwater flow model developed as part of several studies in the West Credit subwatershed.
- Groundwater Management Study, Town of Erin, prepared by Blackport Hydrogeology Inc., 2005. Much of the work was done in 2001 and 2002 and included development of a groundwater flow model, assessment of capture zones, wellhead protection areas and aquifer vulnerability.
- Source Water Protection, Interim Watershed Characterization Report for the Credit River Watershed, prepared by CVC, 2007. This study included an updated of information on a watershed wide basis, containing information, mainly in digital form on geology, water quality and updated well field capture zones.
- County of Wellington, Groundwater Protection Study, prepared by MHBC, Golder Associates and SRG, September 2006. The previous groundwater flow model was updated as part of the county study, using the most recent hydrogeologic information and pumping data to refine the well field capture zones and aquifer vulnerability to contamination.
- WHPA Delineation and Vulnerability Assessment, Town of Erin Municipal Wells, prepared by Blackport Hydrogeology Inc. and Golder Associates Ltd, April 2010. The groundwater flow model was updated and new assessment performed in accordance with the Clean Water Act (2006).
- Issue Evaluation and Threats Assessment, Town of Erin Municipal Wells, prepared by Blackport Hydrogeology Inc. and Golder Associates Ltd, June 2010, in accordance with the Clean Water Act (2006).

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- Proposed Updated Approved Assessment Report: Credit Valley Source Protection Area, prepared by Credit Valley Conservation Authority, February 2015.
- Historical reports for municipal well test drilling and water supply assessment for the former Erin Village and for Hillsburgh in the former Township of Erin.

Additional information is also available through various consultants’ reports, related to development applications, aggregate sites and groundwater contamination studies as well as information on the existing municipal wells from the Town of Erin through the Drinking Water Surveillance Program and annual monitoring data.

Source Protection studies, completed, under the Clean Water Act (2006) produced locally developed, science based Assessment Reports and Source Protection Plans. Much of this information can be used to eliminate areas considered too vulnerable to groundwater contamination or having a potential for mutual well interference with existing water supplies. This initial screening will aid in limiting potential issues related to the Source Water Protection Plan developed for the Town of Erin.

**2.2 CURRENT WATER SUPPLY SOURCES**

There are currently two separate municipal water supply systems in the Town of Erin, one system in Hillsburgh and one in Erin Village. There are currently four wells in operation, two in Erin Village and two in Hillsburgh. There is one non-operating water supply system known as the Bel-Erin wells located adjacent to the Bel-Erin subdivision in the south part of Erin Village.

Municipal Well No. E7 and Well No. E8, located in Erin Village, are operated under consolidated PTTW 8112-9CPNNW. The Bel-Erin wells are also included in the consolidated PTTW for Erin Village. Municipal Well No. H2 (Hillsburgh Heights), and Municipal Well No. H3 (Victoria Park Well) are located in Hillsburgh and operate under PTTW No. 6306-8X5KRY and PTTW No.8548-6SBGWC, respectively. Table 2.1 presents a summary of well depths and maximum permitted pumping rates and average pumping rates from 2011-2013.

Table 2.1 Summary of Erin Municipal Water Supply Wells

Well	Location	Total Depth (m)	Maximum Permitted Rate	Average pumping rate 2011-2013
E7	bedrock	43	2,160,000 L/day	540,000 L/day
E8	bedrock	46	1,964,000 L/day	498,000 L/day
H3	bedrock	57.9	653,760 L/day	101,000 L/day
H2	bedrock	88	982,000 L/day	67,000 L/day
BE1, BE2	overburden	11.3-16.2	655,200 L/day	Not operational



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**2.3 GROUNDWATER QUALITY**

Water quality data is collected through operational monitoring of the water supply systems under the Drinking-Water Systems Regulation (O. Reg. 170/03), as part of the Drinking Water Surveillance Program (DWSP). The most recent results indicate that all organic parameters, which include volatile organic compounds, pesticides and herbicides, were non-detectable at all operational municipal wells in the Town of Erin.

Trihalomethane (THM) concentrations ranged from 2.6 to 6.7 ug/L, well below the current drinking water standard of 100 ug/L. No exceedances of trace metals were noted; however, as previously indicated, there is a treatment system on Well H2 in Hillsburgh, to remove lead. Elevated concentrations of lead were found in the raw water near or at the ODWS of 10 ug/L, requiring treatment. The source of the lead is interpreted to be naturally occurring in the bedrock.

Sodium concentrations range from 5-12 mg/L for all operation wells, typical of background water quality in the bedrock aquifer. Nitrate concentrations range from non-detect (ND) to 1.2 mg/L at Well No. H2, located upgradient of Hillsburgh. An assessment of historical water quality was conducted as part of the Source Water Protection, Interim Watershed Characterization Report for the Credit River Watershed (CVC, 2007). No water quality trends were noted, with respect to increasing concentrations of sodium, chloride or nitrate over time at any of the municipal wells.

Water quality results indicate that there are no apparent impacts from non-point sources of contamination (i.e. road salting, septic effluent or fertilizer application) in Well E7 and Well E8, given the very low sodium, chloride and nitrate concentrations. It would appear that, given the location of the wells, there is little local recharge to the wells. Well H3 and Well E8 likely obtain most water from deeper in the bedrock, having higher sulphate concentrations of 204 and 145 mg/L respectively, compared to the other wells.

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**3.0 Detailed Work Plan**

**3.1 APPROACH AND FACTORS TO CONSIDER FOR ADDITIONAL WATER SUPPLY**

Water supply capacity was estimated under various existing population and future growth scenarios for Erin and Hillsburgh as presented in the SSMP Final Report (B M Ross, August, 2014). Table 3.1 provides a summary of the surplus/deficit water supply capacity for the existing water system under different population scenarios.

<b>Existing Population and Growth Scenarios</b>	<b>Max day demand m<sup>3</sup>/day</b>	<b>Max available*<sup>1</sup> m<sup>3</sup>/day</b>	<b>Surplus/deficit m<sup>3</sup>/day</b>	<b>Max with Bel Erin wells*<sup>2</sup> m<sup>3</sup>/day</b>	<b>Surplus/deficit m<sup>3</sup>/day</b>
1a – Erin all existing	2475	1,968	<b>-507</b>	2,623	+148
1b – Hillsburgh all existing	795	654	<b>-141</b>	n/a	n/a
2a – Erin + 750	3492	1,968	<b>-1524</b>	2,623	<b>-869</b>
2b – Hillsburgh + 750	1222	654	<b>-568</b>	n/a	n/a
3a – Erin + 1500	4174	1,968	<b>-2206</b>	2,623	<b>-1551</b>
3b – Hillsburgh + 1500	1650	654	<b>-996</b>	n/a	n/a
4 – Combined all existing	3809	3,603	<b>-206</b>	4,258	+449
5 – Combined + 1500	5084	3,603	<b>-1481</b>	4,258	<b>-826</b>

\*<sup>1</sup> assumes only the highest capacity well is out of service for wells used in each scenario

\*<sup>2</sup> Bel-Erin wells are permitted but require additional assessment for treatment requirements

**Table 3.1 – Summary of Water Supply Wells –surplus/deficit for maximum day demand for existing population and future growth scenarios**

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As indicated, the maximum available water supply assumes the highest capacity well is out of service for each scenario. It is also assumed the maximum permitted water taking capacity is available for use. The Bel-Erin wells are included as an optional source of water. The Bel-Erin wells are currently not operational, and although permitted the wells will require a water treatment system before they are operational. Their current source water classification is non-GUDI, but without adequate filtration, which will require further assessment. These water supply demand scenarios form the basis for the requirements for new water supply wells.

There are a number of factors or assumptions that need to be considered in the targeting and development of any potential new water supply well locations, including but not limited to the following:

- wells should be located outside of the Well Head Protection Areas (WHPAs) of existing municipal wells, minimizing the potential for mutual well interference;
- well locations should have a reasonable level of natural protection from surface sources of contamination;
- well locations should be sufficiently removed from potential or known sources of contamination or known areas of naturally poor water quality;
- the potential for Groundwater Under the Direct Influence (GUDI) of surface water and the new rules associated with GUDI wells needs to be taken into account in determining geographic locations to test for any new water supplies;
- geographic areas having existing well yield information showing limited potential for higher yielding wells ( $> 500 \text{ m}^3/\text{day}$ ) should be a low priority for further investigation, as the aim should be to find a location capable of producing  $>1000 \text{ m}^3/\text{day}$ ; and,
- the priority search for well locations should factor in the proximity to the existing distribution system and the number of private wells that could potentially be impacted by the water taking.

The following work plan is presented, based on the findings of the SSMP and current understanding of the existing conditions. A preliminary cost estimate is presented in Table 4.1. It is noted that the work will be conducted in three stages, as outlined in the sections below:

- Stage 1 – assessment of water supply options (Tasks 1 and 2);
- Stage 2 – investigate new water sources (Tasks 3, 4, 5 and 6); and,
- Stage 3 – develop new water sources (Task 7).

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**3.2 TASK 1 – DEVELOP A WORK PLAN AND PRELIMINARY SCHEDULE**

The first task is to develop a work plan and preliminary schedule to ensure all appropriate information is assessed and ensure that the EA process is followed. A preliminary work plan will be developed and reviewed by the Town's Project Team and appropriate review agencies to ensure the approach is acceptable and follows the EA process. The work plan and schedule will then be refined accordingly.

**3.3 TASK 2 – ASSESSMENT OF WATER SUPPLY OPTIONS**

Background information has been previously compiled and summarized in the SSMP Final Report (B. M. Ross, August 2014) and in the SSMP Phase 1 – Environmental Component - Existing Conditions Report (Credit Valley Conservation, et al., 2011) and briefly discussed in Section 2, above. This information will form the basis for assessment of water supply source options; however the appropriate information will need to be compiled and presented, as part of the Class EA process, to document the approach and rationale for assessing the increased use of existing sources of water or the development of new sources of water. The following tasks are proposed:

- compile and summarize existing hydrogeology and water supply information, focusing on geographic areas where the potential exists for greater aquifer yields and having good natural aquifer protection;
- update, analyze and summarize existing private water well data;
- update/verify existing municipal well capacity and identify any potential constraints or opportunities for increased water taking from each well, beyond the permitted capacity;
- an assessment of the constraints and opportunities for future water taking from the Bel-Erin wells;
- assess potential areas of exploration for new sources of water;
- prepare a summary report and recommendations;
- finalize locations and well testing/monitoring requirements with agencies;
- prepare and submit final water supply options report and recommendations; and,
- secure drilling location options.

**3.4 TASK 3 – SECURE DRILLING CONTRACTOR AND LICENCED WELL TECHNICIAN**

Once the drilling locations have been determined and secured for test drilling a drilling contractor and licensed well technician will be retained. Our services will assist the Town with

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retaining a drilling contractor and licensed well technician through a tender process to drill and conduct a pumping test on the test wells. The following is anticipated with respect to some of the requirements of the contract, which will be refined upon completion of Task 2:

- assume two drilling locations for 6 inch diameter test wells, with an option for an additional test well should the first locations not prove successful;
- ensure the wells are plumb to allow for appropriate pump installation;
- allow for observation wells to be drilled as part of the assessment, depending on the number of existing private wells available for monitoring;
- secure a temporary Permit To Take Water (PTTW), coordinating the step pumping test (e.g. variable increasing pumping rates) of the well and developing the well to a suitable level to conduct a pumping test; and,
- retain the services of a licensed well technician to conduct a pumping test and provide the results in a timely manner.

**3.5 TASK 4 – TEST WELL(S) DRILLING AND ASSESSMENT**

The following tasks are proposed as part of the test well drilling contract and associated work to assess the potential yield of each well::

- obtain a temporary Permit to Take Water (PTTW) from the MOECC to conduct a pumping test on the test wells;
- conduct a private well survey in the area of each proposed test well;
- prepare well sites for drilling, including access and clearing services;
- drill test wells (assume two with an optional third location) and any required monitoring wells;
- conduct initial testing to assess potential well yield and water quality;
- conduct a longer term pumping test (24-72 hours) to assess potential aquifer yield and assess water quality trends during pumping;
- depending on the location of the well, conduct an assessment of the potential for the well to be a GUDI well, under the current regulations; and,
- assess the potential need for additional test wells, depending on the potential well yield.

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**3.6 TASK 5 – TEST WELL ANALYSES AND YIELD ASSESSMENT**

The following tasks are proposed as part of the analyses of the test well pumping:

- analyze pumping test results and determine potential aquifer yield in the vicinity of the well;
- determine if the well site is suitable for the installation of a larger diameter production well;
- assess the potential extent of pumping influence in the aquifer; and,
- assess water quality to drinking water standards and determine if there are any potential concerns.

**3.7 TASK 6 – SOURCE WATER PROTECTION REQUIREMENTS**

As part the Clean Water Act (CWA), established in 2006, source protection plans (SPP) were developed for each Source Protection Area (SPA). Each SPP requires that areas that are potentially vulnerable to surface source of contamination (Vulnerable Areas) must be delineated for every existing and planned municipal residential drinking water system. This includes the determination of a Wellhead Protection Area (WHPA) and the level of vulnerability to contamination within the WHPA as well as a determination of potential threats to the drinking water system. The WHPAs are delineated using a groundwater flow model. This work has been completed for the existing wells, and will need to be updated for any new wells through a refinement of the existing groundwater flow model and updating of the water well data base as well as the threats data base. The following will need to be completed:

- Update the existing groundwater flow model for the Town of Erin. The work was previously completed by Golder Associates, through Blackport Hydrogeology Inc., and will require refinement, using the updated data, in particular information from the test drilling and pumping tests to determine local aquifer properties for input into the model.
- WHPA Delineation and Vulnerability Assessment for the new well sites. Based on the information from the test wells, anticipated production rates will be used in the groundwater flow model to develop WHPAs and assess vulnerability in order to determine if there are any potential concerns with respect to source water protection.
- Threats Assessment conducted in the WHPA areas to determine if there are any potential issues with respect to source water protection.

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**3.8 TASK 7 – DEVELOP PRODUCTION WELL(S) AND OBTAIN A PTTW**

If the test wells show promise, production wells will be drilled in close proximity to the test wells. It is proposed that the drilling of the production wells will be an option to the drilling tender, and subject to minor revisions based on the findings of the test well drilling, the option to continue the drilling contract can be exercised. The following tasks are proposed:

- refine production well(s) tender documents;
- evaluate tenders and award contracts, if required;
- obtain a temporary PTTW to conduct a pumping test;
- drill production well(s), assume to be 10 inch diameter and develop the well(s) to appropriate standards;
- conduct a long-term pumping test, 72 hours to 7 days, the length will be based on discussions with the MOECC and the findings of the test well assessment;
- analyze pumping test results and water quality;
- assuming the well(s) is suitable for municipal water supply, prepare supporting documentation for the PTTW;
- confirm GUDI status;
- refine Source Water Protection analysis if necessary; and,
- assist the Town in the submission of the PTTW.

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## **4.0 Preliminary Cost Estimate**

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A preliminary cost estimate and time allocation has been prepared and is presented in Table 4.1. The following is noted:

- Fees and general disbursements for Stages 2 and 3 are preliminary and will be refined once the previous Stage is completed and the findings from the previous stage factored into the refinement of fees and general disbursements.
- Stage 1 costs and time allocation are based on the current understanding of the existing data, the anticipated water supply requirements and the requirements of the Class EA process. Costs are presented for professional fees and general disbursement only. Fees and general disbursement costs for Stage 1 are considered an upset limit.
- Stage 2 costs and time allocation are preliminary, with costs based on estimated time and well drilling/testing requirements. Preliminary contractor costs are provided for general planning purposes and are based on factors such as: initial estimates of depth of drilling, anticipated length of pumping tests, the level of effort required to update the groundwater model, and typical water quality analyses required.
- Stage 2 costs will be refined after the Stage 1 work, upon selection of potential drilling locations and an understanding of regulatory agency requirements, after consultation with the appropriate agencies.
- The costs assume two test wells and two production wells will be drilled, with the test wells being 6-inch diameter wells and the production wells being 10-inch diameter wells. It is anticipated that there will be an option to drill a third test well, if necessary, but this is currently not included in the preliminary cost estimate.
- Pumping tests are expected to range from 24 hours to 7 days in length, and will be refined in consultation with Technical Support at the MOECC. It is often difficult to determine the appropriate length of a pumping test, as it will depend on the water level response throughout the aquifer system during the test. For costing purposes, it is assumed that the test wells will be pumped for short periods, from 24 hours to 72 hours while the production wells will be pumped for 5 days.



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## **5.0 Preliminary Schedule**

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A preliminary schedule has been prepared, based on anticipated level of effort and estimated timing for various tasks and is presented in Table 5.1. The schedule will be reviewed and refined after each task. The following is noted:

- Stage 1 – the Schedule is relatively firm as there are few tasks requiring specific timing or input from various parties to complete the tasks, once the work plan is refined.
- Stage 2 – the Schedule is based on a number of factors and is preliminary. Factors affecting the scheduling include, but not limited to:
  - timing of Council meetings to make decisions;
  - availability of agencies to meet and provide input/responses, including such things as obtaining temporary a temporary PTTW;
  - availability of drilling contractors after awarding of contract;
  - negotiations with potential land owners to obtain access to drill on their property;
  - weather conditions impacting timing of field work; and,
  - time required to update and calibrate the groundwater flow model and develop new WHPAs.
- Stage 3 – the Schedule is preliminary and based the similar factors as in Stage 2, including but not limited to the following:
  - timing of Council meetings to make decisions;
  - availability of agencies to meet and provide input/responses, including such things as obtaining a temporary PTTW to conduct a pumping test;
  - timing/availability of drilling contractors to drill the production well(s); and,
  - time of year and weather conditions impacting timing and duration of field work.

Also included in the preliminary Schedule are anticipated project meetings including, project team meetings, agency meetings and public consultation meetings.

Town of Erin  
**ERIN SSMP - WATER COMPONENT CLASS EA - Assessment and Development of Water Supply Options**  
**BLACKPORT HYDROGEOLOGY INC.**

TABLE 4.1: PRELIMINARY COST ESTIMATE AND TIME ALLOCATION

	Project Team Member Name:						Total Hours	Fees per Task	Disbursements General Office Expenses, Travel, Equipment Rental	Total Cost per Task	
	Ray Blackport	Andrew Pentney	Technician	CAD/GIS Design	Engineering Support	Administrative Support					
	Role in Project: St. Hydrogeologist	Hydrogeologist		CAD/GIS Design	Engineering Support	Administrative Support					
Hourly Rate:	\$125	\$105	\$75	\$105	\$165	\$75					
<b>STAGE 1 - Assessment of Water Supply Options</b>											
<b>Task 1: Develop a Work Plan and Preliminary Schedule</b>											
1.1	Develop a Preliminary Work Plan and Schedule	24.0	4.0				4.0	32.0	\$3,720	\$3,720	
1.2	Refine Work Plan and Preliminary Schedule	8.0						8.0	\$1,000	\$1,000	
<b>Task 1: Develop a Work Plan and Preliminary Schedule - Cost Summary</b>									<b>\$4,720</b>	<b>\$0</b>	<b>\$4,720</b>
<b>Task 2: Assessment of Water Supply Source Options</b>											
2.1	Compile and Summarize Existing Hydrogeology and Water Supply Information	16.0	8.0		8.0	4.0		36.0	\$4,340	\$4,340	
2.2	Analyze and Summarize Water Supply Data and Update Existing Well Capacity	16.0	8.0					24.0	\$2,840	\$2,840	
2.3	Assess Potential Areas of Exploration for new Sources of Water	24.0	12.0		8.0	6.0		50.0	\$6,090	\$200	\$6,290
2.4	Prepare a Summary Report and Recommendations	36.0	8.0				8.0	52.0	\$5,940	\$120	\$6,060
2.5	Finalize Locations and Well Testing Requirements with Agencies	20.0	8.0					28.0	\$3,340	\$240	\$3,580
2.6	Prepare and submit final water supply options report and recommendations	24.0	12.0		12.0	8.0		64.0	\$7,440	\$120	\$7,560
2.7	Secure Drilling Location Options	16.0	12.0					28.0	\$3,260	\$60	\$3,320
<b>Task 2: Assessment of Water Supply Source Options - Cost Summary</b>									<b>\$33,250</b>	<b>\$740</b>	<b>\$33,990</b>
<b>STAGE 2: Investigate New Water Sources</b>											
<b>Task 3: Secure Drilling Contractor</b>											
3.1	Prepare Tender / Quotation documents	20.0						20.0	\$3,820	\$3,820	
3.2	Evaluate Tenders and Make Recommendation to Council to Award Contract	8.0					8.0	20.0	\$2,260	\$2,260	
<b>Task 3: Secure Drilling Contractor - Cost Summary</b>									<b>\$6,080</b>	<b>\$0</b>	<b>\$6,080</b>
<b>Task 4: Test Well Drilling and Assessment</b>											
4.1	Obtain Temporary PTTW	8.0	4.0					12.0	\$1,420	\$700	\$2,120
4.2	Conduct Private Well Survey	4.0	12.0	40.0				56.0	\$4,760	\$600	\$5,360
4.3	Prepare Field Sites for Drilling	4.0	8.0	6.0				18.0	\$1,790		\$1,790
4.4	Drill test wells / monitoring wells	12.0	12.0	24.0				48.0	\$4,560	\$300	\$4,860
4.5	Conduct Initial Testing and water quality analysis	4.0	8.0					12.0	\$1,340	\$800	\$2,140
4.6	Conduct Extended Pumping Test and Water quality sampling	8.0		16.0				24.0	\$2,200	\$200	\$2,400
4.7	Assessment of the need for Additional Wells	8.0	4.0			4.0		16.0	\$2,060		\$2,060
<b>Task 4: Test Well Drilling and Assessment - Cost Summary</b>									<b>\$18,150</b>	<b>\$2,600</b>	<b>\$20,750</b>
<b>Task 5: Test Well Analyses and Yield Assessment</b>											
5.1	Analyze Pumping Test Results and Determine Well Yields	24.0	12.0	4.0				40.0	\$4,560		\$4,560
5.2	Assess Water Quality	4.0						4.0	\$500		\$500
5.3	Prepare Summary Report and Present Recommendations	28.0	8.0		24.0	12.0	8.0	80.0	\$9,440		\$9,440
<b>Task 5: Test Well Analyses and Yield Assessment - Cost Summary</b>									<b>\$14,500</b>	<b>\$0</b>	<b>\$14,500</b>
<b>Task 6: Source Water Protection Requirements</b>											
6.1	Update Groundwater Flow model	16.0	4.0		8.0	4.0		32.0	\$3,920		\$3,920
6.2	WHPA Delineation and Vulnerability Assessment	20.0	4.0		4.0			28.0	\$3,340		\$3,340
6.3	Issues Evaluation and Threats Assessment	20.0					8.0	28.0	\$3,100		\$3,100
<b>Task 6: Source Water Protection Requirements - Cost Summary</b>									<b>\$10,360</b>	<b>\$0</b>	<b>\$10,360</b>
<b>STAGE 3: Develop New Water Source(s)</b>											
<b>Task 7: Develop Production Well(s) and Obtain Permit To Take Water</b>											
7.1	Prepare Production Well Tender documents	12.0					8.0	24.0	\$2,760		\$2,760
7.2	Evaluate Tenders and Make Recommendation to Council to Award Contract	4.0	4.0				4.0	12.0	\$1,580		\$1,580
7.3	Obtain Temporary PTTW	12.0	4.0					16.0	\$1,920	\$700	\$2,620
7.4	Drill Production Well(s) and Conduct Pumping Test	24.0	12.0	12.0				48.0	\$5,160	\$700	\$5,860
7.5	Analyze Pumping Test Results and Water Quality	24.0	12.0					36.0	\$4,260		\$4,260
7.6	Prepare Supporting Documentation for PTTW Application	32.0	8.0		8.0	8.0	4.0	60.0	\$7,300		\$7,300
7.7	Assist Town Submission of PTTW	8.0						8.0	\$1,000	\$3,000	\$4,000
<b>Task 7: Develop Production Well(s) and Obtain Permit To Take Water - Cost Summary</b>									<b>\$23,980</b>	<b>\$4,400</b>	<b>\$28,380</b>
<b>TOTAL TIME (hours)</b>		<b>488.0</b>	<b>188.0</b>	<b>102.0</b>	<b>72.0</b>	<b>66.0</b>	<b>56.0</b>	<b>972.0</b>			
<b>TOTAL</b>		<b>\$1,000.0</b>	<b>\$19,740.0</b>	<b>\$7,650.0</b>	<b>\$7,560.0</b>	<b>\$10,890.0</b>	<b>\$4,200.0</b>	<b>111,040.0</b>	<b>\$111,040</b>	<b>\$7,740</b>	<b>\$118,780</b>
<b>Notes</b>		<b>Estimated Contractor Disbursements</b>									
<b>Test Well Drilling and Pumping Test (assume two test wells with an option for a third well)</b>											
<b>Production Well Drilling and Pumping Test (assume two Production wells)</b>											
<b>Water Quality Testing</b>											
<b>Source Water Protection Updates</b>											
									<b>\$80,000</b>		
									<b>\$120,000</b>		
									<b>\$9,000</b>		
									<b>\$24,000</b>		<b>\$233,000</b>



# **ATTACHMENT B**

**Town of Erin**  
**MUNICIPAL WATER SUPPLY COMPONENT CLASS EA - PROJECT MANAGEMENT AND CLASS EA CO-ORDINATION**  
**TRITON ENGINEERING SERVICES LIMITED**  
**PRELIMINARY TIME ALLOCATION AND COST ESTIMATE**

		Project Team Member Name:					Total Hours	Fees per Task	Disbursements			Total Cost per Task
		Christine Furlong	Dale Murray	Engineering Support	Drafting	Administrative Support			Travel	Printing	Disbursement Total	
		Senior Engineer/ Project Manager	Consultant	Engineering Support	CAD/GIS Design	Administrative Support						
Hourly Rate:		\$150	\$215	\$90	\$90	\$75						
<b>PROPOSED SCHEDULE B CLASS ENVIRONMENTAL ASSESSMENT</b>												
<b>PHASE 1 -- PROBLEM OR OPPORTUNITY</b>												
4.1	Develop the problem statement for the study with Blackport	1.0					1.0	\$150				\$150
4.2	Consult with Town staff and Blackport to initiate project, review project purpose and identify available background information	4.0					8.0	\$900	\$85			\$985
4.3	Identify, review and ensure regulatory policies are followed for source water protection, ground water under the direct influence of surface water, Class EA, etc.	4.0	2.0				6.0	\$1,030	\$85			\$1,115
4.4	Initiate public consultation process including identification of stakeholders	8.0			2.0		26.0	\$2,580		\$100		\$2,680
4.5	Project Management	4.0	1.0				13.0	\$1,415	\$70			\$1,485
<b>CLASS EA PHASE 1 COSTS</b>								<b>\$6,075</b>			<b>\$340</b>	<b>\$6,415</b>
<b>PHASE 2 -- ALTERNATIVE SOLUTIONS</b>												
4.1	Review and confirm water supply and storage deficiencies identified in the SSMP	8.0		4.0			12.0	\$1,560				\$1,560
4.2	Review and confirm water supply and storage alternative solutions identified in the SSMP and consult with Town and Blackport to confirm alternatives	24.0	2.0				30.0	\$4,330	\$70			\$4,400
4.3	Inventory existing terrestrial, aquatic, cultural, social, technical and financial environments	24.0			8.0		36.0	\$4,620	\$70			\$4,690
4.4	Review and confirm SSMP preliminary capital cost estimates for the proposed alternative solutions	32.0					36.0	\$5,100				\$5,100
4.5	Evaluate alternatives and recommend preferred solution	32.0	2.0	80.0	16.0		134.0	\$14,170				\$14,170
4.6	Prepare appropriate material for a Public Information Centre (PIC) and attend PIC to present alternative solutions and recommended preferred solution to the public	16.0			32.0		80.0	\$7,680	\$85	\$1,000		\$8,765
4.7	Select preferred solution and identify the Class EA schedule under which the Project will be undertaken	6.0					6.0	\$900				\$900
4.8	Project Management and Project Documentation	24.0					64.0	\$6,600		\$200		\$6,800
<b>CLASS EA PHASE 2 COSTS</b>								<b>\$44,960</b>		<b>\$200</b>	<b>\$1,425</b>	<b>\$46,385</b>
<b>TOTAL</b>												
<b>TOTAL TIME (hours)</b>		<b>187.0</b>	<b>7.0</b>	<b>84.0</b>	<b>58.0</b>	<b>116.0</b>	<b>452.0</b>	<b>\$51,035</b>			<b>\$1,765</b>	<b>\$52,800</b>
<b>TOTAL COST (excluding HST)</b>		<b>\$28,050</b>	<b>\$1,505</b>	<b>\$7,560</b>	<b>\$5,220</b>	<b>\$8,700</b>		<b>\$51,035</b>			<b>\$1,765</b>	<b>\$52,800</b>

**Appendix B**

**Archaeological Studies**

## **Appendix B.1**

# **MTCS Checklist for Evaluating Archaeological Potential**

## Criteria for Evaluating Archaeological Potential A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area may contain archaeological resources i.e., have archaeological potential
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

**Processes covered** under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

### Archaeological assessment

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a licensed consultant archaeologist (see page 4 for definitions) to undertake an archaeological assessment.

The assessment will help you:

- identify, evaluate and protect archaeological resources on your property or project area
- reduce potential delays and risks to your project

**Note:** By law, archaeological assessments **must** be done by a licensed consultant archaeologist. Only a licensed archaeologist can assess – or alter – an archaeological site.

### What to do if you:

- **find an archaeological resource**

If you find something you think may be of archaeological value during project work, you must – by law – stop all activities immediately and contact a licensed consultant archaeologist

The archaeologist will carry out the fieldwork in compliance with the *Ontario Heritage Act* [s.48(1)].

- **unearth a burial site**

If you find a burial site containing human remains, you must immediately notify the appropriate authorities (i.e., police, coroner's office, and/or Registrar of Cemeteries) and comply with the *Funeral, Burial and Cremation Services Act*.

### Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages when completing this form.



Project or Property Name

Town of Erin Urban Centre Water Servicing Class Environmental Assessment

Project or Property Location (upper and lower or single tier municipality)

5384 Wellington Road 52, Town of Erin, Wellington County

Proponent Name

Town of Erin

Proponent Contact Information

Christine Furlong, P.Eng. Triton Engineering Services Limited

### Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

	Yes	No
2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, do **not** complete the rest of the checklist. You are expected to follow the recommendations in the archaeological assessment report(s).

The proponent, property owner and/or approval authority will:

- summarize the previous assessment
- add this checklist to the project file, with the appropriate documents that demonstrate an archaeological assessment was undertaken e.g., MTCS letter stating acceptance of archaeological assessment report

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., environmental assessment document
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Are there known archaeological sites on or within 300 metres of the property (or the project area)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Yes	No
4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property (or project area)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Yes	No
5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or project area)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Yes	No
6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Yes	No
7. Has the property (or project area) been recognized for its cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to any of the above questions (3 to 7), do **not** complete the checklist. Instead, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment of your property or project area.

If No, continue to question 8.

	Yes	No
8. Has the entire property (or project area) been subjected to recent, extensive and intensive disturbance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If Yes to the preceding question, do **not** complete the checklist. Instead, please keep and maintain a summary of documentation that provides evidence of the recent disturbance.

An archaeological assessment is not required.

If No, continue to question 9.

Yes No

9. Are there present or past water sources within 300 metres of the property (or project area)?

**If Yes**, an archaeological assessment is required.

**If No**, continue to question 10.

Yes No

10. Is there evidence of two or more of the following on the property (or project area)?

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

**If Yes**, an archaeological assessment is required.

**If No**, there is low potential for archaeological resources at the property (or project area).

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g., under the *Environmental Assessment Act*, *Planning Act* processes
- maintained by the property owner, proponent or approval authority

## Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

In this context, the following definitions apply:

- **consultant archaeologist** means, as defined in Ontario regulation as an archaeologist who enters into an agreement with a client to carry out or supervise archaeological fieldwork on behalf of the client, produce reports for or on behalf of the client and provide technical advice to the client. In Ontario, these people also are required to hold a valid professional archaeological licence issued by the Ministry of Tourism, Culture and Sport.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

### 1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may be already in place for identifying archaeological potential, including:

- one prepared and adopted by the municipality e.g., archaeological management plan
- an environmental assessment process e.g., screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s. B.2.]

### 2. Has an archaeological assessment been prepared for the property (or project area) and been accepted by MTCS?

Respond 'yes' to this question, if all of the following are true:

- an archaeological assessment report has been prepared and is in compliance with MTCS requirements
  - a letter has been sent by MTCS to the licensed archaeologist confirming that MTCS has added the report to the Ontario Public Register of Archaeological Reports (Register)
- the report states that there are no concerns regarding impacts to archaeological sites

Otherwise, if an assessment has been completed and deemed compliant by the MTCS, and the ministry recommends further archaeological assessment work, this work will need to be completed.

For more information about archaeological assessments, contact:

- approval authority
- proponent
- consultant archaeologist
- Ministry of Tourism, Culture and Sport at [archaeology@ontario.ca](mailto:archaeology@ontario.ca)

### 3. Are there known archaeological sites on or within 300 metres of the property (or project area)?

MTCS maintains a database of archaeological sites reported to the ministry.

For more information, contact MTCS Archaeological Data Coordinator at [archaeology@ontario.ca](mailto:archaeology@ontario.ca).

### 4. Is there Aboriginal or local knowledge of archaeological sites on or within 300 metres of the property?

Check with:

- Aboriginal communities in your area
- local municipal staff

They may have information about archaeological sites that are not included in MTCS' database.

Other sources of local knowledge may include:

- property owner
- [local heritage organizations and historical societies](#)
- local museums
- [municipal heritage committee](#)
- published local histories

## 5. Is there Aboriginal knowledge or historically documented evidence of past Aboriginal use on or within 300 metres of the property (or property area)?

Check with:

- Aboriginal communities in your area
- local municipal staff

Other sources of local knowledge may include:

- property owner
- [local heritage organizations and historical societies](#)
- local museums
- [municipal heritage committee](#)
- published local histories

## 6. Is there a known burial site or cemetery on the property or adjacent to the property (or project area)?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulation Unit, Ontario Ministry of Consumer Services – for [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, ‘adjacent’ means ‘contiguous’, or as otherwise defined in a municipal official plan.

## 7. Has the property (or project area) been recognized for its cultural heritage value?

There is a strong chance there may be archaeological resources on your property (or immediate area) if it has been listed, designated or otherwise identified as being of cultural heritage value by:

- your municipality
- Ontario government
- Canadian government

This includes a property that is:

- designated under *Ontario Heritage Act* (the OHA ), including:
  - individual designation (Part IV)
  - part of a heritage conservation district (Part V)
  - an archaeological site (Part VI)
- subject to:
  - an agreement, covenant or easement entered into under the OHA (Parts II or IV)
  - a notice of intention to designate (Part IV)
  - a heritage conservation district study area by-law (Part V) of the OHA
- listed on:
  - a municipal register or inventory of heritage properties
  - Ontario government’s list of provincial heritage properties
  - Federal government’s list of federal heritage buildings
- part of a:
  - National Historic Site
  - UNESCO World Heritage Site
- designated under:
  - *Heritage Railway Station Protection Act*
  - *Heritage Lighthouse Protection Act*
- subject of a municipal, provincial or federal commemorative or interpretive plaque.

To determine if your property or project area is covered by any of the above, see:

- Part A of the MTCS Criteria for Evaluating Potential for Built Heritage and Cultural Heritage Landscapes

## Part VI – Archaeological Sites

Includes five sites designated by the Minister under Regulation 875 of the Revised Regulation of Ontario, 1990 (Archaeological Sites) and 3 marine archaeological sites prescribed under Ontario Regulation 11/06.

For more information, check [Regulation 875](#) and [Ontario Regulation 11/06](#).

### 8. Has the entire property (or project area) been subjected to recent extensive and intensive ground disturbance?

Recent: after-1960

Extensive: over all or most of the area

Intensive: thorough or complete disturbance

Examples of ground disturbance include:

- quarrying
- major landscaping – involving grading below topsoil
- building footprints and associated construction area
  - where the building has deep foundations or a basement
- infrastructure development such as:
  - sewer lines
  - gas lines
  - underground hydro lines
  - roads
  - any associated trenches, ditches, interchanges. **Note:** this applies only to the excavated part of the right-of-way; the remainder of the right-of-way or corridor may not have been impacted.

A ground disturbance does **not** include:

- agricultural cultivation
- gardening
- landscaping

#### Site visits

You can typically get this information from a site visit. In that case, please document your visit in the process (e.g., report) with:

- photographs
- maps
- detailed descriptions

If a disturbance isn't clear from a site visit or other research, you need to hire a licensed consultant archaeologist to undertake an archaeological assessment.

### 9. Are there present or past water bodies within 300 metres of the property (or project area)?

Water bodies are associated with past human occupations and use of the land. About 80-90% of archaeological sites are found within 300 metres of water bodies.

#### Present

- Water bodies:
  - primary - lakes, rivers, streams, creeks
  - secondary - springs, marshes, swamps and intermittent streams and creeks
- accessible or inaccessible shoreline, for example:
  - high bluffs
  - swamps
  - marsh fields by the edge of a lake
  - sandbars stretching into marsh

Water bodies not included:

- man-made water bodies, for example:
  - temporary channels for surface drainage
  - rock chutes and spillways
  - temporarily ponded areas that are normally farmed
  - dugout ponds
- artificial bodies of water intended for storage, treatment or recirculation of:
  - runoff from farm animal yards
  - manure storage facilities
  - sites and outdoor confinement areas

## Past

Features indicating past water bodies:

- raised sand or gravel beach ridges – can indicate glacial lake shorelines
- clear dip in the land – can indicate an old river or stream
- shorelines of drained lakes or marshes
- cobble beaches

You can get information about water bodies through:

- a site visit
- aerial photographs
- 1:10,000 scale [Ontario Base Maps](#) - or [equally detailed and scaled maps](#).

## 10. Is there evidence of two or more of the following on the property (or project area)?

- elevated topography
- pockets of well-drained sandy soil
- distinctive land formations
- resource extraction areas
- early historic settlement
- early historic transportation routes

### • **Elevated topography**

Higher ground and elevated positions - surrounded by low or level topography - often indicate past settlement and land use.

Features such as eskers, drumlins, sizeable knolls, plateaus next to lowlands, or other such features are a strong indication of archaeological potential.

Find out if your property or project area has elevated topography, through:

- site inspection
- aerial photographs
- [topographical maps](#)

### • **Pockets of well-drained sandy soil, especially within areas of heavy soil or rocky ground**

Sandy, well-drained soil - in areas characterized by heavy soil or rocky ground - may indicate archaeological potential

Find out if your property or project area has sandy soil through:

- site inspection
- [soil survey reports](#)

- **Distinctive land formations**

Distinctive land formations include – but are not limited to:

- waterfalls
- rock outcrops
- rock faces
- caverns
- mounds, etc.

They were often important to past inhabitants as special or sacred places. The following sites may be present – or close to – these formations:

- burials
- structures
- offerings
- rock paintings or carvings

Find out if your property or project areas has a distinctive land formation through:

- a site visit
- aerial photographs
- 1:10,000 scale [Ontario Base Maps](#) - or [equally detailed and scaled maps](#).

- **Resource extraction areas**

The following resources were collected in these extraction areas:

- food or medicinal plants e.g., migratory routes, spawning areas, prairie
- scarce raw materials e.g., quartz, copper, ochre or outcrops of chert
- resources associated with early historic industry e.g., fur trade, logging, prospecting, mining

Aboriginal communities may hold traditional knowledge about their past use or resources in the area.

- **Early historic settlement**

Early Euro-Canadian settlement include – but are not limited to:

- early military or pioneer settlement e.g., pioneer homesteads, isolated cabins, farmstead complexes
- early wharf or dock complexes
- pioneers churches and early cemeteries

For more information, see below – under the early historic transportation routes.

- **Early historic transportation routes** - such as trails, passes, roads, railways, portage routes, canals.

For more information, see:

- historical maps and/or historical atlases
  - for information on early settlement patterns such as trails (including Aboriginal trails), monuments, structures, fences, mills, historic roads, rail corridors, canals, etc.
  - [Archives of Ontario](#) holds a large collection of historical maps and historical atlases
  - digital versions of historic atlases are available on the [Canadian County Atlas Digital Project](#)
- commemorative markers or plaques such as local, [provincial](#) or [federal](#) agencies
- [municipal heritage committee](#) or other [local heritage organizations](#)
  - for information on early historic settlements or landscape features (e.g., fences, mill races, etc.)
  - for information on commemorative markers or plaques

## **Appendix B.2**

**Stage 1 and 2 Archaeological Assessments,  
Proposed Well Sites Erin 2, Erin 3 and Hillsburgh  
2, Town of Erin, Wellington County  
(ARA Ltd., October 11, 2018)**



**Stage 1 and 2 Archaeological Assessments  
Urban Centre Water Servicing  
Municipal Class Environmental Assessment  
Proposed Well Sites Erin 2, Erin 3 and Hillsburgh 2  
Town of Erin, Wellington County  
Part of Lots 17–18, Concession 10  
Part of Lot 24, Concession 8  
Geographic Township of Erin  
Wellington County, Ontario**

Prepared for  
**Triton Engineering Services Limited**  
105 Queen Street West, Unit 14  
Fergus, ON N1M 1S6  
Tel: (519) 843-3920 Fax: (519) 843-1943  
&  
**Ministry of Tourism, Culture and Sport**

Licensed under  
**P.J. Racher, M.A., CAHP**  
MTCS Licence #P007  
PIF #P007-0874-2017  
ARA File #2017-0268

**11/10/2018**

**Original Report**

## **EXECUTIVE SUMMARY**

Under a contract awarded in November 2017, Archaeological Research Associates Ltd. carried out Stage 1 and 2 archaeological assessments of lands with the potential to be impacted by new water supply wells in the Town of Erin, Wellington County, Ontario. The increase in water supply is required to service potential growth of approximately 10,000 people in the communities of Erin Village and Hillsburgh. The assessments were completed as a component of a 'Schedule B' Municipal Class Environment Assessment. This report documents the background research and fieldwork involved in the assessments, and presents conclusions and recommendations pertaining to archaeological concerns within the assessed area.

The Stage 1 and 2 assessments of the study area were conducted in December 2017 and May 2018 under Project Information Form #P007-0874-2017. The investigation encompassed the entirety of the project lands at the Erin 2, Erin 3 and Hillsburgh 2 well sites. Legal permission to enter and conduct all necessary fieldwork activities within the assessed lands was granted by the property owners. At the time of assessment, the parcels comprised parts of three different agricultural fields.

The Stage 1 assessment determined that the study area had archaeological potential. The Stage 2 assessment did not result in the identification of any archaeological materials. Archaeological Research Associates Ltd. recommends that no further assessment be required within the Erin 2, Erin 3 and Hillsburgh 2 well sites.

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## GLOSSARY OF ABBREVIATIONS

AAL – Archaeological Assessments Ltd.  
ARA – Archaeological Research Associates Ltd.  
ASI – Archaeological Services Inc.  
CHVI – Cultural Heritage Value or Interest  
MTC – (Former) Ministry of Tourism and Culture  
MTCS – Ministry of Tourism, Culture and Sport  
PIF – Project Information Form  
S&Gs – Standards and Guidelines for Consultant Archaeologists

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## 1.0 PROJECT CONTEXT

### 1.1 Development Context

Under a contract awarded in November 2017, ARA carried out Stage 1 and 2 archaeological assessments of lands with the potential to be impacted by new water supply wells in the Town of Erin, Wellington County, Ontario. The increase in water supply is required to service potential growth of approximately 10,000 people in the communities of Erin Village and Hillsburgh. The assessments were completed as a component of a ‘Schedule B’ Municipal Class Environment Assessment. This report documents the background research and fieldwork involved in the assessments, and presents conclusions and recommendations pertaining to archaeological concerns within the assessed area.

The subject study area consists of three rectangular parcels of land with a total area of 0.37 ha (Map 1). These potential well sites have been designated as Erin 2, Erin 3 and Hillsburgh 2. Erin 2 is bounded by Wellington Road 124 to the northwest and agricultural lands to the northeast, southeast and southwest, Erin 3 is bounded by Wellington Road 23 to the southwest and agricultural lands to the northwest, northeast and southeast, and Hillsburgh 2 is bounded by a residential subdivision to the northwest and agricultural lands to the northeast, southeast and southwest. In legal terms, the study area falls on parts of multiple lots and concessions in the Geographic Township of Erin, Wellington County (Table 1).

**Table 1: Locations of Well Sites**

Well Site	Lower Tier Municipality	Upper Tier Municipality	Lot	Concession	Geographic Township	Former County
Erin 2	Town of Erin	Wellington County	17	10	Erin	Wellington
Erin 3	Town of Erin	Wellington County	18	10	Erin	Wellington
Hillsburgh 2	Town of Erin	Wellington County	24	8	Erin	Wellington

The Stage 1 and 2 assessments of the study area were conducted in December 2017 and May 2018 under PIF #P007-0874-2017. The investigation encompassed the entirety of the project lands at the Erin 2, Erin 3 and Hillsburgh 2 well sites. Legal permission to enter and conduct all necessary fieldwork activities within the assessed lands was granted by the property owners. In compliance with the objectives set out in Section 1.0 and Section 2.0 of the *S&Gs* (MTC 2011:13–41), these investigations were carried out in order to:

- Provide information concerning the geography, history and current land condition of the study area;
- Determine the presence of known archaeological sites in the study area;
- Evaluate in detail the archaeological potential of the study area;
- Empirically document all archaeological resources within the study area;
- Determine whether the study area contains archaeological resources requiring further assessment; and
- Recommend appropriate Stage 3 assessment strategies, if any archaeological resources requiring further assessment are identified.

The MTCS is asked to review the results and recommendations presented in this report and express their satisfaction with the fieldwork and reporting through a *Letter of Review and Entry into the Ontario Public Register of Archaeological Reports*.

## 1.2 Historical Context

After a century of archaeological work in southern Ontario, scholarly understanding of the historic usage of the area has become very well-developed. With occupation beginning in the Palaeo-Indian period approximately 11,000 years ago, the greater vicinity of the study area comprises a complex chronology of Indigenous and Euro-Canadian histories. Section 1.2.1 summarizes the region’s settlement history, whereas Section 1.2.2 documents the study area’s past and present land uses. Multiple previous archaeological reports containing relevant background information (influencing the choice of fieldwork strategy or recommendations) were obtained during the research component of the study. These reports are summarized in Section 1.3.3, and the references (including title, author and PIF number) appear in Section 8.0.

### 1.2.1 Settlement History

#### 1.2.1.1 Pre-Contact

The Pre-Contact history of the region is lengthy and rich, and a variety of Indigenous groups inhabited the landscape. Archaeologists generally divide this vibrant history into three main periods: Palaeo-Indian, Archaic and Woodland. Each of these periods comprise a range of discrete sub-periods characterized by identifiable trends in material culture and settlement patterns, which are used to interpret past lifeways. The principal characteristics of these sub-periods are summarized in Table 2.

**Table 2: Pre-Contact Settlement History**  
 (Wright 1972; Ellis and Ferris 1990; Warrick 2000; Munson and Jamieson 2013)

Sub-Period	Timeframe	Characteristics
Early Palaeo-Indian	9000–8400 BC	Gainey, Barnes and Crowfield traditions; Small bands; Mobile hunters and gatherers; Utilization of seasonal resources and large territories; Fluted projectiles
Late Palaeo-Indian	8400–7500 BC	Holcombe, Hi-Lo and Lanceolate biface traditions; Continuing mobility; Campsite/Way-Station sites; Smaller territories are utilized; Non-fluted projectiles
Early Archaic	7500–6000 BC	Side-notched, Corner-notched (Nettling, Thebes) and Bifurcate traditions; Growing diversity of stone tool types; Heavy woodworking tools appear (e.g., ground stone axes and chisels)
Middle Archaic	6000–2500 BC	Stemmed (Kirk, Stanly/Neville), Brewerton side- and corner-notched traditions; Reliance on local resources; Populations increasing; More ritual activities; Fully ground and polished tools; Net-sinkers common; Earliest copper tools
Late Archaic	2500–900 BC	Narrow Point (Lamoka), Broad Point (Genesee) and Small Point (Crawford Knoll) traditions; Less mobility; Use of fish-weirs; True cemeteries appear; Stone pipes emerge; Long-distance trade (marine shells and galena)
Early Woodland	900–400 BC	Meadowood tradition; Crude cord-roughened ceramics emerge; Meadowood cache blades and side-notched points; Bands of up to 35 people
Middle Woodland	400 BC–AD 600	Point Peninsula tradition; Vinette 2 ceramics appear; Small camp sites and seasonal village sites; Influences from northern Ontario and Hopewell area to the south; Hopewellian influence can be seen in continued use of burial mounds

Sub-Period	Timeframe	Characteristics
Middle/Late Woodland Transition	AD 600–900	Princess Point tradition; Cord roughening, impressed lines and punctate designs on pottery; Adoption of maize horticulture at the western end of Lake Ontario; Oval houses and ‘incipient’ longhouses; First palisades; Villages with 75 people
Late Woodland (Early Iroquoian)	AD 900–1300	Glen Meyer tradition; Settled village-life based on agriculture; Small villages (0.4 ha) with 75–200 people and 4–5 longhouses; Semi-permanent settlements
Late Woodland (Middle Iroquoian)	AD 1300–1400	Uren and Middleport traditions; Classic longhouses emerge; Larger villages (1.2 ha) with up to 600 people; More permanent settlements (30 years)
Late Woodland (Late Iroquoian)	AD 1400–1600	Pre-Contact Neutral tradition; Larger villages (1.7 ha); Examples up to 5 ha with 2,500 people; Extensive croplands; Also, hamlets, cabins, camps and cemeteries; Potential tribal units; Fur trade begins ca. 1580; European trade goods appear

### 1.2.1.2 Post-Contact

The arrival of European explorers and traders at the beginning of the 17<sup>th</sup> century triggered widespread shifts in Indigenous lifeways and set the stage for the ensuing Euro-Canadian settlement process. Documentation for this period is abundant, ranging from the first sketches of Upper Canada and the written accounts of early explorers to detailed township maps and lengthy histories. The Post-Contact period can be effectively discussed in terms of major historical events, and the principal characteristics associated with these events are summarized in Table 3.

**Table 3: Post-Contact Settlement History**  
(Smith 1846; Coyne 1895; Lajeunesse 1960; Cumming 1972; Ellis and Ferris 1990; Surtees 1994; AO 2015)

Historical Event	Timeframe	Characteristics
Early Contact	Early 17 <sup>th</sup> century	Brûlé explores southern Ontario in 1610; Champlain travels through in 1613 and 1615/1616, encountering a variety of Indigenous groups (including both Iroquoian-speakers and Algonkian-speakers); European goods begin to replace traditional tools
	Mid- to late 17 <sup>th</sup> century	Conflicts between various First Nations during the Beaver Wars result in numerous population shifts; European explorers continue to document the area, and many Indigenous groups trade directly with the French and English; ‘The Great Peace of Montreal’ treaty established between roughly 39 different First Nations and New France in 1701
Fur Trade Development	Early to mid-18 <sup>th</sup> century	Growth and spread of the fur trade; Peace between the French and English with the Treaty of Utrecht in 1713; Ethnogenesis of the Métis; Hostilities between French and British lead to the Seven Years’ War in 1754; French surrender in 1760
British Control	Mid-18 <sup>th</sup> century	<i>Royal Proclamation</i> of 1763 recognizes the title of the First Nations to the land; Numerous treaties arranged by the Crown; First acquisition is the Seneca surrender of the west side of the Niagara River in August 1764
Loyalist Influx	Late 18 <sup>th</sup> century	United Empire Loyalist influx after the American Revolutionary War (1775–1783); British develop interior communication routes and acquire additional lands; ‘Between the Lakes Purchase’ orchestrated by Haldimand in 1784 to obtain lands for Six Nations; <i>Constitutional Act</i> of 1791 creates Upper and Lower Canada
County Development	Late 18 <sup>th</sup> to early 19 <sup>th</sup> century	Area initially adjacent to York County’s ‘West Riding’, Additional lands acquired in the second ‘Between the Lakes Purchase’ in 1792; Became part of York County’s ‘West Riding’ in 1798; Additional lands obtained in the ‘Lake Simcoe-Nottawasaga Purchase’ and ‘Ajetance Purchase’ in 1818, the ‘Huron Tract Purchase’ in 1827 and the ‘Bond Head-Saugeen Treaty’ in 1836; Wellington District and Waterloo County created in 1840; Wellington County created after the abolition of the district system in 1849



Historical Event	Timeframe	Characteristics
Township Formation	Early 19 <sup>th</sup> century	South part of Erin was surveyed by Kennedy in 1819, and the north part by O'Reilly and Burt; First settlers included A. Patterson, G. Roszel, N. Roszel (1820), W. How (1821), the Trouts (1822) and the McMillans (1824); 75 households, 1 grist mill and 1 saw mill in 1830, with a population of 368
Township Development	Mid-19 <sup>th</sup> to early 20 <sup>th</sup> century	The population of Erin reached 1,368 by 1841; Road from Erin to Guelph completed in 1844; 1 grist mill and 4 saw mills in operation by 1846; 13,131 ha taken up at that time, with 3,215 ha under cultivation; Traversed by the Credit Valley Railway Elora Branch (ca. 1880); Communities at Crewson's Corner, Ballinafad, Ospringe, Brisbane, Erin, Coningsby, Hillsburgh and Mimosa

### 1.2.2 Past and Present Land Use

During Pre-Contact and Early Contact times, the vicinity of the study area would have comprised a mixture of coniferous trees, deciduous trees and open areas. Indigenous communities would have managed the landscape to some degree. During the early 19<sup>th</sup> century, Euro-Canadian settlers arrived in the area and began to clear the forests for agricultural and settlement purposes. The vicinity of the study area was well-settled for the remainder of the Euro-Canadian period, and the subject parcels were located near the historic communities Hillsburgh and Erin.

In order to gain a general understanding of the study area's past land uses, three illustrated maps and one aerial image were examined during the research component of the study. Specifically, the following resources were consulted:

- G. Leslie and C.J. Wheelock's *Map of the County of Wellington, Canada West* (1861) (OHCMP 2018);
- *Erin* from Walker & Miles's *Topographical and Historical Atlas of the County of Wellington, Ont.* (1877) (McGill University 2001);
- *Township of Erin* from the Historical Atlas Publishing Co.'s *Historical Atlas of the County of Wellington, Ontario* (1906) (Cumming 1972); and
- An aerial image from 1954 (University of Toronto 2018).

The limits of the study area are shown on georeferenced versions of the consulted historical resources in Map 2–Map 6. These resources indicate that subject parcels and the surrounding lands were well-settled by the second half of the 19<sup>th</sup> century. A variety of agricultural properties are visible, and numerous Euro-Canadian landowners and/or features are documented in the vicinity of the study area (Table 4).

**Table 4: Occupational History and Past Land Uses**

Well Site	Mid-19 <sup>th</sup> century	Late 19 <sup>th</sup> century	Early 20 <sup>th</sup> century	Mid-20 <sup>th</sup> century
Erin 2	Part of J.R. Thompson's property; No structures indicated	Part of J.R. Thompson's property; Farmhouse to southwest	Part of J.A. Thompson's property; Farmhouse to the southwest	Part of an agricultural field
Erin 3	Part of Brown's property; No structures indicated	Part of J. Brown's property; Farmhouse to the southeast	Part of J.H. Thompson's property; Farmhouse to the southeast	Part of an agricultural field
Hillsburgh 2	Part of R. Nodwell's property; No structures indicated	Part of R. Nodwell's property; No structures indicated	Part of R.D. Nodwell's property; Farmhouse to the south	Part of an agricultural field

The land use at the time of assessment can be classified as agricultural.

### 1.3 Archaeological Context

The Stage 1 and 2 assessments were conducted concurrently on December 4 and 8, 2017 and May 3, 2018 under PIF #P007-0874-2017. ARA utilized a Topcon GRS-1 GNSS receiver with RTK correction providing a precision of 1 cm (UTM17/NAD83) during the investigation. The limits of the study area were confirmed using project-specific GIS data translated into GPS points for reference in the field, in combination with georeferenced aerial imagery showing natural formations in relation to the project lands. The proponent had also arranged for the staking of the project limits using GPS technology in advance of fieldwork, and ARA recorded the staked limits to reconfirm the extent of the study area.

The archaeological context of any given study area must be informed by 1) the condition of the property as found (Section 1.3.1), 2) a summary of registered or known archaeological sites located within a minimum 1 km radius (Section 1.3.2) and 3) descriptions of previous archaeological fieldwork carried out within the limits of, or immediately adjacent to the subject lands (Section 1.3.3).

#### 1.3.1 Condition of the Property

The study area lies within the Great Lakes–St. Lawrence forest, which is a transitional zone between the southern deciduous forest and the northern boreal forest. This forest extends along the St. Lawrence River across central Ontario to Lake Huron and west of Lake Superior along the border with Minnesota, and its southern portion extends into the more populated areas of Ontario. This forest is dominated by hardwoods, featuring species such as maple, oak, yellow birch, white and red pine. Coniferous trees such as white pine, red pine, hemlock and white cedar commonly mix with deciduous broad-leaved species, such as yellow birch, sugar and red maples, basswood and red oak (MNR 2015).

Physiographically, Erin 2 and Erin 3 lie within the region known as the Guelph Drumlin Field, whereas Hillsburgh 2 falls within the Hillsburgh Sandhills. The characteristics of these regions are summarized in Table 5.

**Table 5: Physiographic Regions**

Well Site	Physiographic Region	Description
Erin 2	Guelph Drumlin Field	The Guelph Drumlin Field is located northwest of the Paris Moraine and includes roughly 300 broad oval drumlins of various sizes. The drumlins themselves consist largely of loamy and calcareous till, and analyses have placed the average grain sizes in the neighbourhood of 50% sand, 35% silt and 15% clay. These drumlins are not closely grouped, and the intervening low ground supports mainly fluvial materials created by river action (Chapman and Putnam 1984:137–138).
Erin 3		
Hillsburgh 2	Hillsburgh Sandhills	The Hillsburgh Sandhills flank the Dundalk Till Plain and extend from Orangeville to Hillsburgh and Belwood. This area is characterized by rough topography, sandy materials and a flat-bottomed swampy valley turning through the moraine from Orangeville to Hillsburgh. Knobby hills are most common, although steep slopes occur along the sides of the spillway north of Hillsburgh (Chapman and Putnam 1984:135–136).

A variety of soil types occur within the subject parcels. The specific characteristics of these soil types are summarized in Table 6 (Hoffman et al. 1963).

**Table 6: Soil Types**

Well Site	Soil Code	Soil Type	Parent Materials	Drainage
Erin 2	Cg	Caledon fine sandy loam	Fine sand over gravel	Good
Erin 3	G1	Guelph loam	Loam till	Good
Hillsburgh 2	Hif	Hillsburgh fine sandy loam	Fine to medium sand	Good

In terms of local watersheds, the project lands fall within the ‘West Credit River’ drainage basin, which is under the jurisdiction of the Credit Valley Conservation Authority (CVC 2018). The water sources in the vicinity of each Well Site are summarized in Table 7.

**Table 7: Water Sources**

Well Site	Conservation Authority	Drainage Basin	Proximity to Water Sources
Erin 2	Credit Valley	West Credit River	Located 397 m east of a tributary of the Credit River (East Branch) and 358 m east of the West Credit River Provincial Swamp
Erin 3	Credit Valley	West Credit River	Located 350 m southwest of the West Credit River Provincial Swamp, 878 m southwest of a tributary of the Credit River (East Branch) and 1.0 km north of the Credit River (East Branch)
Hillsburgh 2	Credit Valley	West Credit River	Located 203 m east of a tributary of the Credit River (Erin Branch), 319 m south of the Alton - Hillsburgh Wetland Complex Provincial Swamp and 657 m north of the West Credit River Provincial Swamp

At the time of assessment, the parcels comprised parts of three different agricultural fields. Field conditions were ideal during the assessments, with well-weathered soils in the ploughed lands during the pedestrian survey and high ground surface visibility throughout the investigation. No unusual physical features were encountered that affected fieldwork strategy decisions or the identification of artifacts or cultural features (e.g., dense root mats, boulders, rubble, etc.).

### **1.3.2 Registered or Known Archaeological Sites**

The Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports were consulted to determine whether any registered or known archaeological resources occur within a 1 km radius of the study area. The available MTCS search facility returned a total of seven registered archaeological sites located within at least a 1 km radius (the facility returns sites in a rectangular area, rather than a radius, potentially resulting in returns located beyond the specified distance). Five other previously identified sites (i.e., unregistered sites) were noted within a 1 km radius during the research component of the study. The sites are summarized in Table 8.

**Table 8: Registered or Known Archaeological Sites**

Borden No.	Site Name (Identifier)	Time Period	Affinity	Site Type
AkHa-6	Walker-Ball	Post-Contact	Euro-Canadian	Farmstead, homestead
AkHa-7	Walker-Slack	Post-Contact	Euro-Canadian	Building, homestead
AkHa-19	N/A	Post-Contact	Euro-Canadian	Homestead
AkHa-22	N/A	Post-Contact	Unspecified	Farmstead
AlHa-2	Harkness-Slack	Post-Contact	Euro-Canadian	Homestead
AlHa-42	Carlton	Post-Contact	Euro-Canadian	Homestead
AlHa-43	Alton Village South	Post-Contact	Euro-Canadian	Unspecified
N/A	IF#1	Pre-Contact	Indigenous	Findspot
N/A	IF#2	Pre-Contact	Indigenous	Findspot
N/A	IF#3	Pre-Contact	Indigenous	Findspot
N/A	IF#4	Pre-Contact	Indigenous	Findspot
N/A	IF#5	Pre-Contact	Indigenous	Findspot

None of the registered archaeological sites are located within or immediately adjacent to the subject parcels; accordingly, they have no potential to traverse the project lands. The closest registered sites are located over 300 m away from the limits of Erin 2 and Erin 3. The specific locations of IF#1–IF#5 could not be determined due to the lack of an available supplementary documentation report.

### 1.3.3 Previous Archaeological Work

Reports documenting assessments conducted within the subject lands and assessments that resulted in the discovery of archaeological sites that could extend into the subject lands were sought during the research component of the study. In order to ensure that all relevant past work was identified, an investigation was launched to identify all reports involving assessments within 50 m of the study area. The investigation determined that there are three reports on record documenting previous archaeological fieldwork within the specified distance. Copies of the reports were obtained, and the previous results and recommendations are summarized below in fulfilment of the requirements set out in Section 7.5.8 Standards 4–5 of the *S&Gs* (MTC 2011:126). The limits of the past assessments are shown in the report mapping.

In July 2012, a Stage 1 assessment of the Solmar Holdings Corp Lands was carried out under PIF #P013-669-2012 (AAL 2012). The assessed area encompassed the entirety of the subject lands at Erin 2. The study area was found to comprise mixture of areas of archaeological potential and areas of no archaeological potential. It was recommended that the property be subject to Stage 2 assessment prior to any development (AAL 2012:5). The Stage 2 assessment was carried out in June and September 2013 under PIF #P361-053-2013 (AAL 2013). The entire property was assessed, save for 16 ha of pasture in the southwest that could not be surveyed. A total of six locations of archaeological materials were identified during the assessment, including five Indigenous findspots and a mid-19<sup>th</sup> century Euro-Canadian homestead (AkHa-19). Akha-19 was found to have further CHVI and was recommended for Stage 3 assessment. As noted above, this site is located more than 300 m away from Erin 2.

A Stage 1 assessment for the Erin Wastewater Servicing Municipal Class Environmental Assessment was carried out in June 2017 under PIF #P094-0233-2017 (ASI 2017). Part of the assessed area traverses the subdivision located northwest of the subject lands at Hillsburgh 2. The assessed area was determined to comprise a mixture of areas of archaeological potential and areas of no archaeological potential. The identified areas of archaeological potential were recommended for Stage 2 assessment prior to any proposed project impacts (ASI 2017:13).

## **2.0 STAGE 1 BACKGROUND STUDY**

### **2.1 Background**

The Stage 1 assessment involved background research to document the geography, history, previous archaeological fieldwork and current land condition of the study area. This desktop examination included research from both archival sources as well as current academic/archaeological publications. It also included the analysis of modern topographic maps, aerial images and historical maps/atlas of the most detailed scale available. The results of the research conducted for the background study are summarized below.

With occupation beginning approximately 11,000 years ago, the greater vicinity of the study area comprises a complex chronology of Pre-Contact and Post-Contact histories (Section 1.2). Artifacts associated with Palaeo-Indian, Archaic, Woodland and Early Contact traditions are well-attested in Wellington County, and Euro-Canadian archaeological sites dating to pre-1900 and post-1900 contexts are likewise common. The presence of 12 previously identified archaeological sites in the vicinity of the study area demonstrates the desirability of this locality for early settlement (Section 1.3.2). Background research determined that there was one area of previous assessment within the study area and confirmed that none of the identified archaeological sites could extend into the subject lands (Section 1.3.3).

The natural environment of the study area would have been attractive to both Indigenous and Euro-Canadian populations as a result of proximity to tributaries of the Credit River. The relatively well-drained soils would have been ideal for agriculture, and the diverse local vegetation would also have encouraged settlement throughout Ontario's lengthy history. Euro-Canadian populations would have been particularly drawn to Wellington Road 23 and Wellington Road 124, both of which were historically-surveyed thoroughfares.

In summary, the background study included an up-to-date listing of sites from the Ontario Archaeological Sites Database (within at least a 1 km radius), the consideration of previous local archaeological fieldwork (within at least a 50 m radius), the analysis of topographic and illustrated historic maps (at the most detailed scale available), and the study of aerial images. ARA therefore confirms that the standards for background research set out in Section 1.1 of the *S&Gs* (MTC 2011:14–15) were met.

### **2.2 Field Methods (Property Inspection)**

Since the Stage 1 and 2 archaeological assessments were carried out concurrently, a separate property inspection was not completed as part of the Stage 1 background study. Instead, the visual inspection was conducted over the course of the Stage 2 property survey, in keeping with the concepts set out in Section 2.1 Standards 2a–b of the *S&Gs* (MTC 2011:28). The specific field methods utilized during the visual inspection and the weather and lighting conditions at the time of assessment are summarized in Section 3.1 (Stage 2).

## 2.3 Analysis and Conclusions

In addition to relevant historical sources and the results of past archaeological assessments, the archaeological potential of a property can be assessed using its soils, hydrology and landforms as considerations. Section 1.3.1 of the *S&Gs* (MTC 2011:17–18) recognizes the following features or characteristics as indicators of archaeological potential: previously identified sites, water sources (past and present), elevated topography, pockets of well-drained sandy soil, distinctive land formations, resource areas, areas of Euro-Canadian settlement, early transportation routes, listed or designated properties, historic landmarks or sites, and areas that local histories or informants have identified with possible sites, events, activities or occupations.

The Stage 1 assessment resulted in the identification of numerous features of archaeological potential in the vicinity of the study area (Map 7). The closest and most relevant indicators of archaeological potential (i.e., those that would directly affect survey interval requirements) are summarized in Table 9. Background research did not identify any features indicating that the study area has potential for deeply buried archaeological resources.

**Table 9: Features of Potential**

Well Site	Features of Potential
Erin 2	Two historic roadways (Wellington Road 124 and 10 <sup>th</sup> Line); Two historic structure localities
Erin 3	One historic roadway (Wellington Road 23); Two historic structure localities
Hillsburgh 2	One primary water source (a tributary of the Credit River); Two secondary water sources (unnamed wetlands)

Although proximity to a feature of archaeological potential is a significant factor in the potential modelling process, current land conditions must also be considered. Section 1.3.2 of the *S&Gs* (MTC 2011:18) emphasizes that 1) quarrying, 2) major landscaping involving grading below topsoil, 3) building footprints and 4) sewage/infrastructure development can result in the removal of archaeological potential, and Section 2.1 of the *S&Gs* (MTC 2011:28) states that 1) permanently wet areas, 2) exposed bedrock and 3) steep slopes (> 20°) can also be considered as having no archaeological potential.

Background research determined that the entire parcel at Erin 2 had been previously assessed. Although not recommended for further assessment in 2013, these lands were re-evaluated during the subject assessment to confirm that they were of no further archaeological concern. ARA's visual inspection, coupled with the analysis of aerial images, topographic mapping and digital environmental data, did not result in the identification of any areas of no archaeological potential within the assessed lands. A Stage 2 assessment was therefore required.

### 3.0 STAGE 2 PROPERTY ASSESSMENT

#### 3.1 Field Methods

The Stage 2 assessment involved visual inspection to evaluate archaeological potential, monitoring of artificial weathering, and pedestrian survey in all identified areas of archaeological potential (Image 1–Image 12). Environmental conditions were ideal during the investigation, permitting good visibility of land features and providing an increased chance of finding evidence of archaeological resources. A breakdown of the specific fieldwork activities and environmental conditions appears in Table 10. ARA therefore confirms that fieldwork was carried out under weather and lighting conditions that met the requirements set out in Section 1.2 Standard 2 and Section 2.1 Standard 3 of the *S&Gs* (MTC 2011:16, 29).

**Table 10: Fieldwork Activities and Environmental Conditions**

Date	Activity	Field Conditions	Weather Conditions	Temperature (°C)	Lighting Conditions
04/12/2017	Monitoring of Artificial Weathering	Damp	Foggy	8	Good
08/12/2017	Field Condition Inspection	Snow Covered	Cloudy	-1	Good
03/05/2018	Pedestrian Survey	Damp	Partly Cloudy	20	Excellent

The study area was subjected to a systematic visual inspection (at an interval of 5 m) in accordance with the requirements set out in Section 1.2 of the *S&Gs* (MTC 2011:15–17). This inspection was conducted concurrently with the monitoring and property survey. The visually inspected areas were examined under conditions that permitted good visibility of land features. The inspection confirmed that all surficial features of archaeological potential (e.g., historically-surveyed roadways, etc.) were present where they were previously identified, and did not result in the identification of any additional features of archaeological potential not visible on mapping (e.g., relic water channels, patches of well-drained soils, etc.).

The visual inspection did not document any areas that had been clearly disturbed by past construction activities. No natural features (e.g., permanently wet lands, sloped lands, overgrown vegetation, heavier soils than expected, etc.) or significant built features (e.g., heritage structures, landscapes, plaques, monuments, cemeteries, etc.) that would affect assessment strategies were identified.

Artificial weathering was carried out at Erin 2, Erin 3 and Hillsburgh 2 in December 2017 so that the property survey could occur before weather conditions became inappropriate. Four trucks from Erin Fire Station 50 assisted in the weathering, including one pumper with a roof mounted remote water cannon, two tankers and a command vehicle. At Hillsburgh 2, the pumper was connected to a fire hydrant and positioned west of the study area. In order to document the amount of rainfall, an impromptu rain gauge (a plastic container) was embedded in the southeastern corner of the study area (furthest from the truck). Once watering began, the gauge was checked regularly in order to track the amount of rainfall. Using a sweeping motion to avoid erosion or ponding, 11,931 gallons of water were applied over 90 minutes, resulting in an accumulation of 27 mm.



The same technique was followed at Erin 2 and Erin 3, although the tankers were used as the water source. Due to the presence of a large fence along Wellington Road 23 at Erin 3, hand watering with a two-inch hose was needed along the inside of the fence to ensure complete coverage. Between 10,000 and 11,000 gallons were applied at each site (Image 1–Image 6). Although the artificial weathering was successfully carried out, the sudden onset of winter and significant snow accumulation prevented the pedestrian survey. This snow accumulation was documented in a field condition visit on December 8, 2017, at which time it was decided to delay the survey.

In May 2018, the pedestrian survey method was utilized to complete the property assessment within the agricultural fields. Section 2.1.1 of the *S&Gs* (MTC 2011:30) provides clear requirements for the condition of such lands prior to the commencement of fieldwork: all fields must be recently ploughed; all soils must be well-weathered; and at least 80% of the ploughed ground surface must be visible. These conditions were met during the pedestrian survey. Following the standard strategy for pedestrian survey outlined in Section 2.1.1 of the *S&Gs* (MTC 2011:30–31), ARA crewmembers traversed the fields along parallel transects established at an interval of 5 m, yielding at least 20 survey transects per hectare (Image 7–Image 12). No archaeological materials were encountered during the pedestrian survey.

The combined results of the Stage 1 and 2 assessments are presented in Map 10–Map 12. The limits of the project lands (‘study area’) are depicted as layers in these maps. A breakdown of the survey methods appears in Table 11.

**Table 11: Survey Methods**

Category	Study Area
Property assessed by pedestrian survey at an interval of 5 m	100.00% (0.37 ha)
Property assessed by test pit survey at an interval of 5 m	0.00% (0.00 ha)
Property assessed by test pit survey at an interval of 10 m	0.00% (0.00 ha)
Property assessed by combination of visual inspection and test pit survey to confirm disturbance	0.00% (0.00 ha)
Property assessed with a modified survey interval due to a physical or cultural constraint	0.00% (0.00 ha)
Property not assessed due to physical constraint	0.00% (0.00 ha)
Property not assessed because of permanently wet areas	0.00% (0.00 ha)
Property not assessed because of exposed bedrock	0.00% (0.00 ha)
Property not assessed because of sloped areas	0.00% (0.00 ha)
Property not assessed because of disturbed areas	0.00% (0.00 ha)
<b>Total</b>	<b>100% (0.37 ha)</b>

As required by Section 2.1 Standard 4 of the *S&Gs* (MTC 2011:29), GPS coordinates were recorded for at least one local fixed reference landmark (e.g., a Land Surveyor benchmark, Hydro pole, standard iron bar, etc.). The GPS co-ordinates for the documented landmarks appear in Table 12, and the fixed reference landmark locations are shown in Map 10–Map 12.

**Table 12: Fixed Reference Landmarks**

Fixed Reference Landmark ID	Landmark Type	UTM Zone	Easting (m)	Northing (m)
FRL1	Utility Pole	17	569,216	4,849,163
FRL2	Utility Pole	17	569,260	4,849,219
FRL3	Utility Pole	17	574,551	4,848,967

Fixed Reference Landmark ID	Landmark Type	UTM Zone	Easting (m)	Northing (m)
FRL4	Utility Pole	17	574,594	4,849,022

### 3.2 Record of Finds

The assessment did not result in the discovery of any archaeological materials. The inventory of the documentary record, which includes a quantitative summary of the field notes, photographs and mapping materials associated with the project, appears in Table 13.

**Table 13: Documentary Record**

Field Documents	Total	Nature	Location
Photographs	95	Digital	On server at 219-900 Guelph Street, Kitchener
Notes	4	Digital and hard copy	Filed and on server at 219-900 Guelph Street, Kitchener
Maps	9	Digital and hard copy	Filed and on server at 219-900 Guelph Street, Kitchener

### 3.3 Analysis and Conclusions

No archaeological sites were identified within the assessed lands.

## **4.0 RECOMMENDATIONS**

The Stage 1 assessment determined that the study area had archaeological potential. The Stage 2 assessment did not result in the identification of any archaeological materials. ARA recommends that no further assessment be required within the Erin 2, Erin 3 and Hillsburgh 2 well sites.

## 5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

Section 7.5.9 of the *S&Gs* requires that the following information be provided for the benefit of the proponent and approval authority in the land use planning and development process (MTC 2011:126–127):

- This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the MTCS, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.
- The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

## 6.0 IMAGES



**Image 1: Erin 2 – Artificial Weathering**  
(December 4, 2017; Facing North)



**Image 2: Erin 2 – Artificial Weathering**  
(December 4, 2017; Facing Northwest)



**Image 3: Erin 3 – Artificial Weathering**  
(December 4, 2017; Facing Northwest)



**Image 4: Erin 3 – Artificial Weathering**  
(December 4, 2017; Facing Northeast)



**Image 5: Hillsburgh 2 – Artificial Weathering**  
(December 4, 2017; Facing Northwest)



**Image 6: Hillsburgh 2 – Artificial Weathering**  
(December 4, 2017; Facing North)



**Image 7: Erin 2 – Pedestrian Survey**  
(May 3, 2018; Facing Northeast)



**Image 8: Erin 2 – Pedestrian Survey**  
(May 3, 2018; Facing Northeast)



**Image 9: Erin 3 – Pedestrian Survey**  
(May 3, 2018; Facing Southeast)



**Image 10: Erin 3 – Pedestrian Survey**  
(May 3, 2018; Facing Southeast)

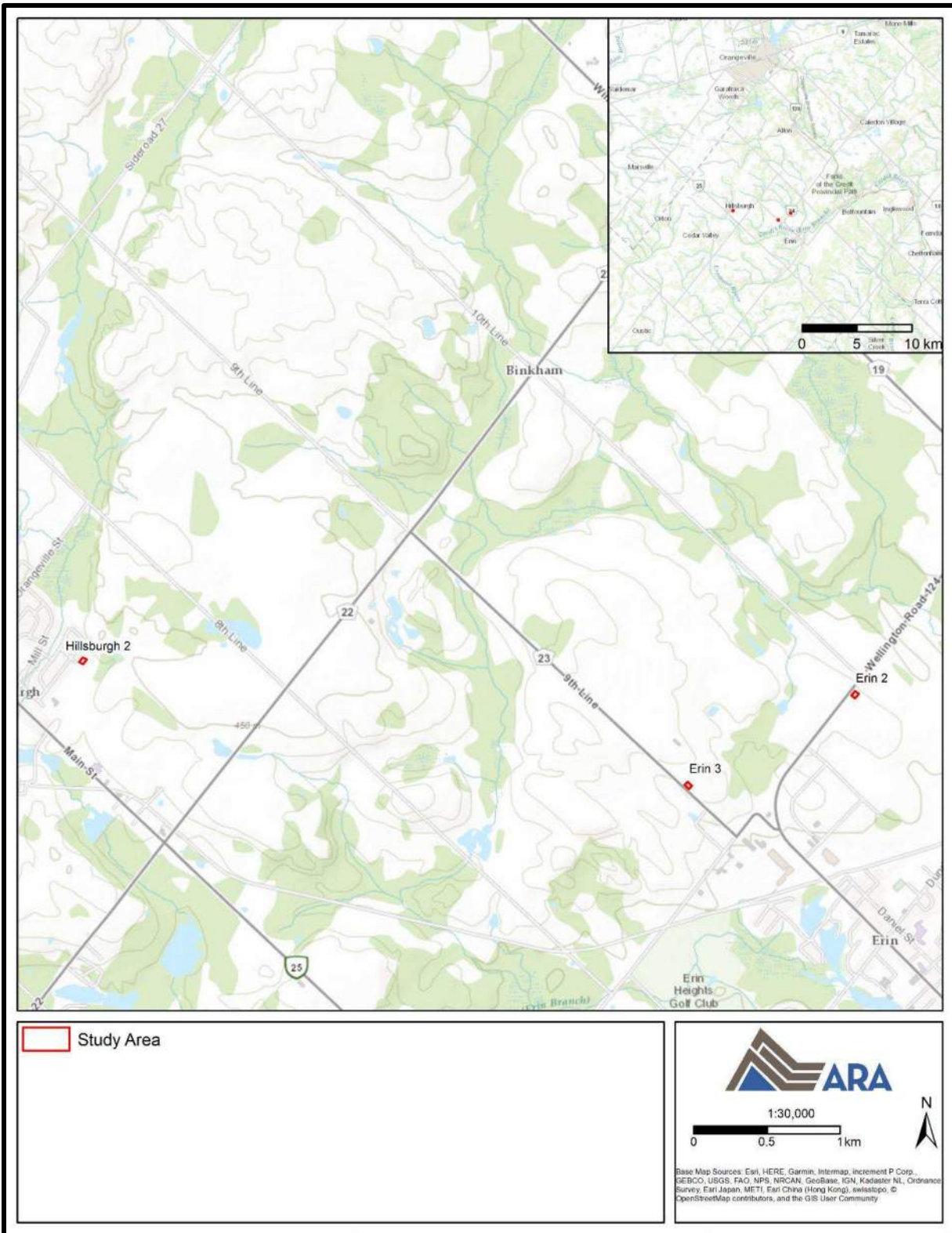


**Image 11: Hillsburgh 2 – Pedestrian Survey**  
(May 3, 2018; Facing Northeast)



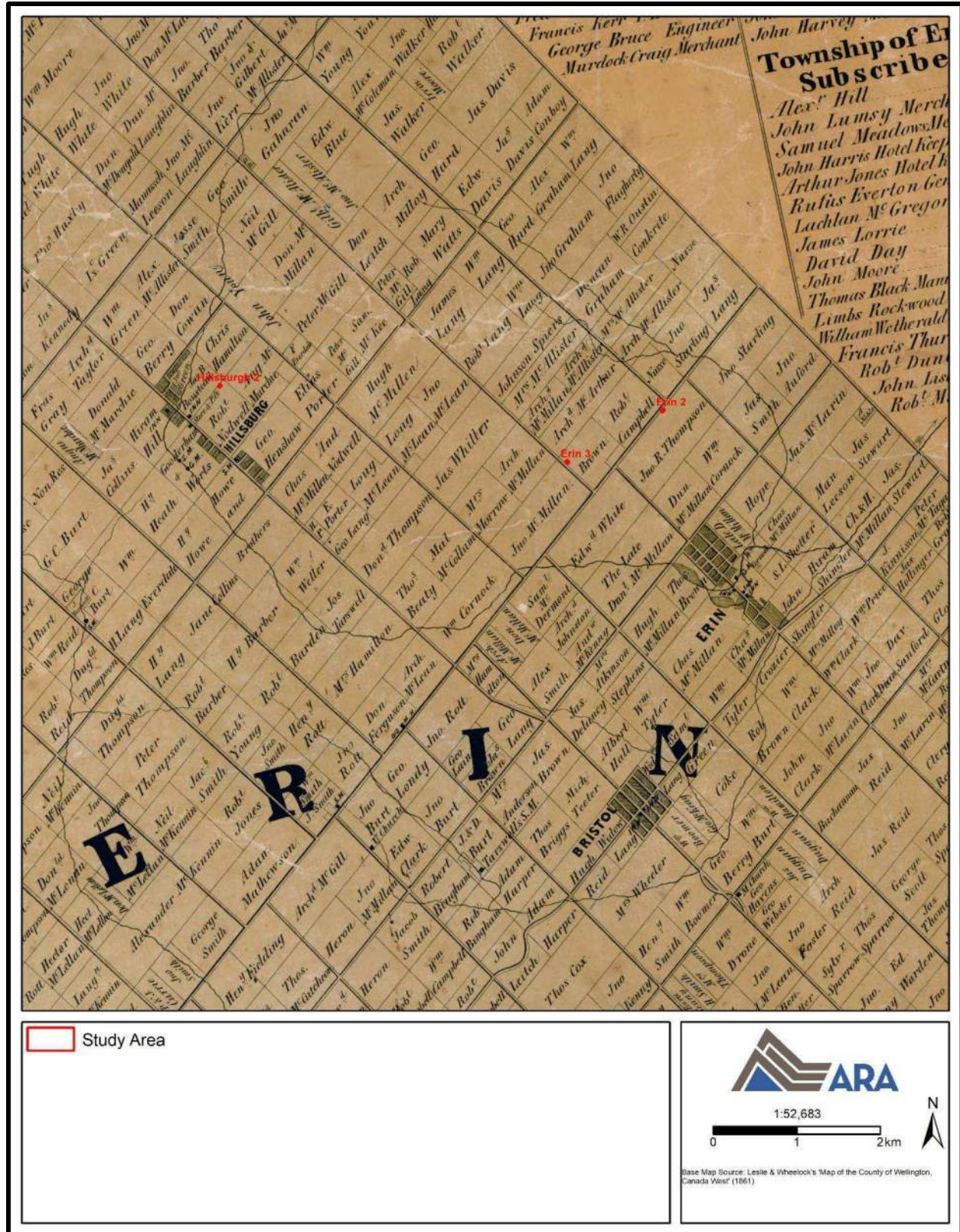
**Image 12: Hillsburgh 2 – Pedestrian Survey**  
(May 3, 2018; Facing Northeast)

## 7.0 MAPS



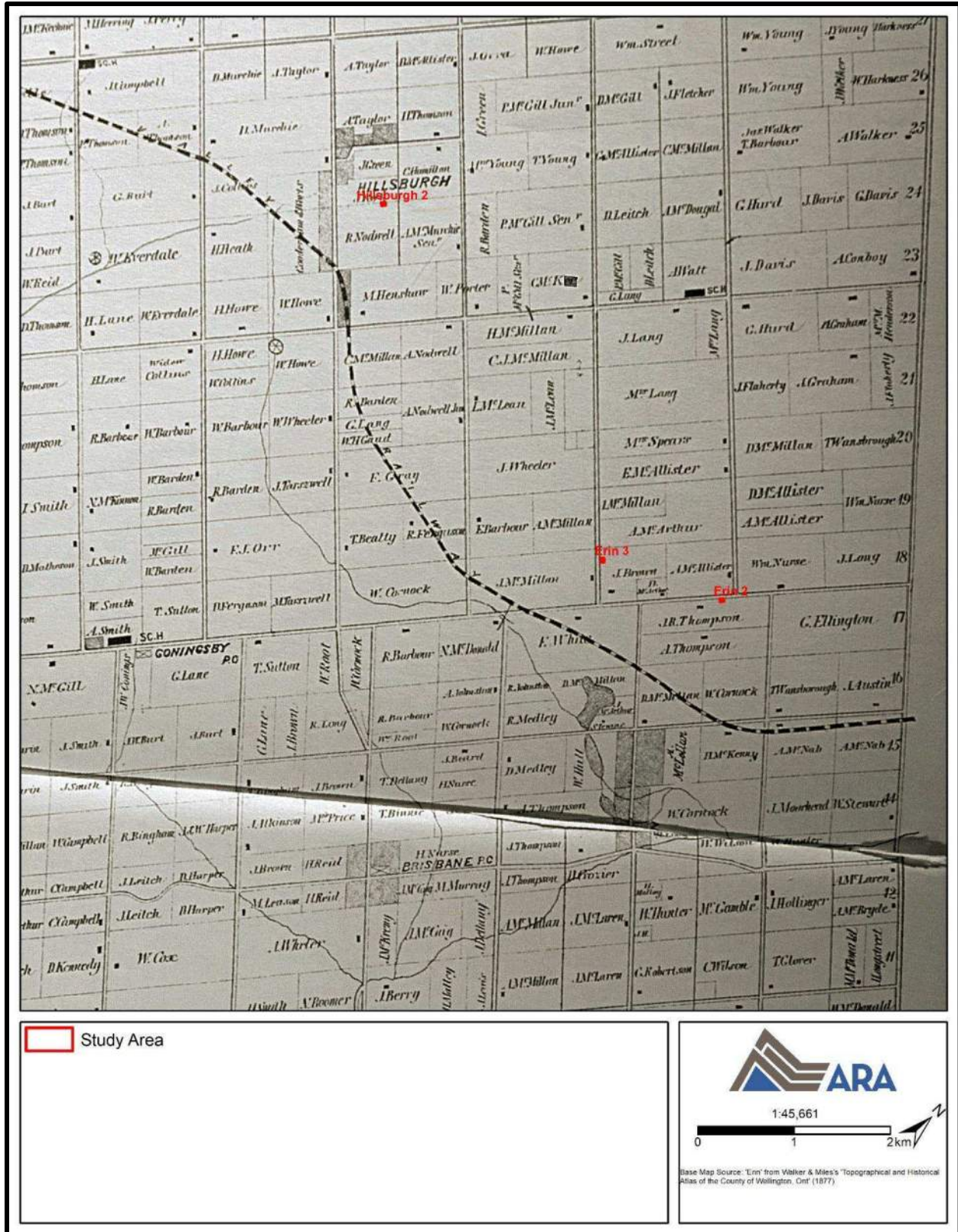
**Map 1: Location of Proposed Well Sites**  
(Produced under licence using ArcGIS® software by Esri, © Esri)





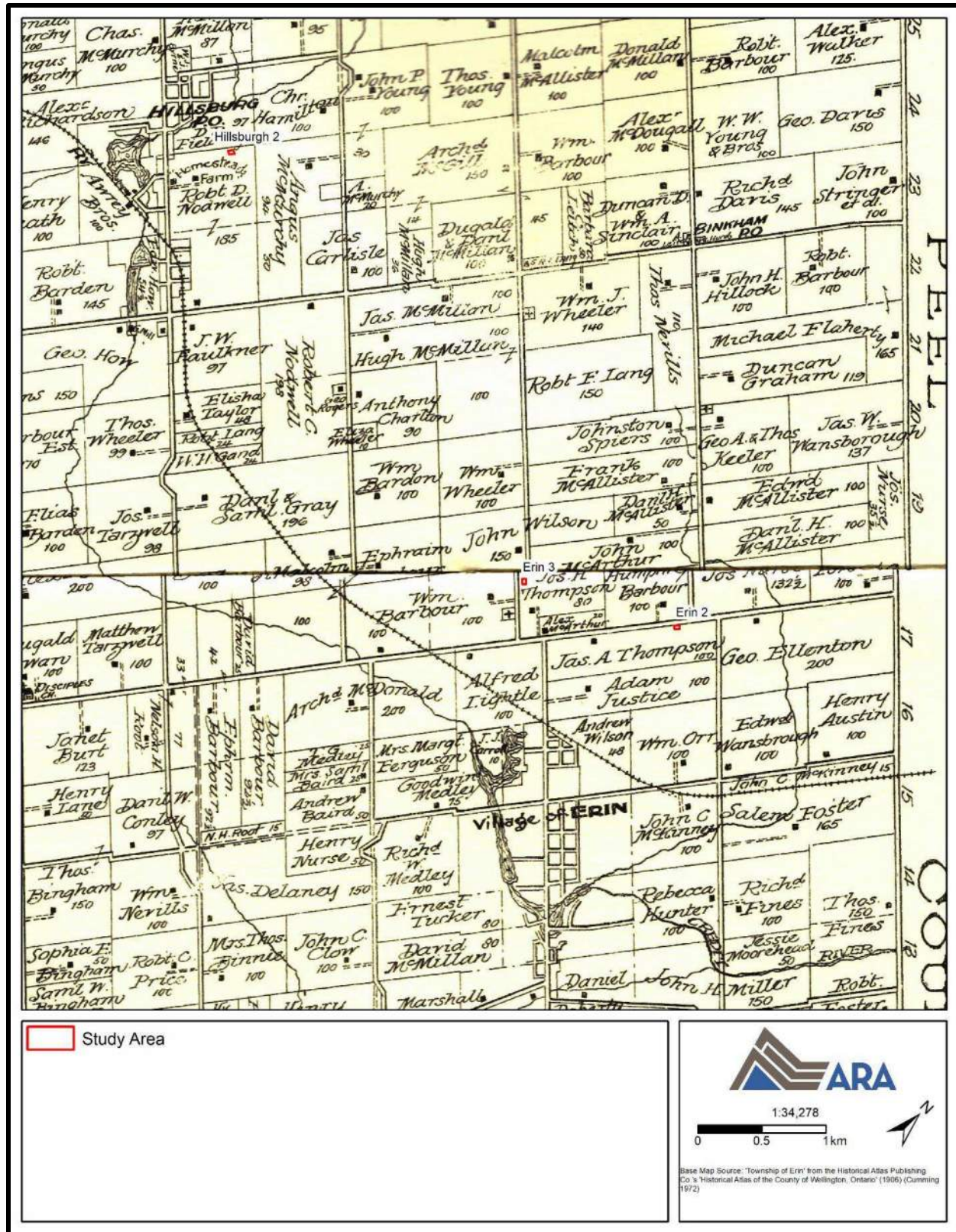
**Map 2: G. Leslie & C.J. Wheelock's Map of the County of Wellington, Canada West (1861)**

(Produced under licence using ArcGIS® software by Esri, © Esri; OHCMP 2018)

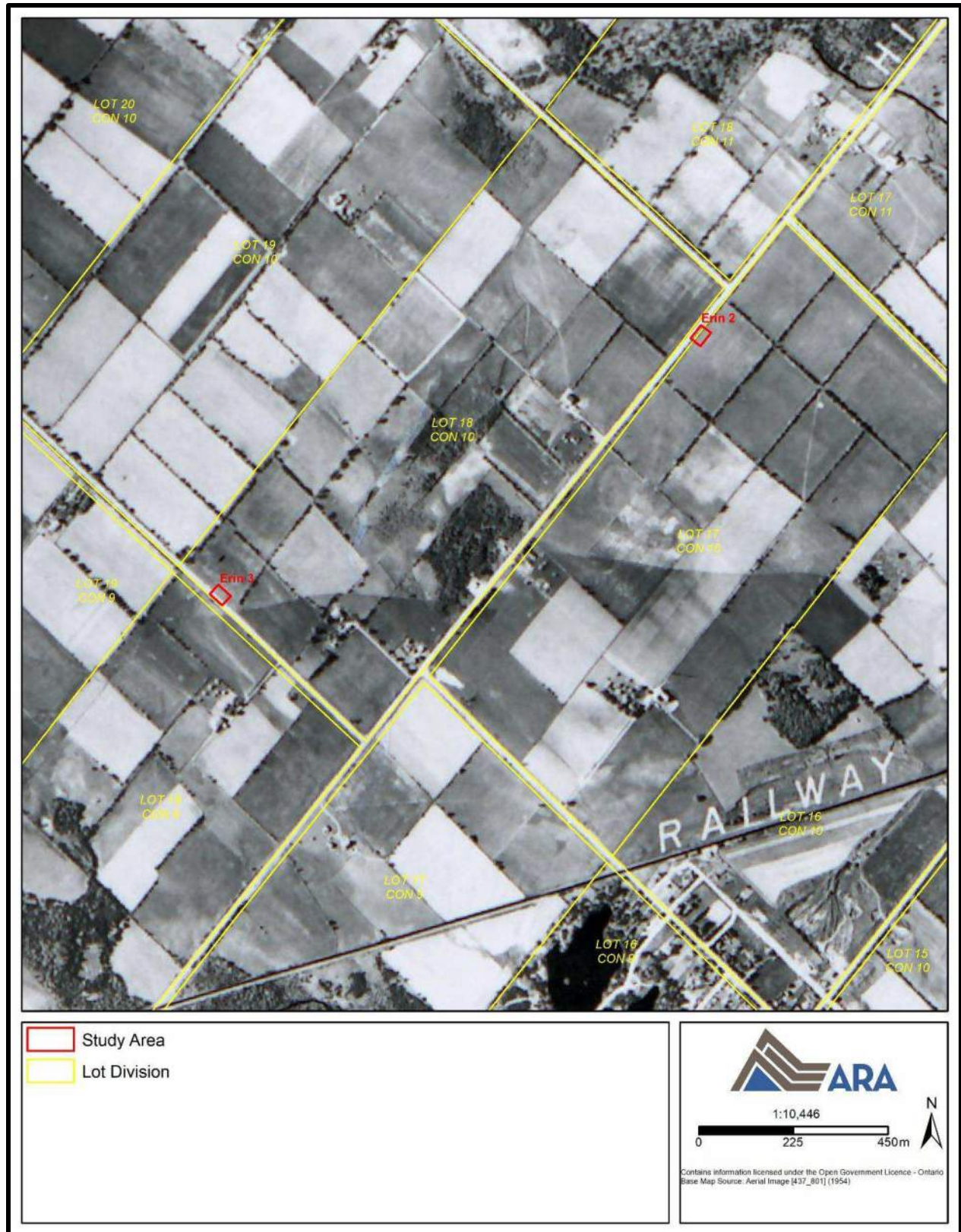


**Map 3: Erin from Walker & Miles's Topographical and Historical Atlas of the County of Wellington, Ontario (1877)**

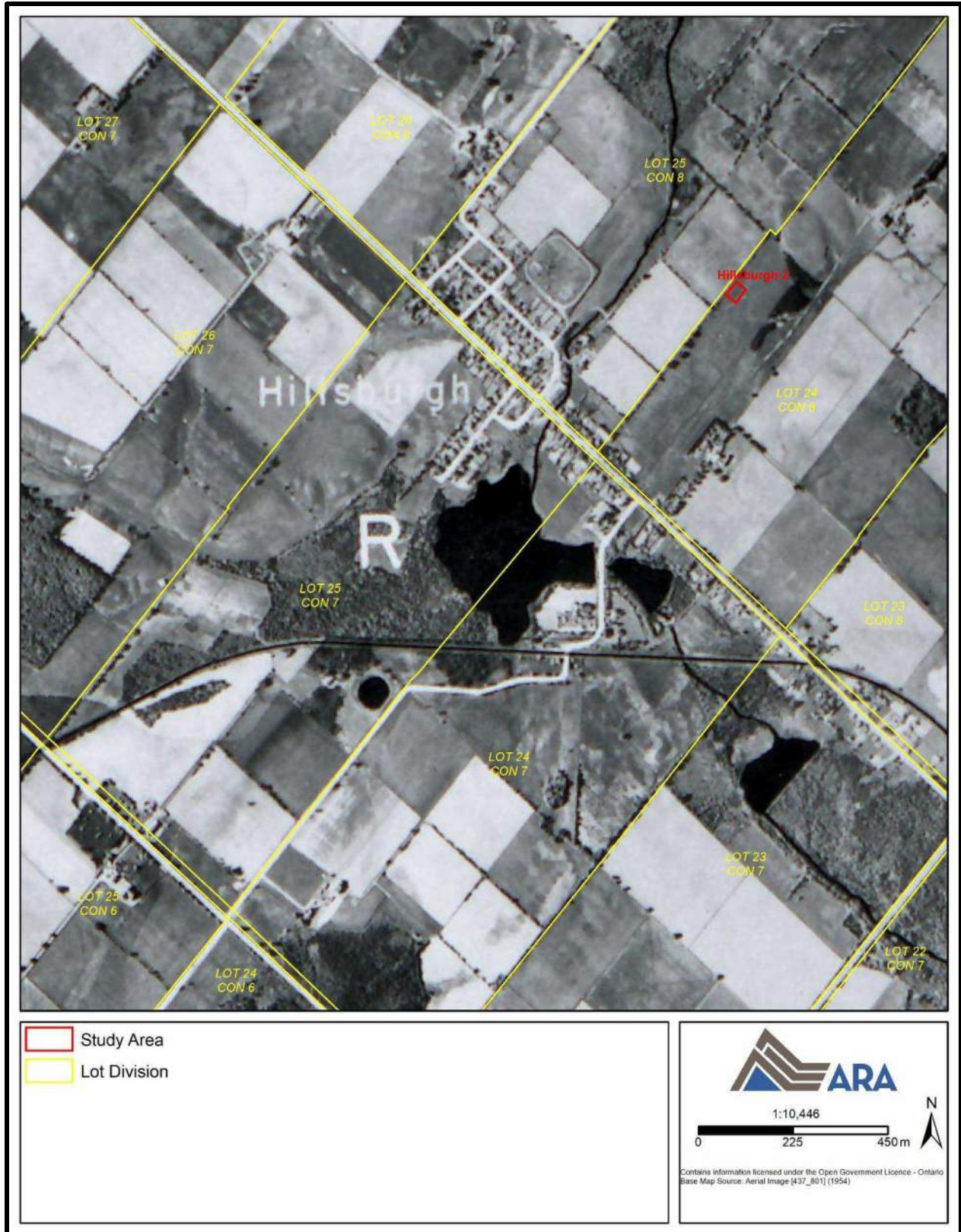
(Produced under licence using ArcGIS® software by Esri, © Esri; OHCMP 2018)



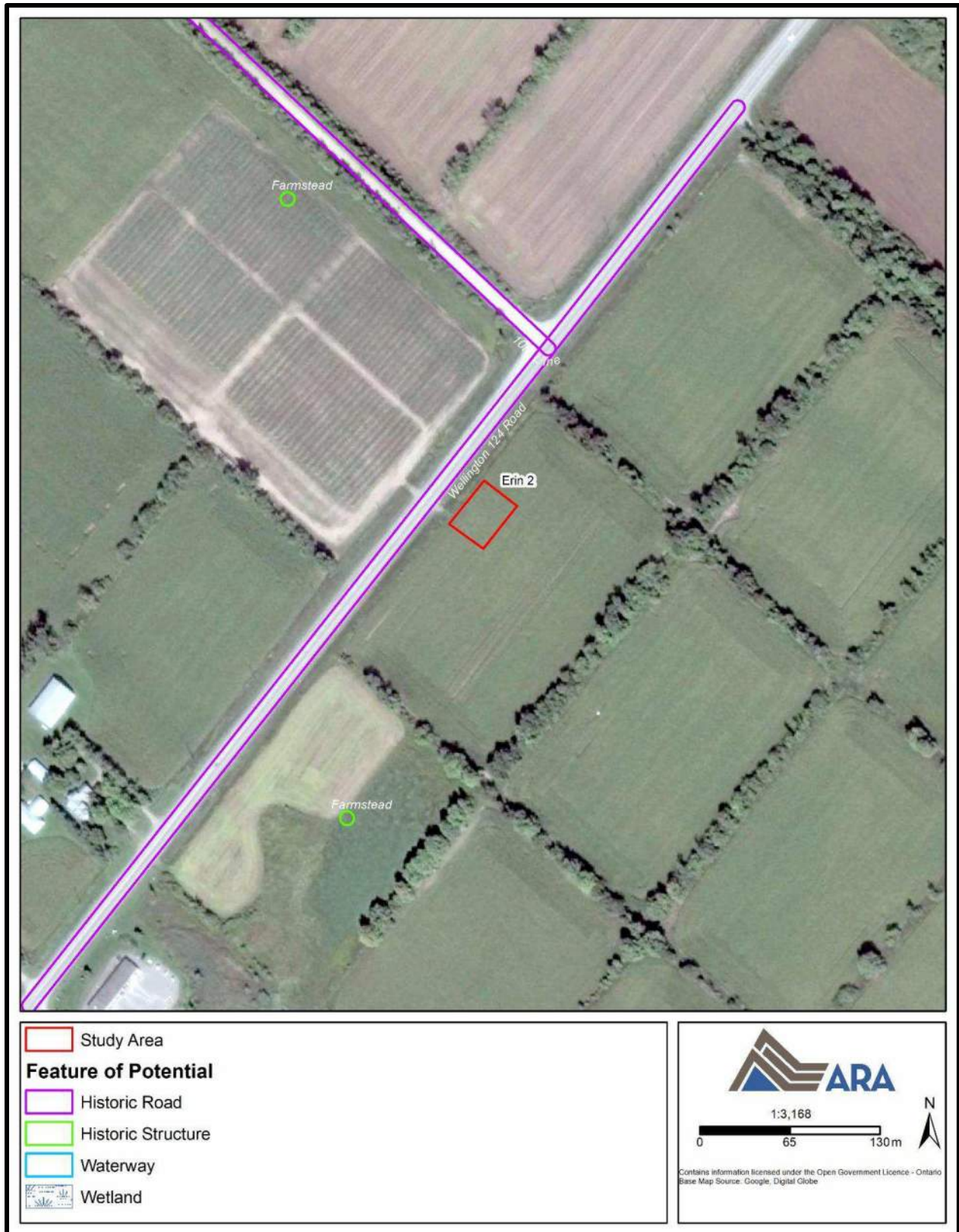
**Map 4: Township of Erin from the Historical Atlas Publishing Co.'s Historical Atlas of the County of Wellington, Ontario (1906)**  
 (Produced under licence using ArcGIS® software by Esri, © Esri; Cumming 1972)



**Map 5: Erin 2 and Erin 3 – Aerial Image (1954)**  
(Produced under licence using ArcGIS® software by Esri, © Esri; University of Toronto 2018)



**Map 6: Hillsburgh 2 – Aerial Image (1954)**  
(Produced under licence using ArcGIS® software by Esri, © Esri; University of Toronto 2018)



**Map 7: Erin 2 – Features of Potential**  
(Produced under licence using ArcGIS® software by Esri, © Esri)



**Map 8: Erin 3 – Features of Potential**  
(Produced under licence using ArcGIS® software by Esri, © Esri)



**Map 9: Hillsburgh 2 – Features of Potential**  
(Produced under licence using ArcGIS® software by Esri, © Esri)





**Map 10: Erin 2 – Field Methods**  
 (Produced under licence using ArcGIS® software by Esri, © Esri)



**Map 11: Erin 3 – Field Methods**  
 (Produced under licence using ArcGIS® software by Esri, © Esri)



**Map 12: Hillsburgh 2 – Field Methods**  
(Produced under licence using ArcGIS® software by Esri, © Esri)

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## **Appendix B.3**

**Letter Re: Review and Entry into the Ontario  
Public Register of Archaeological Reports  
(MTCS, February 12, 2019)**

**Ministry of Tourism, Culture and Sport**

Archaeology Programs Unit  
Programs and Services Branch  
Culture Division  
401 Bay Street, Suite 1700  
Toronto ON M7A 0A7  
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**Ministère du Tourisme, de la Culture et du Sport**

Unité des programmes d'archéologie  
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Feb 12, 2019

Paul Racher (P007)  
Archaeological Research Associates Ltd.  
900 Guelph Kitchener ON N2H 5Z6

**RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 and 2 Archaeological Assessments, Urban Centre Water Servicing, Municipal Class Environmental Assessment, Proposed Well Sites Erin 2, Erin 3 and Hillsburgh 2, Town of Erin, Wellington County, Part of Lots 17–18, Concession 10 Part of Lot 24, Concession 8 Geographic Township of Erin Wellington County, Ontario", Dated Oct 11, 2018, Filed with MTCS Toronto Office on Oct 25, 2018, MTCS Project Information Form Number P007-0874-2017, MTCS File Number 0008185**

Dear Mr. Racher:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18.<sup>1</sup> This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 Standards and Guidelines for Consultant Archaeologists set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment/mitigation of the study area as depicted in Maps 10-12 ARO of the above titled report and recommends the following:

The Stage 1 assessment determined that the study area had archaeological potential. The Stage 2 assessment did not result in the identification of any archaeological materials. ARA recommends that no further assessment be required within the Erin 2, Erin 3 and Hillsburgh 2 well sites.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Meagan Brooks  
Archaeology Review Officer

cc. Archaeology Licensing Officer  
Ray Kirtz, Triton Engineering Services Limited  
Nathan Hyde, Town of Erin

<sup>1</sup>In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.



## **Appendix B.4**

**Stage 1 Archaeological Assessment, Proposed  
Erin 3 Well Site, Town of Erin, Wellington County  
(ARA Ltd., February 14, 2020)**

**Stage 1 Archaeological Assessment  
Urban Centre Water Servicing  
Municipal Class Environmental Assessment  
Proposed Erin 3 Well Site  
Town of Erin  
Part of Lot 20, Concession 10  
Geographic Township of Erin  
Wellington County, Ontario**

Prepared for  
**Triton Engineering Services Limited**  
105 Queen Street West, Unit 14  
Fergus, ON N1M 1S6  
Tel: (519) 843-3920 Fax: (519) 843-1943

Licensed under  
**P.J. Racher**  
MHSTCI Licence #P007  
PIF #P007-1078-2019  
ARA File #2019-0335

**14/02/2020**

**Original Report**

## **EXECUTIVE SUMMARY**

Under a contract awarded in October 2019, Archaeological Research Associates Ltd. carried out a Stage 1 assessment of lands with the potential to be impacted by a new water supply well in the Town of Erin (Town), Wellington County, Ontario. The increase in water supply is required to improve system redundancy and service potential growth of approximately 5,700 people in the Town's urban centres of Erin and Hillsburgh, forecast to year 2041. The assessment was completed as a component of a 'Schedule B' Municipal Class Environment Assessment. An alternate location for the placement of the Erin 3 well site was previously assessed in the Town of Erin (ARA 2018), but the revised location falls beyond the limits of the previous study. This report documents the background research and fieldwork involved in the assessment of the new Erin 3 well site location, and presents conclusions and recommendations pertaining to archaeological concerns within the assessed area.

The Stage 1 assessment was conducted in November 2019 under Project Information Form #P007-1078-2019. The investigation encompassed the entirety of the project lands at the Erin 3 well site. Legal permission to enter and conduct all necessary fieldwork activities within the assessed lands was granted by the property owner. At the time of assessment, the study area comprised a gravelled access route, overgrown lands (formerly agricultural), an agricultural field, partially impacted lands associated with recent well site testing and a soil stockpile.

The Stage 1 assessment determined that the entire study area has archaeological potential. Archaeological Research Associates Ltd. recommends that all identified areas of archaeological potential within the project lands be subject to a Stage 2 property assessment in accordance with Section 2.1 of the 2011 *Standards and Guidelines for Consultant Archaeologists*. Given that there are still outstanding archaeological concerns within the subject lands, no ground alterations or development of any kind may occur within the assessed area until the Stage 2 assessment is complete, a recommendation that the lands require no further archaeological assessment is made, and the associated report is entered into the Ontario Public Register of Archaeological Reports.

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## GLOSSARY OF ABBREVIATIONS

ARA – Archaeological Research Associates Ltd.  
EA – Environmental Assessment  
GIS – Geographic Information System  
MHSTCI – Ministry of Heritage, Sport, Tourism and Culture Industries  
PIF – Project Information Form  
PTP – Positive Test Pit  
ROW – Right of Way  
S&Gs – Standards and Guidelines for Consultant Archaeologists

## **PERSONNEL**

*Project Director:* P.J. Racher (#P007)

*Operations Manager:* C.E. Gohm (#R187)

*Project Manager:* M. McCready (#P490)

*Field Director:* A. Moulton (#R1067)

*Assistant Field Director:* Q. Clouthier

*Cartographers:* A. Bailey (#R1069), K. Brightwell (#R341)

*Report Writer:* D. Worby (#R1190)

*Editor:* C.J. Gohm

## **1.0 PROJECT CONTEXT**

### **1.1 Development Context**

Under a contract awarded in October 2019, ARA carried out a Stage 1 assessment of lands with the potential to be impacted by a new water supply well at a new site named Erin 3 in the village of Erin, Town of Erin, Wellington County, Ontario. The increase in water supply is required to improve system redundancy and service potential growth of approximately 5,700 people in the Town's urban centres of Erin and Hillsburgh. The assessment was completed as a component of a 'Schedule B' Municipal Class EA. An alternate location for the placement of the Erin 3 well site was previously assessed in the Town of Erin (ARA 2018), but the revised location falls beyond the limits of the previous study. This report documents the background research and fieldwork involved in the assessment of the new Erin 3 well site location, and presents conclusions and recommendations pertaining to archaeological concerns within the assessed area.

The subject study area consists of a square parcel of land with a total area of 0.24 ha (Map 1). This parcel is generally bounded by Wellington Road 23 to the southwest, a rural residence to the northwest and an agricultural field to the northeast and southeast. In legal terms, the study area falls on part of Lot 20, Concession 10 in the Geographic Township of Erin, Wellington County.

The Stage 1 assessment was conducted in November 2019 under PIF #P007-1078-2019. The investigation encompassed the entirety of the project lands at the Erin 3 well site. Legal permission to enter and conduct all necessary fieldwork activities within the assessed lands was granted by the property owner. In compliance with the objectives set out in Section 1.0 of the 2011 *S&Gs*, this investigation was carried out in order to:

- Provide information concerning the geography, history and current land condition of the study area;
- Determine the presence of known archaeological sites in the study area;
- Present strategies to mitigate project impacts to such sites, if they are located;
- Evaluate in detail the archaeological potential of the study area; and
- Recommend appropriate strategies for Stage 2 archaeological assessment, if some or all of the study area has archaeological potential.

The Ministry of Heritage, Sport, Tourism and Culture Industries is asked to review the results and recommendations presented herein and enter the report into the Ontario Public Register of Archaeological Reports. ARA did not engage with any Indigenous groups over the course of the subject investigation.

### **1.2 Historical Context**

After a century of archaeological work in southern Ontario, scholarly understanding of the historic usage of the area has become very well-developed. With occupation beginning in the Palaeo period approximately 11,000 years ago, the greater vicinity of the study area comprises a complex chronology of Indigenous and Euro-Canadian histories. Section 1.2.1 summarizes the region's settlement history, whereas Section 1.2.2 documents the study area's past and present land uses.

No previous archaeological reports containing relevant background information were identified during the research component of the study.

## 1.2.1 Settlement History

### 1.2.1.1 Pre-Contact

The Pre-Contact history of the region is lengthy and rich, and a variety of Indigenous groups inhabited the landscape. Archaeologists generally divide this vibrant history into three main periods: Palaeo, Archaic and Woodland. Each of these periods comprise a range of discrete sub-periods characterized by identifiable trends in material culture and settlement patterns, which are used to interpret past lifeways. The principal characteristics of these sub-periods are summarized in Table 1.

**Table 1: Pre-Contact Settlement History**  
 (Wright 1972; Ellis and Ferris 1990; Warrick 2000; Munson and Jamieson 2013)

Sub-Period	Timeframe	Characteristics
Early Palaeo	9000–8400 BC	Gainey, Barnes and Crowfield traditions; Small bands; Mobile hunters and gatherers; Utilization of seasonal resources and large territories; Fluted projectiles
Late Palaeo	8400–7500 BC	Holcombe, Hi-Lo and Lanceolate biface traditions; Continuing mobility; Campsite/Way-Station sites; Smaller territories are utilized; Non-fluted projectiles
Early Archaic	7500–6000 BC	Side-notched, Corner-notched (Nettling, Thebes) and Bifurcate traditions; Growing diversity of stone tool types; Heavy woodworking tools appear (e.g., ground stone axes and chisels)
Middle Archaic	6000–2500 BC	Stemmed (Kirk, Stanly/Neville), Brewerton side- and corner-notched traditions; Reliance on local resources; Populations increasing; More ritual activities; Fully ground and polished tools; Net-sinkers common; Earliest copper tools
Late Archaic	2500–900 BC	Narrow Point (Lamoka), Broad Point (Genesee) and Small Point (Crawford Knoll) traditions; Less mobility; Use of fish-weirs; True cemeteries appear; Stone pipes emerge; Long-distance trade (marine shells and galena)
Early Woodland	900–400 BC	Meadowood tradition; Crude cord-roughened ceramics emerge; Meadowood cache blades and side-notched points; Bands of up to 35 people
Middle Woodland	400 BC–AD 600	Point Peninsula tradition; Vinette 2 ceramics appear; Small camp sites and seasonal village sites; Influences from northern Ontario and Hopewell area to the south; Hopewellian influence can be seen in continued use of burial mounds
Middle/Late Woodland Transition	AD 600–900	Princess Point tradition; Cord roughening, impressed lines and punctate designs on pottery; Adoption of maize horticulture at the western end of Lake Ontario; Oval houses and ‘incipient’ longhouses; First palisades; Villages with 75 people
Late Woodland (Early)	AD 900–1300	Glen Meyer tradition; Settled village-life based on agriculture; Small villages (0.4 ha) with 75–200 people and 4–5 longhouses; Semi-permanent settlements
Late Woodland (Middle)	AD 1300–1400	Uren and Middleport traditions; Classic longhouses emerge; Larger villages (1.2 ha) with up to 600 people; More permanent settlements (30 years)
Late Woodland (Late)	AD 1400–1600	Pre-Contact Neutral tradition; Larger villages (1.7 ha); Examples up to 5 ha with 2,500 people; Extensive croplands; Also, hamlets, cabins, camps and cemeteries; Potential tribal units; Fur trade begins ca. 1580; European trade goods appear

Although Iroquoian-speaking populations tended to leave a much more obvious mark on the archaeological record and are therefore emphasized in the Late Woodland entries above, it must be understood that Algonquian-speaking populations also represented a significant presence in southern Ontario. Due to the sustainability of their lifeways, archaeological evidence directly



associated with the Anishinaabeg remains elusive, particularly when compared to sites associated with the more sedentary agriculturalists. Many artifact scatters in southern Ontario were likely camps, chipping stations or processing areas associated with the more mobile Anishinaabeg, utilized during their travels along the local drainage basins while making use of seasonal resources. It must be recognized that this part of southern Ontario represents the ancestral territory of various Indigenous groups, each with their own land use and settlement pattern tendencies.

### 1.2.1.2 Post-Contact

The arrival of European explorers and traders at the beginning of the 17<sup>th</sup> century triggered widespread shifts in Indigenous lifeways and set the stage for the ensuing Euro-Canadian settlement process. Documentation for this period is abundant, ranging from the first sketches of Upper Canada and the written accounts of early explorers to detailed township maps and lengthy histories. The Post-Contact period can be effectively discussed in terms of major historical events, and the principal characteristics associated with these events are summarized in Table 2.

**Table 2: Post-Contact Settlement History**  
(Smith 1846; Coyne 1895; Lajeunesse 1960; Cumming 1972; Ellis and Ferris 1990; Surtees 1994; AO 2015)

Historical Event	Timeframe	Characteristics
Early Exploration	Early 17 <sup>th</sup> century	Brûlé explores southern Ontario in 1610; Champlain travels through in 1613 and 1615/1616, encountering a variety of Indigenous groups (including both Iroquoian-speakers and Algonquian-speakers); European goods begin to replace traditional tools
Increased Contact and Conflict	Mid- to late 17 <sup>th</sup> century	Conflicts between various First Nations during the Beaver Wars result in numerous population shifts; European explorers continue to document the area, and many Indigenous groups trade directly with the French and English; ‘The Great Peace of Montreal’ treaty established between roughly 39 different First Nations and New France in 1701
Fur Trade Development	Early to mid-18 <sup>th</sup> century	Growth and spread of the fur trade; Peace between the French and English with the Treaty of Utrecht in 1713; Ethnogenesis of the Métis; Hostilities between French and British lead to the Seven Years’ War in 1754; French surrender in 1760
British Control	Mid-18 <sup>th</sup> century	<i>Royal Proclamation</i> of 1763 recognizes the title of the First Nations to the land; Numerous treaties arranged by the Crown; First acquisition is the Seneca surrender of the west side of the Niagara River in August 1764
Loyalist Influx	Late 18 <sup>th</sup> century	United Empire Loyalist influx after the American Revolutionary War (1775–1783); British develop interior communication routes and acquire additional lands; ‘Between the Lakes Purchase’ orchestrated by Haldimand in 1784 to obtain lands for Six Nations; <i>Constitutional Act</i> of 1791 creates Upper and Lower Canada
County Development	Late 18 <sup>th</sup> to early 19 <sup>th</sup> century	Area initially adjacent to York County’s ‘West Riding’, Additional lands acquired in the second ‘Between the Lakes Purchase’ in 1792; Became part of York County’s ‘West Riding’ in 1798; Additional lands obtained in the ‘Lake Simcoe-Nottawasaga Purchase’ and ‘Ajetance Purchase’ in 1818, the ‘Huron Tract Purchase’ in 1827 and the ‘Bond Head-Saugeen Treaty’ in 1836; Wellington District and Waterloo County created in 1840; Wellington County created after the abolition of the district system in 1849
Township Formation	Early 19 <sup>th</sup> century	South part of Erin was surveyed by Kennedy in 1819, and the north part by O’Reilly and Burt; First settlers included A. Patterson, G. Roszel, N. Roszel (1820), W. How (1821), the Trouts (1822) and the McMillans (1824); 75 households, 1 grist mill and 1 saw mill in 1830, with a population of 368

Historical Event	Timeframe	Characteristics
Township Development	Mid-19 <sup>th</sup> to early 20 <sup>th</sup> century	The population of Erin reached 1,368 by 1841; Road from Erin to Guelph completed in 1844; 1 grist mill and 4 saw mills in operation by 1846; 13,131 ha taken up at that time, with 3,215 ha under cultivation; Traversed by the Credit Valley Railway Elora Branch (ca. 1880); Communities at Crewson's Corner, Ballinafad, Ospringe, Brisbane, Erin, Coningsby, Hillsburgh and Mimosa

## 1.2.2 Past and Present Land Use

### 1.2.2.1 Overview

During Pre-Contact and Early Contact times, the vicinity of the study area would have comprised a mixture of coniferous trees, deciduous trees, wetlands and open areas. Indigenous communities would have managed the landscape to some degree. During the early 19<sup>th</sup> century, Euro-Canadian settlers arrived in the area and began to clear the forests for agricultural and settlement purposes. The study area was located northwest of historic community of Erin.

During the 19<sup>th</sup> and 20<sup>th</sup> centuries, the proposed site of the Erin 3 well was situated within an agricultural field adjacent to Wellington Road 23; however, the study area has been subject to partial impacts and testing activities since July 2019 in order to verify the location's suitability for a well site. A summary of modifications and testing activities at the study area prior to assessment appears in Table 3.

**Table 3: Summary of Modification and Testing Activities**

Date	Activity/Development
July 2019	Construction of temporary gravel access driveway from Wellington Road 23 to proposed well location, approx. 30 m long and 4 m wide
August–October 2019	Drilling of 150 mm pilot well, boring of this well to 250 mm diameter, and installation of steel well casing
October–November 2019	Preliminary pump testing and video/alignment testing of well
December 2019	Long term pump testing on well

The land use at the time of assessment can be classified as a mixture of agricultural (the field) and infrastructural (the access route and staging area for the well).

### 1.2.2.2 Mapping and Imagery Analysis

In order to gain a general understanding of the study area's past land uses, one patent plan, three historic settlement maps, one topographic map, and one aerial image were examined during the research component of the study. Specifically, the following resources were consulted:

- The Erin Township Patent Plan (No Date) (AO 2015);
- G. Leslie and C.J. Wheelock's *Map of the County of Wellington, Canada West* (1861) (OHCMP 2019);
- *Erin* from Walker & Miles's *Topographical and Historical Atlas of the County of Wellington, Ontario* (1877) (McGill University 2001);

- *Township of Erin* from the Historical Atlas Publishing Co.'s *Historical Atlas of the County of Wellington, Ontario* (1906) (Cumming 1972);
- A topographic map from 1937 (OCUL 2019); and
- An aerial image from 1954 (University of Toronto 2019).

The limits of the study area are shown on georeferenced versions of the consulted historical resources in Map 2–Map 7.

The *Erin Township* Patent Plan (No Date) was initiated on a copy of one of the original survey plans and updated with patent information until the records were transferred to the Archives of Ontario. This plan lists Edward MacAllister as the patentee for the project lands but does not provide any insight to structures or developments in the area (Map 2). The south half of Lot 20, Concession 10 was patented to MacAllister in 1864 by the Crown.

G. Leslie and C.J. Wheelock's *Map of the County of Wellington, Canada West* (1861) indicates that Mrs. McAllister occupied the south half of Lot 20, Concession 10 (Map 3). No structures or buildings are illustrated, though the local road network can clearly be seen in the surrounding landscape, with numerous surveyed thoroughfares (e.g., Wellington Road 23 and 10<sup>th</sup> Line). It should be noted that this particular map depicts no structures in the surrounding lots, so the absence of illustrated buildings is not necessarily an indication that the study area was unimproved.

Walker & Miles's *Topographical and Historical Atlas of the County of Wellington, Ontario* (1877) indicates that E. McAllister now occupied the south half of Lot 20, Concession 10 (Map 4). The occupant is likely the same Edward MacAllister to which the property was patented in 1864, and the 1861 historic settlement map indicates that the McAllister family occupied the land prior to the issuance of the patent. The McAllister farmhouse is depicted northeast of the study area fronting 10<sup>th</sup> Line. The Credit Valley Railway Elora Branch is visible to the south and numerous structures are illustrated within the surrounding area (e.g., a schoolhouse near the intersection of 10<sup>th</sup> Line and Wellington Road 22).

The Historical Atlas Publishing Co.'s *Historical Atlas of the County of Wellington, Ontario* (1906) indicates that Frank McAllister, likely a descendant of Edward, now occupied the property. A structure is illustrated southwest from 10<sup>th</sup> Line; however, no structures are within the immediate vicinity of the study area (Map 5). Similarly, the 1937 topographic map depicts many structures along Wellington Road 23, 10<sup>th</sup> Line and various nearby roadways (Map 6). Many of the structures depicted on the earlier historic maps remain present on the landscape. The subject study area is indicated as being on cleared lands adjacent to Wellington Road 23. The house and barn illustrated to the northeast likely reflect the McAllister farm. The 1954 aerial image does not add much to the discussion. The surrounding landscape is depicted as being agrarian in nature and the roadways depicted reflect their current alignment (Map 7).

What is clear from the consideration of these historic resources is that the area around Wellington Road 23 was moderately settled by the mid-19<sup>th</sup> century, adjacent to which a variety of properties developed. A total of three farmsteads were noted in proximity to the historically-surveyed road by the late 19<sup>th</sup> century. The ample area for agricultural development, the presence of the Credit Valley Railway Elora Branch and numerous historically surveyed roads would have

made this area desirable for settlement. Such desirability is evidenced by the number of structures, farms/orchards and cemeteries and a race-track on historic maps of the surrounding lands. Settlement of this area remained largely similar into the first half of the 20<sup>th</sup> century, with key enterprises remaining based in agriculture.

### **1.3 Archaeological Context**

The Stage 1 assessment (property inspection) was conducted on November 29, 2019 under PIF #P007-1078-2019. The limits of the study area were confirmed using georeferenced aerial imagery showing artificial and natural formations in relation to the project lands.

The archaeological context of any given study area must be informed by 1) the condition of the property as found (Section 1.3.1), 2) a summary of registered or known archaeological sites located within a minimum 1 km radius (Section 1.3.2) and 3) descriptions of previous archaeological fieldwork carried out within the limits of, or immediately adjacent to the subject lands (Section 1.3.3).

#### **1.3.1 Condition of the Property**

The study area lies within the Great Lakes–St. Lawrence forest, which is a transitional zone between the southern deciduous forest and the northern boreal forest. This forest extends along the St. Lawrence River across central Ontario to Lake Huron and west of Lake Superior along the border with Minnesota, and its southern portion extends into the more populated areas of Ontario. This forest is dominated by hardwoods, featuring species such as maple, oak, yellow birch, white and red pine. Coniferous trees such as white pine, red pine, hemlock and white cedar commonly mix with deciduous broad-leaved species, such as yellow birch, sugar and red maples, basswood and red oak (MNR 2019).

In terms of local physiography, the study area lies within the Guelph Drumlin Field, which is located northwest of the Paris Moraine and includes roughly 300 broad oval drumlins of various sizes. The drumlins themselves consist largely of loamy and calcareous till, and analyses have placed the average grain sizes in the neighbourhood of 50% sand, 35% silt and 15% clay. These drumlins are not closely grouped, and the intervening low ground supports mainly fluvial materials created by river action (Chapman and Putnam 1984:137–138).

According to the Ontario Soil Survey, the entire study area consists of Guelph loam. Guelph loam is a Grey-Brown Podzolic developed on loam till that features good drainage qualities. Given its good drainage, these soils well suited for agriculture and are typically used for pasture, mixed grains, silage corn, winter wheat, hay and turnips (Hoffman et al. 1963:25). The subject lands fall within the West Credit River drainage basin and are under the jurisdiction of the Credit Valley Conservation Authority (CVC 2019). Specifically, the study area is located 422 m east of the West Credit River Provincial Swamp and 511 m east of the Credit River.

At the time of assessment, the study area comprised a gravelled access route, overgrown lands (formerly agricultural), an agricultural field, partially impacted lands associated with recent well site testing and a soil stockpile. Field conditions were ideal during the assessment, with high

ground surface visibility. No unusual physical features were encountered that affected the results of the Stage 1 assessment.

### ***1.3.2 Registered or Known Archaeological Sites***

The Ontario Archaeological Sites Database and the Ontario Public Register of Archaeological Reports were consulted to determine whether any registered or known archaeological resources occur within a 1 km radius of the study area. The available search facility returned no registered sites within at least a 1 km radius (the facility returns sites in a rectangular area, rather than a radius, potentially resulting in returns beyond the specified distance). In terms of other known resources (e.g., Isolated Non-Diagnostic Find Spots, Leads or unreported deposits), no unregistered sites were identified within a 1 km radius.

### ***1.3.3 Previous Archaeological Work***

Reports documenting assessments conducted within the subject lands and assessments that resulted in the discovery of archaeological sites that could extend into the subject lands were sought during the research component of the study. In order to ensure that all relevant past work was identified, an investigation was launched to identify reports involving assessments within 50 m of the study area. The investigation determined that there are no available reports documenting previous archaeological fieldwork within the specified distance. The previous Stage 1 and 2 assessments of well site locations in the Town of Erin conducted under PIF #P007-0874-2017 occurred over 50 m away from the subject study area (ARA 2018).

## **2.0 STAGE 1 BACKGROUND STUDY**

### **2.1 Background**

The Stage 1 assessment involved background research to document the geography, history, previous archaeological fieldwork and the land condition of the study area. This desktop examination included research from archival sources, archaeological publications and online databases. It also included the analysis of a variety of historic maps and aerial images. The results of the research conducted for the background study are summarized below.

With occupation beginning approximately 11,000 years ago, the greater vicinity of the study area comprises a complex chronology of Pre-Contact and Post-Contact histories (Section 1.2). Artifacts associated with Palaeo, Archaic, Woodland and Early Contact traditions are well-attested in Wellington County, and Euro-Canadian archaeological sites dating to pre-1900 and post-1900 contexts are likewise common. The lack of documented archaeological sites in the vicinity of the study area should not be taken as an indicator that the area was unattractive or undesirable for human occupation. Instead, this absence is more likely related to a lack of archaeological exploration (Section 1.3.2). Background research did not identify any areas of previous assessment within the study area (Section 1.3.3).

The natural environment of the study area would have been attractive to both Indigenous and Euro-Canadian populations as a result of proximity to the Credit River and its tributaries. The well-drained soils would have been ideal for pastureland and agriculture, and the diverse local vegetation would also have encouraged settlement throughout Ontario's lengthy history. Euro-Canadian populations would have been particularly drawn to Wellington Road 23 (9<sup>th</sup> Line) and 10<sup>th</sup> Line, both of which were historically-surveyed thoroughfares.

In summary, the background study included an up-to-date listing of sites from the Ontario Archaeological Sites Database (within at least a 1 km radius), the consideration of previous local archaeological fieldwork (within at least a 50 m radius), the analysis of historic maps (at the most detailed scale available) and the study of aerial imagery. ARA therefore confirms that the standards for background research set out in Section 1.1 of the 2011 *S&Gs* were met.

### **2.2 Field Methods (Property Inspection)**

In order to gain first-hand knowledge of the geography, topography and current condition of the study area, a property inspection was conducted on November 29, 2019. Environmental conditions were ideal during the inspection, with overcast skies, a high of -2 °C and good lighting. ARA therefore confirms that fieldwork was carried out under weather and lighting conditions that met the requirements set out in Section 1.2 Standard 2 of the 2011 *S&Gs*.

The study area was subjected to random spot-checking in accordance with the requirements set out in Section 1.2 of the 2011 *S&Gs*. Specifically, the inspection began in the southwestern part of the study area where the gravel access road now enters the work site from Wellington Road 23 and progressed northeast, with spot-checks along various points of potential interest. The visually inspected areas were examined under conditions that permitted good visibility of land features. The inspection confirmed that all surficial features of archaeological potential (e.g., the historic

roadway) were present where they were previously identified, and did not result in the identification of any additional features of archaeological potential not visible on mapping (e.g., relic water channels, patches of well-drained soils, etc.).

The inspection determined that parts of the study area may have been disturbed by recent construction activities (Table 3). No natural features (e.g., permanently wet lands, sloped lands, overgrown vegetation, heavier soils than expected, etc.) or significant built features (e.g., heritage structures, landscapes, plaques, monuments, cemeteries, etc.) that would affect assessment strategies were identified.

### 2.3 Analysis and Conclusions

In addition to relevant historical sources and the results of past archaeological assessments, the archaeological potential of a property can be assessed using its soils, hydrology and landforms as considerations. Section 1.3.1 of the 2011 *S&Gs* recognizes the following features or characteristics as indicators of archaeological potential: previously identified sites, water sources (past and present), elevated topography, pockets of well-drained sandy soil, distinctive land formations, resource areas, areas of Euro-Canadian settlement, early transportation routes, listed or designated properties, historic landmarks or sites, and areas that local histories or informants have identified with possible sites, events, activities or occupations.

The Stage 1 assessment resulted in the identification of several features of archaeological potential in the vicinity of the study area (Map 8). The closest and most relevant indicators of archaeological potential (i.e., those that would directly affect survey interval requirements) include one physiographic feature (a drumlin), one historic roadway (Wellington Road 23) and one historic structure locality (a 1906 house). Background research did not identify any features indicating that the study area has potential for deeply buried archaeological resources.

Although proximity to a feature of archaeological potential is a significant factor in the potential modelling process, current land conditions must also be considered. Section 1.3.2 of the 2011 *S&Gs* emphasizes that 1) quarrying, 2) major landscaping involving grading below topsoil, 3) building footprints and 4) sewage/infrastructure development can result in the removal of archaeological potential, and Section 2.1 states that 1) permanently wet areas, 2) exposed bedrock and 3) steep slopes ( $> 20^\circ$ ) can also be considered as having no archaeological potential. Areas previously assessed and not recommended for further work also require no further assessment.

Background research did not identify any previously assessed areas of no further concern within the study area. ARA's visual inspection, coupled with the analysis of historical sources and digital environmental data, did not result in the confident identification of any areas of no archaeological potential within the study area. Although it is clear that some surficial disturbance occurred during the recent well site testing, the complete removal of potential could not be confirmed based on the property inspection alone. Accordingly, the agricultural fields, overgrown lands and even the access route and stockpile have potential for Indigenous and Euro-Canadian archaeological materials (Image 1–Image 8). The potential modeling results are depicted in Map 9. The project limits ('study area') are depicted as a layer in this map.

### 3.0 RECOMMENDATIONS

The Stage 1 assessment determined that the entire study area has archaeological potential. ARA recommends that all identified areas of archaeological potential within the project lands be subject to a Stage 2 property assessment in accordance with Section 2.1 of the 2011 *S&Gs*.

The agricultural fields, overgrown lands and partially impacted lands must be assessed using the pedestrian survey method at an interval of 5 m. All ground surfaces must be recently ploughed (typically within the month prior to assessment), weathered by one heavy rainfall or several light rains, and provide at least 80% visibility. If archaeological materials are encountered, the transect interval must be decreased to at least 1 m and a close inspection of the ground must be conducted over a minimum of a 20 m radius around the find. This interval must be continued until the full extent of the scatter has been defined.

The soil stockpile in the west must be assessed using the test pit survey method. A survey interval of 5 m will be required due to the proximity of the lands to the identified features of archaeological potential. If the stockpile has been graded and ploughed at the time of assessment, it should be subject to pedestrian survey as outlined above. Given the likelihood that the lands underlying the gravel access route from Wellington Road 23 have been impacted by past and recent construction activities, a combination of visual inspection and test pit survey should be utilized to confirm the extents of any disturbed areas in accordance with Section 2.1.8 of the 2011 *S&Gs*. This will allow for the empirical evaluation of the integrity of the soils and the depth of any past disturbances. If disturbance cannot be confirmed, then a test pit survey interval of 5 m must be maintained.

Regardless of the survey method employed, each test pit must be excavated into at least the first 5 cm of subsoil, and the resultant pits must be examined for stratigraphy, potential features and/or evidence of fill. The soil from each test pit must be screened through mesh with an aperture of no greater than 6 mm and examined for archaeological materials. If archaeological materials are encountered, all PTPs must be documented and intensification may be required.

Given that there are still outstanding archaeological concerns within the subject lands, no ground alterations or development of any kind may occur until the Stage 2 assessment is complete, a recommendation that the lands require no further archaeological assessment is made, and the associated report is entered into the Ontario Public Register of Archaeological Reports.



## 4.0 ADVICE ON COMPLIANCE WITH LEGISLATION

Section 7.5.9 of the 2011 *S&Gs* requires that the following information be provided for the benefit of the proponent and approval authority in the land use planning and development process:

- This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the MHSTCI, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.
- The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar at the Ministry of Government and Consumer Services.

## 5.0 IMAGES



**Image 1: Area of Potential (Field)**  
(November 29, 2019; Facing East)



**Image 2: Area of Potential (Field)**  
(November 29, 2019; Facing Northeast)



**Image 3: Area of Potential (Field)**  
(November 29, 2019; Facing Southwest)



**Image 4: Area of Potential  
(Partially Impacted Lands)**  
(November 29, 2019; Facing Northwest)



**Image 5: Area of Potential  
(Partially Impacted Lands)**  
(November 29, 2019; Facing Northeast)



**Image 6: Area of Potential  
(Overgrown Lands and Stockpile)**  
(November 29, 2019; Facing Northwest)

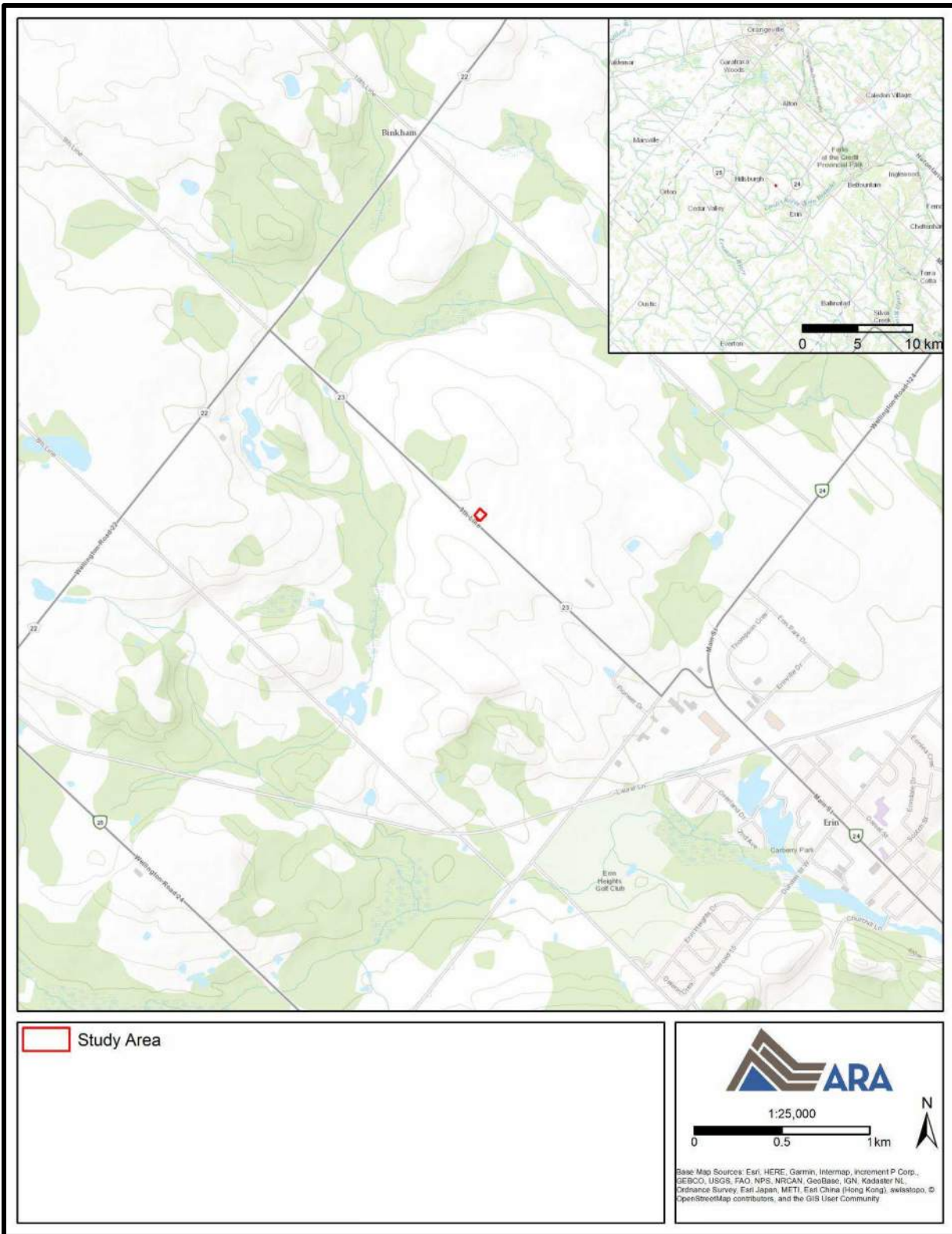


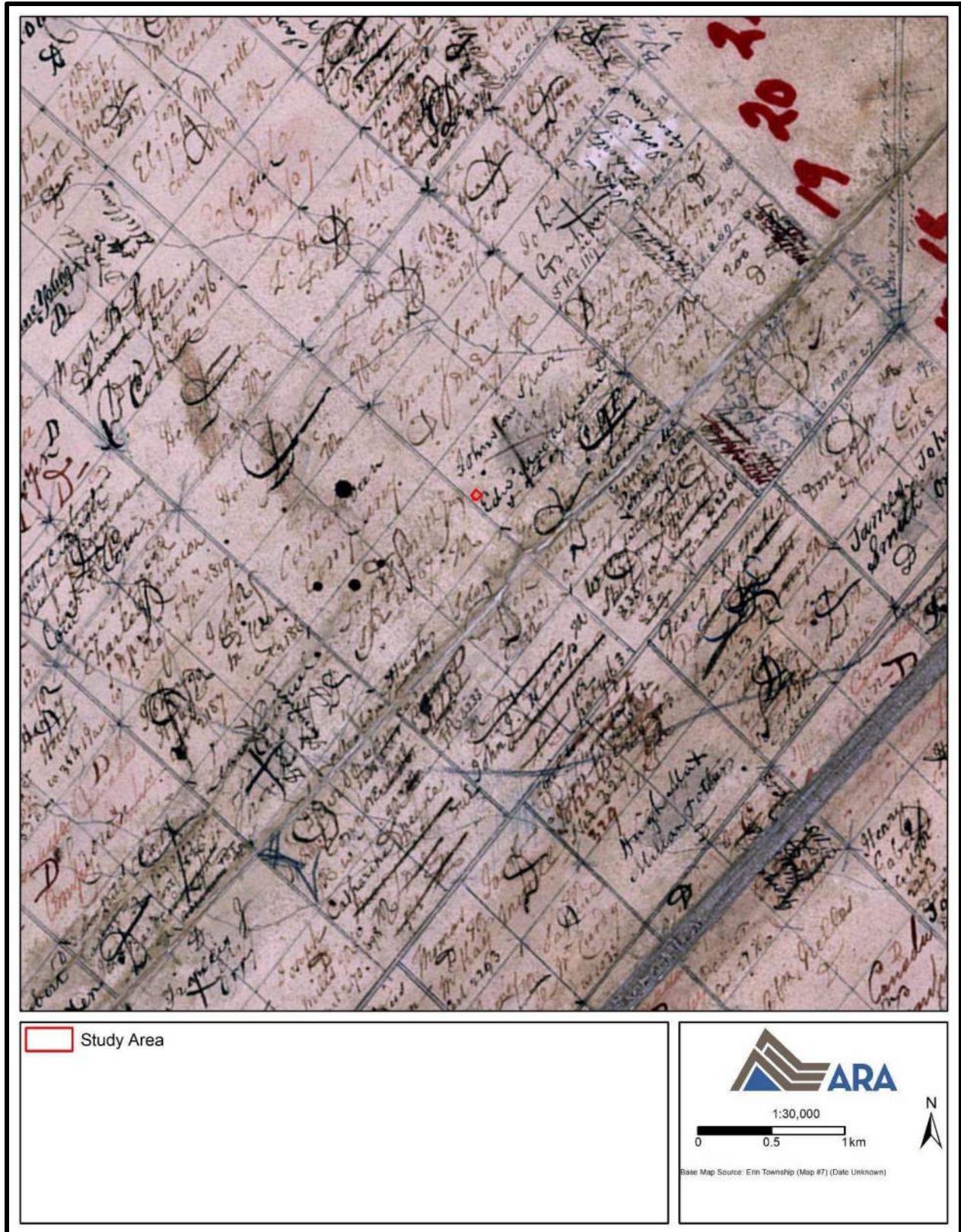
**Image 7: Area of Potential  
(Accessway)**  
(November 29, 2019; Facing Northeast)



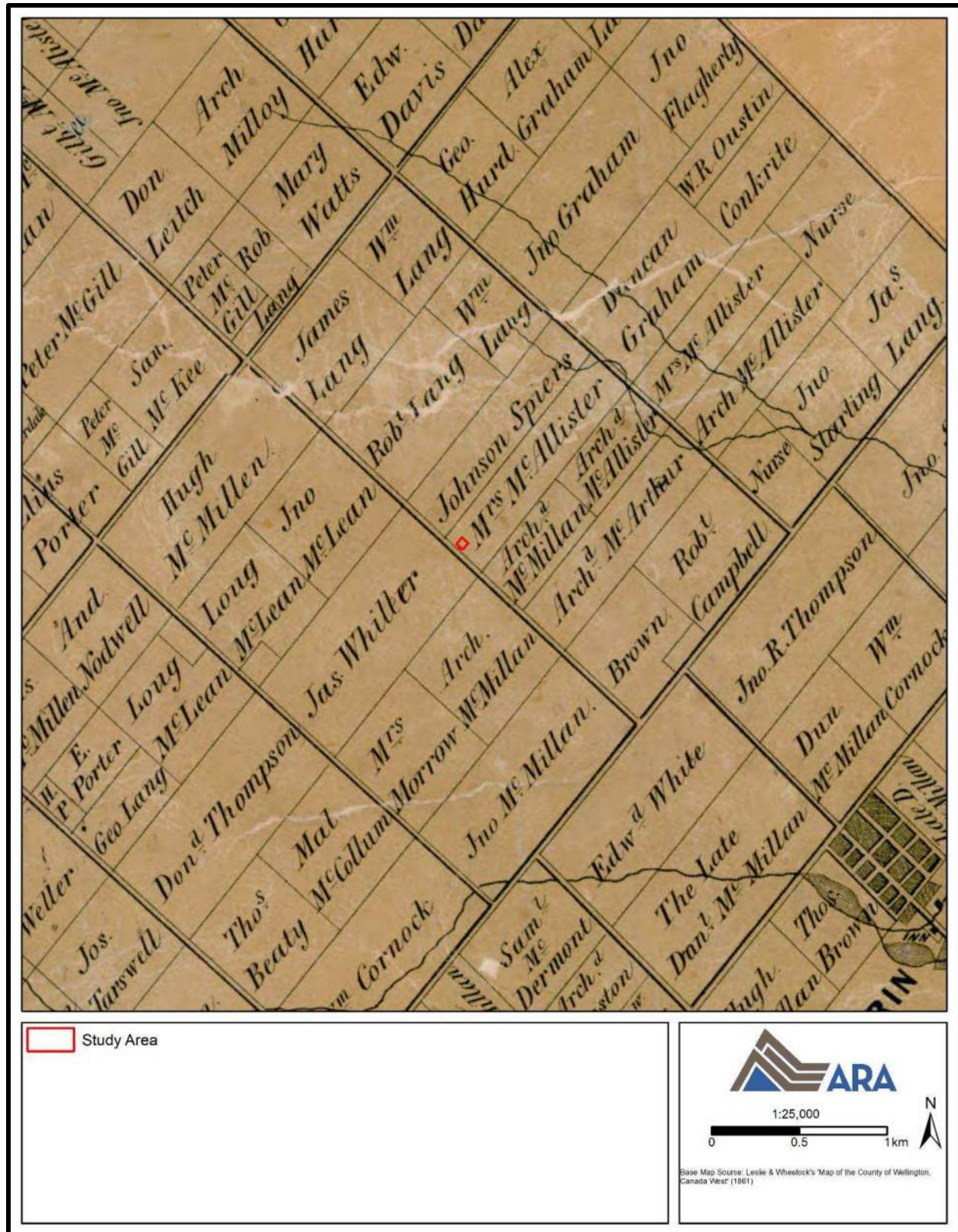
**Image 8: Area of Potential  
(Accessway)**  
(November 29, 2019; Facing North)

## 6.0 MAPS



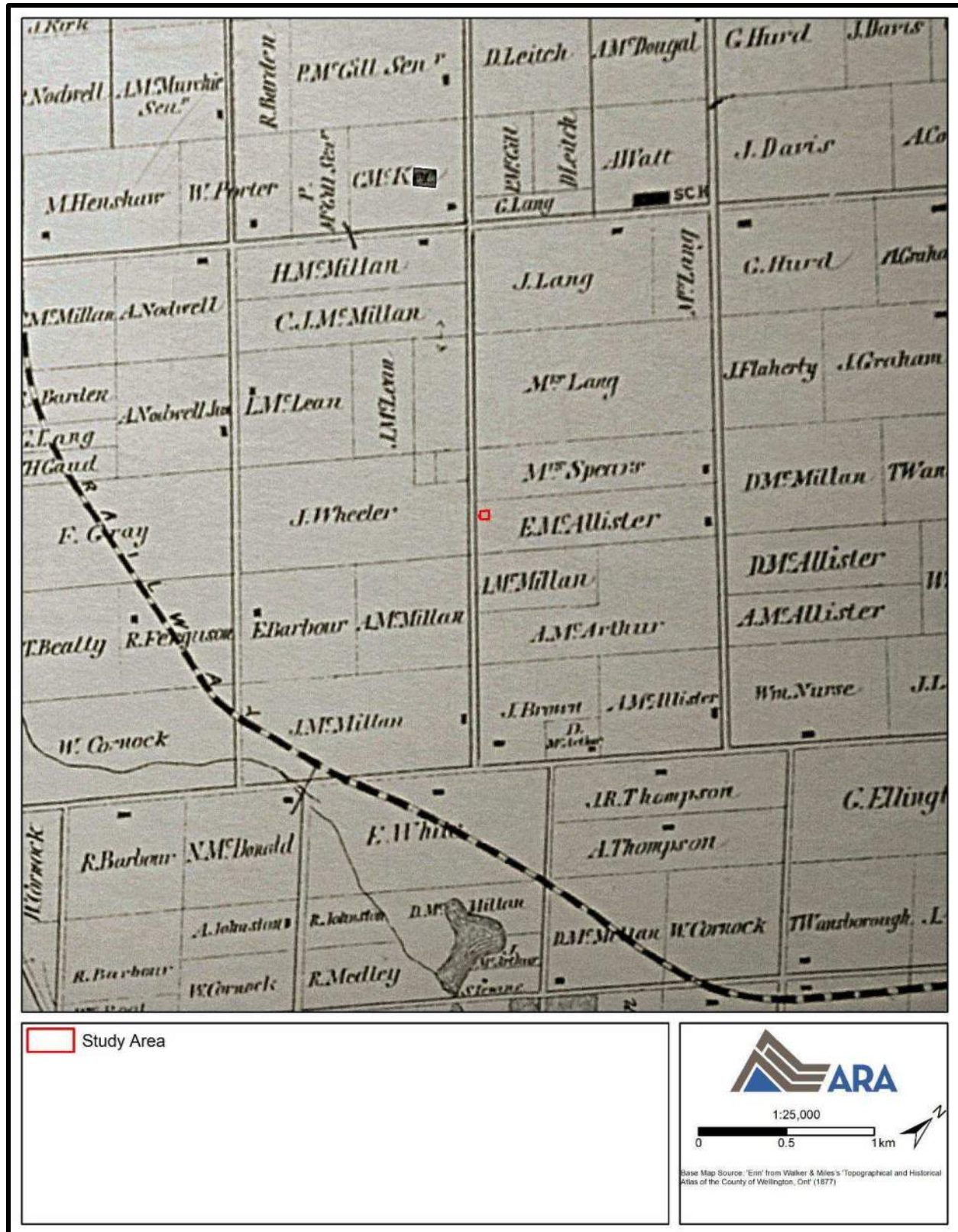


**Map 2: Erin Township Patent Plan (No Date)**  
(Produced under licence using ArcGIS® software by Esri, © Esri; AO 2015)



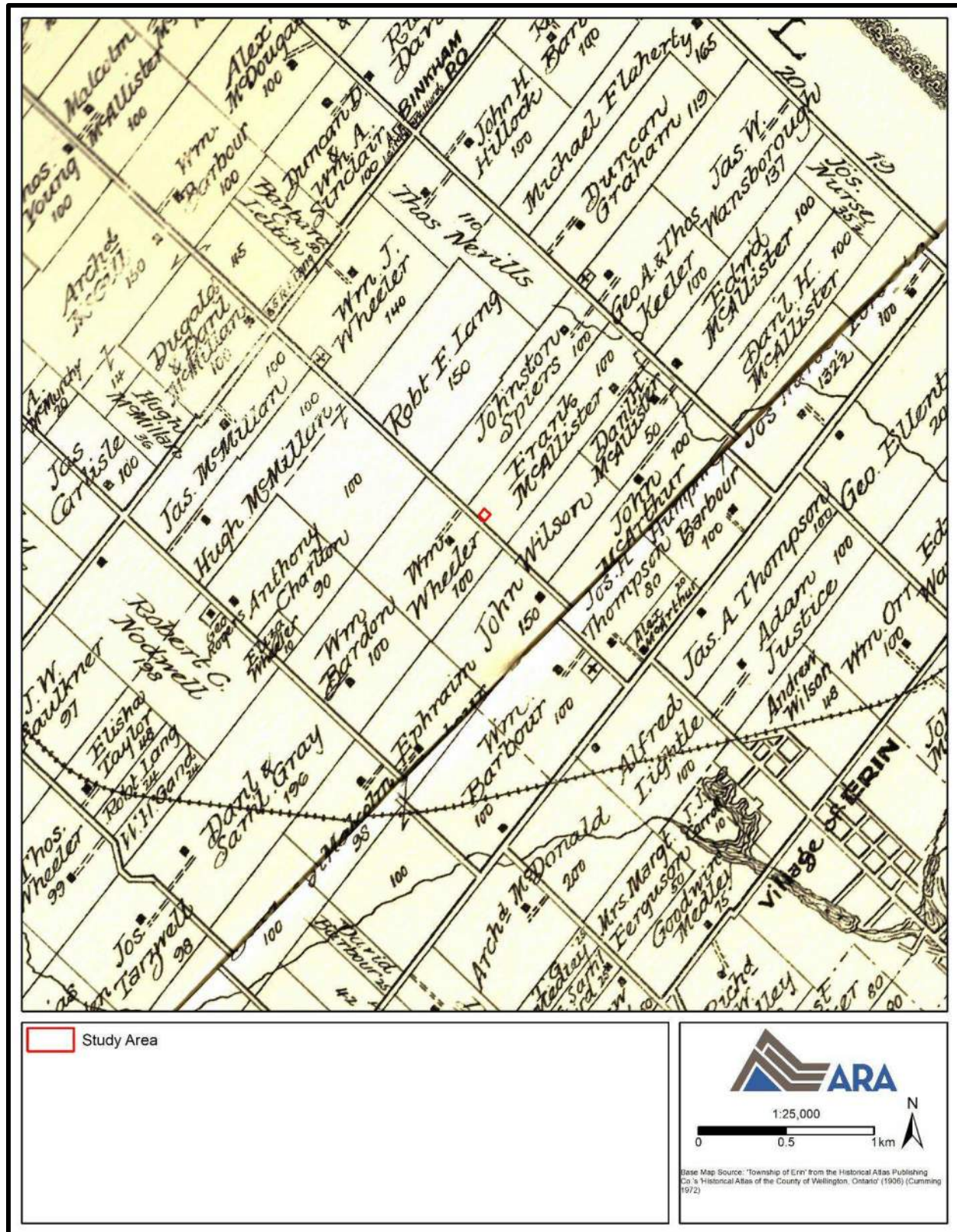
**Map 3: G. Leslie & C.J. Wheelock's Map of the County of Wellington, Canada West (1861)**

(Produced under licence using ArcGIS® software by Esri, © Esri; OHCMP 2019)



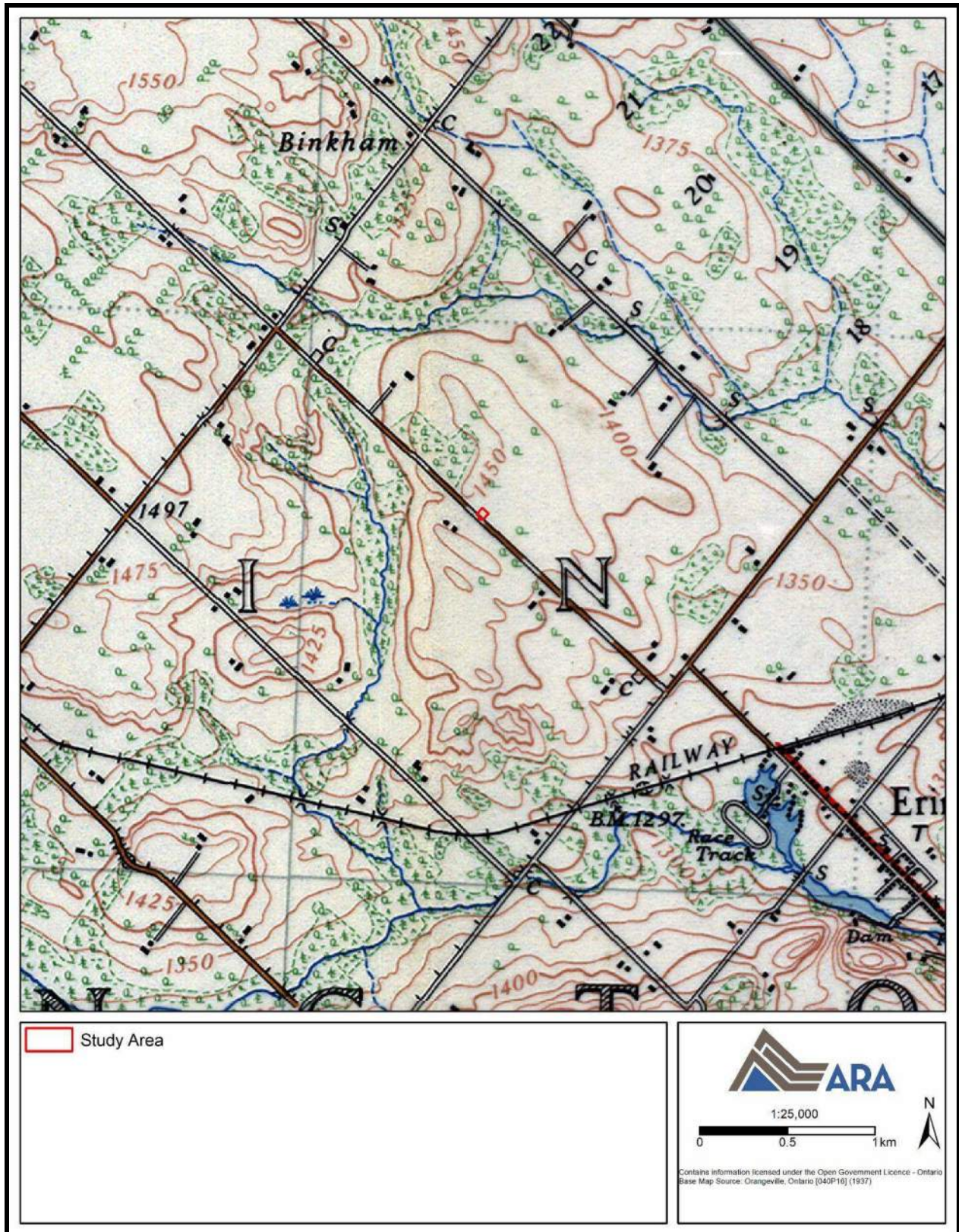
Map 4: Erin from Walker & Miles' Topographic and Historical Atlas of the County of Wellington, Ontario (1877)

(Produced under licence using ArcGIS® software by Esri, © Esri; OHCMP 2019)

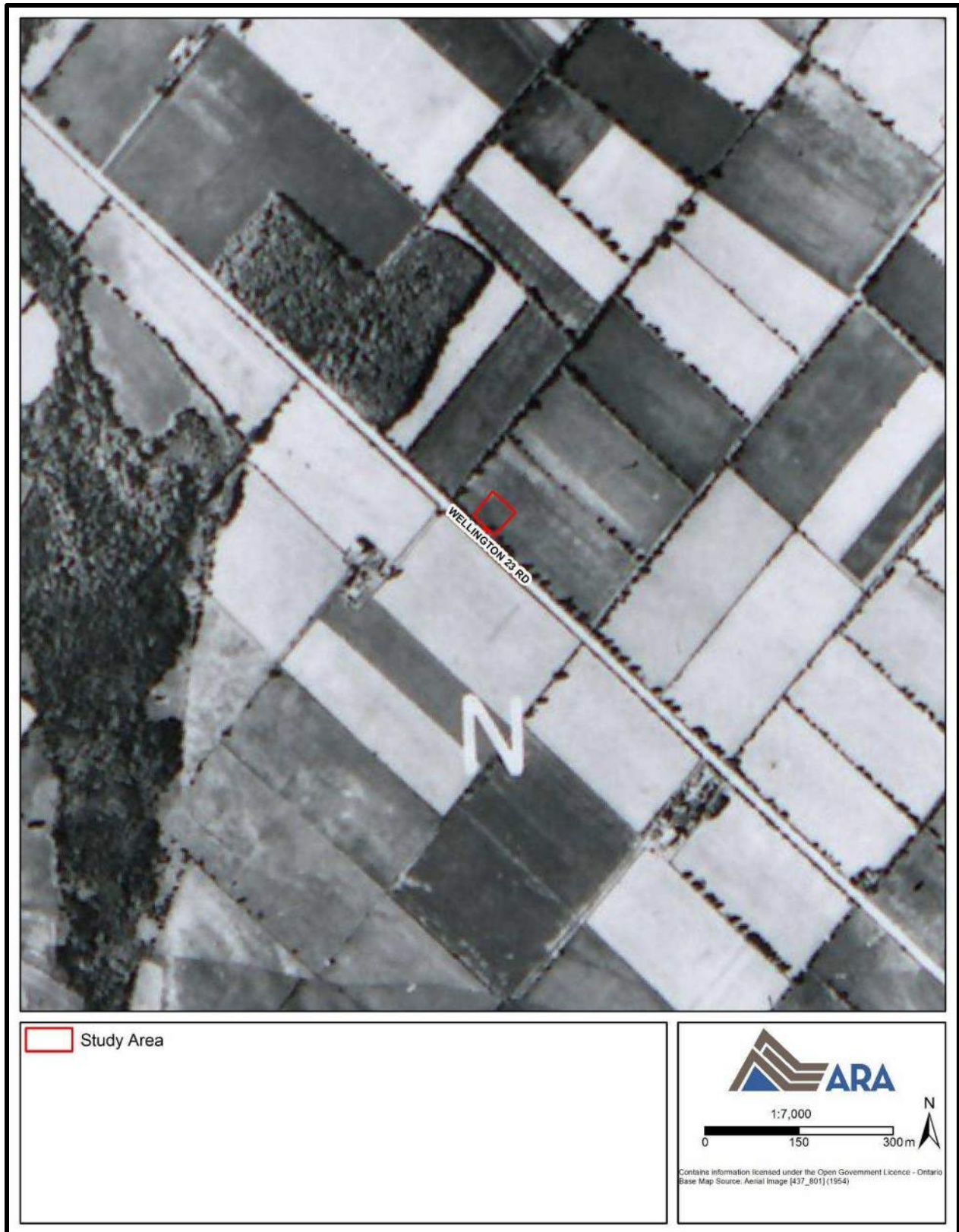


**Map 5: Township of Erin from the Historical Atlas Publishing Co.'s *Historical Atlas of the County of Wellington, Ontario* (1906)**  
 (Produced under licence using ArcGIS® software by Esri, © Esri; Cumming 1972)



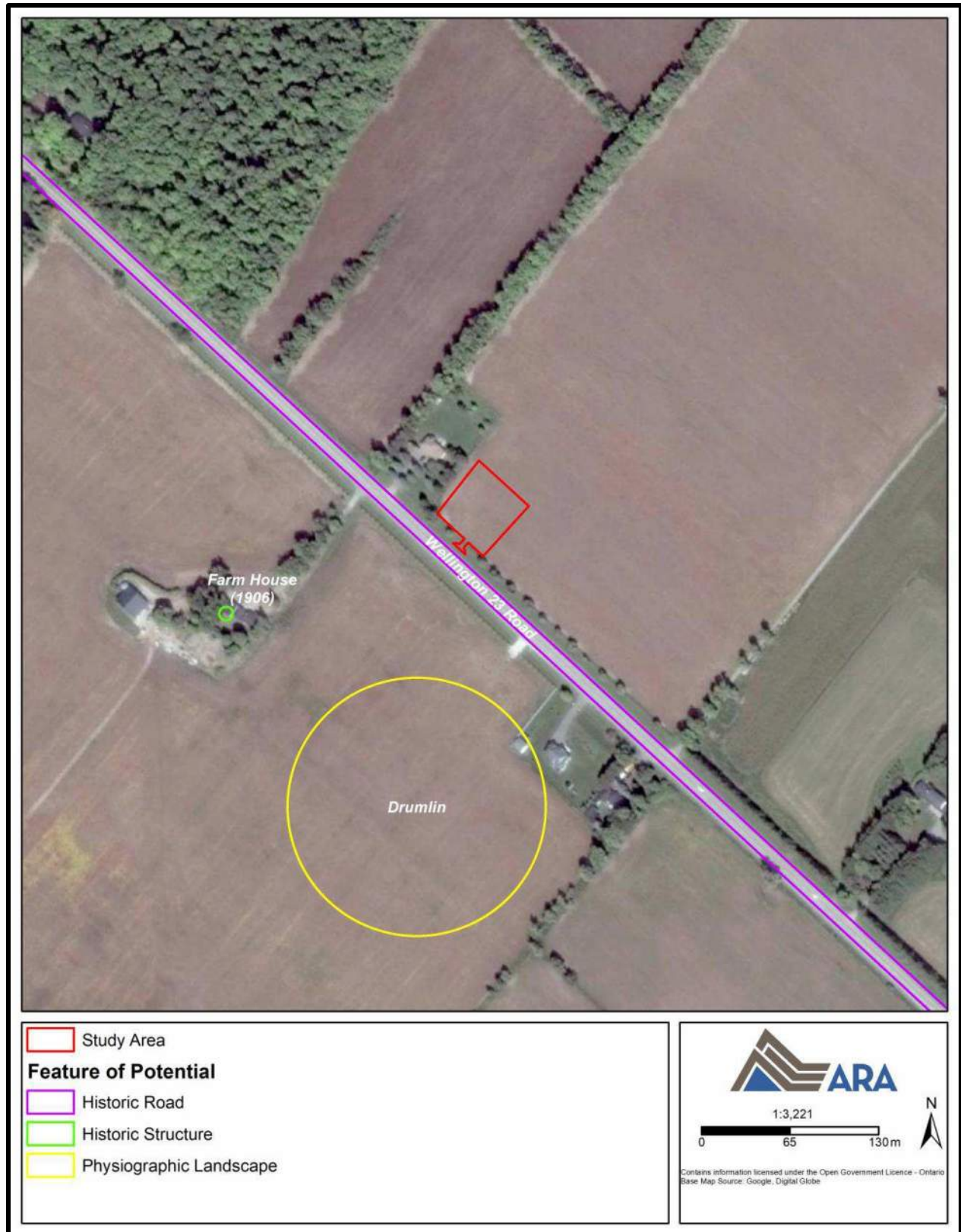


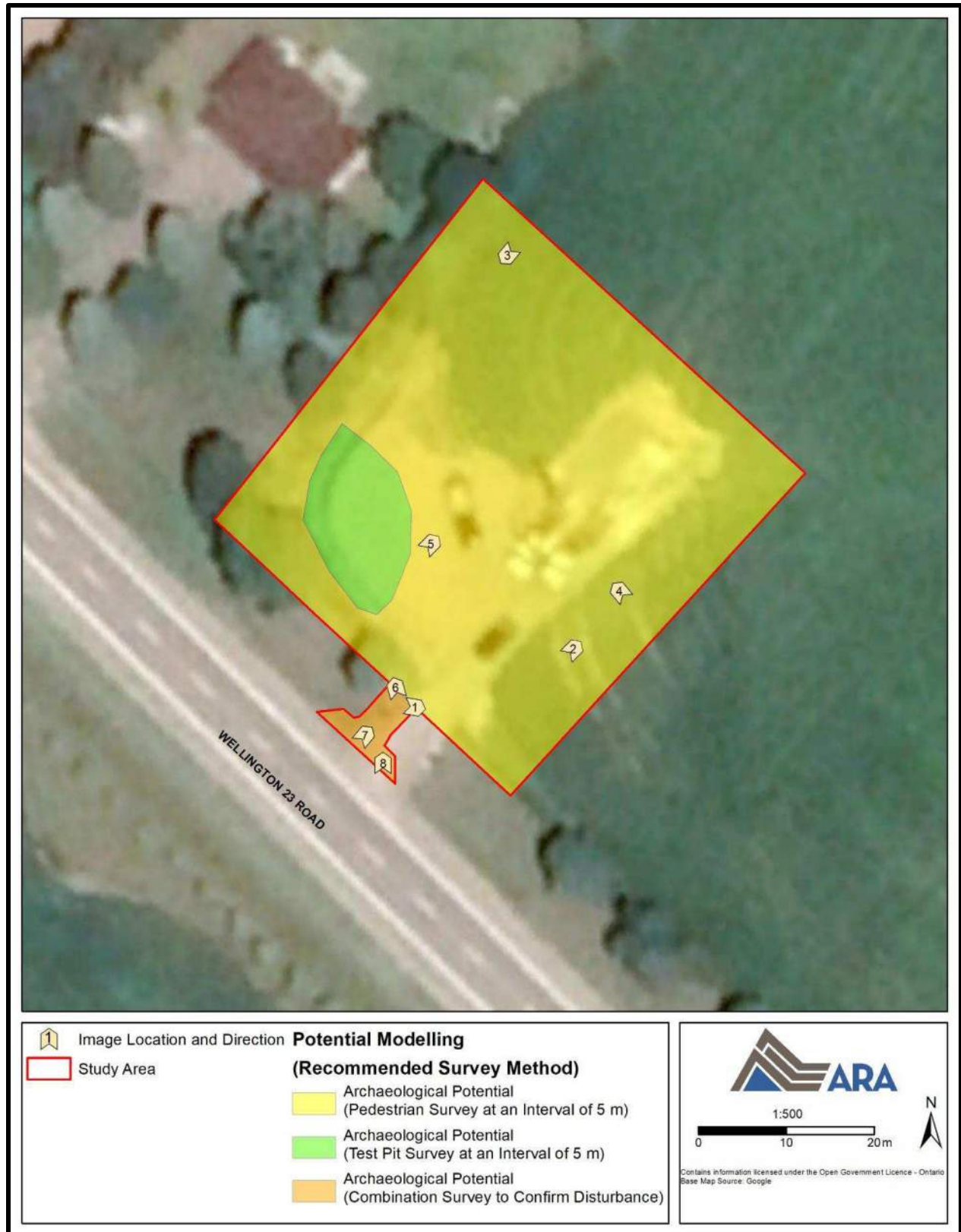
**Map 6: Topographic Map (1937)**  
(Produced under licence using ArcGIS® software by Esri, © Esri; OCUL 2019)



**Map 7: Aerial Image (1954)**

(Produced under licence using ArcGIS® software by Esri, © Esri; University of Toronto 2019)





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## **Appendix C**

### **Cultural Heritage Studies**

## **Appendix C.1**

# **MTCS Checklist for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes**



## Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
  - is a recognized heritage property
  - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
  - the main project area
  - temporary storage
  - staging and working areas
  - temporary roads and detours

**Processes covered** under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

### Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

### Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – [separate checklist](#)
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

Project or Property Name

Town of Erin -- Urban Centre Water Servicing Class EA

Project or Property Location (upper and lower or single tier municipality)

5384 Wellington Road 52

Proponent Name

Town of Erin

Proponent Contact Information

Nathan Hyde, CAO or Christine Furlong, P.Eng, Triton Engineering Services Limited (Project Manager)

### Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

### Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found <b>not</b> to be of cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the <i>Ontario Heritage Act</i> as being of cultural heritage value?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. a National Historic Site (or part of)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. designated under the <i>Heritage Railway Stations Protection Act</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. designated under the <i>Heritage Lighthouse Protection Act</i> ?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

## Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has or is adjacent to a known burial site and/or cemetery?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. is in a Canadian Heritage River watershed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. contains buildings or structures that are 40 or more years old?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. has a special association with a community, person or historical event?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. contains or is part of a cultural heritage landscape?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**If Yes** to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

**If No** to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act*, *Planning Act* processes
- maintained by the property owner, proponent or approval authority

## Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
  - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's [Ontario Heritage Toolkit](#) or [Standards and Guidelines for Conservation of Provincial Heritage Properties](#).

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

### 1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's [Standards & Guidelines for Conservation of Provincial Heritage Properties](#) [s.B.2.]

## Part A: Screening for known (or recognized) Cultural Heritage Value

### 2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

**Note:** Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

### 3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

- i. designated under the *Ontario Heritage Act*
  - individual designation (Part IV)
  - part of a heritage conservation district (Part V)

## Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note:** To date, no properties have been designated by the Minister.

## Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- [Ontario Heritage Trust](#)
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- [Ontario Heritage Trust](#) - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act*. **Note:** To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- [Ontario Heritage Trust](#)

v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at [registrar@ontario.ca](mailto:registrar@ontario.ca).

### **3b. Is the property (or project area) a National Historic Site (or part of)?**

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the [National Historic Sites website](#).

### **3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?**

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the [Directory of Designated Heritage Railway Stations](#).

### **3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?**

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the [Heritage Lighthouses of Canada](#) website.

### **3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?**

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the [Federal Heritage Buildings Review Office](#).

See a [directory of all federal heritage designations](#).

### **3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?**

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – [World Heritage Site website](#).

## **Part B: Screening for potential Cultural Heritage Value**

### **4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?**

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- [municipal heritage committees](#) or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's [Heritage directory](#) – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a [list of plaques](#) commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a [list of plaques](#) commemorating Canada's history

#### **4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?**

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a [database of registered cemeteries](#)
- Ontario Genealogical Society (OGS) – to [locate records of Ontario cemeteries](#), both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to [locate early cemeteries](#)

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

#### **4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?**

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the [Canadian Heritage River System](#).

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

#### **4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?**

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

**Note:** 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide [Heritage Property Evaluation](#).

## Part C: Other Considerations

### 5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

### 5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

### 5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- [municipal heritage committees](#) or local heritage organizations
- Ontario Historical Society's "[Heritage Directory](#)" - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through [Ontario Trails](#).



## **Appendix C.2**

**Cultural Heritage Evaluation Report, Town of  
Erin, Wellington County  
(ARA Ltd., April 2, 2018)**

**Cultural Heritage Evaluation Report  
Urban Centre Water Servicing Class Environmental Assessment  
Town of Erin  
Lots 21-27, Concession 7  
Lots 14-17, 23-27, Concession 8  
Lots 12-13, 15-19, Concession 9  
Lots 11-14, 16-19, Concession 10  
Lots 11-19, Concession 11  
Geographic Township of Erin  
Wellington County, Ontario**

Prepared for  
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HR-115-2017  
*Project # 2017-0269*

**02/04/2018**

**ORIGINAL**

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## EXECUTIVE SUMMARY

Under a contract awarded by Triton Engineering in November 2017, Archaeological Research Associates Ltd. (ARA) prepared a Cultural Heritage Evaluation Report (CHER) for structures and landscapes with the potential to be impacted by the construction of the proposed Hillsburgh and Erin well sites in the Town of Erin, Ontario as a requirement of the Municipal Class Environmental Assessment (Class EA).

Each of the proposed well site locations has the potential to include the construction of a well house that will be similar in construction to the existing Well E7 in Erin Village. It will include a ground level reservoir for disinfection treatment and a masonry superstructure. The anticipated dimensions of the structure will be in the range of 20 m to 25 m long by 10 m to 15 m wide. It is anticipated the facility will have a flat roof.

The project involves a Municipal Class Environmental Assessment to review the proposed upgrades/improvements and the associated proposed equipment and infrastructure in light of any potential environmental impacts that will be mitigated, where necessary.

The approach for the CHER has specific tasks required for the EA process, and they include:

- Background research concerning the project context and historical context of the study areas;
- Consultation with the Town of Erin and the Wellington County planners responsible for heritage matters;
- Identification of any designated or recognized properties within the limits of the study areas;
- On-site inspection and creation of an inventory of all properties with potential Built Heritage Resources (BHR) and Cultural Heritage Landscapes (CHL) within, adjacent to and in proximity to the project areas;
- A description of the location and nature of potential cultural heritage resources;
- Evaluation of each potential cultural heritage resource against the criteria set out in Ontario Regulation 9/06, and 10/06, where applicable, for determining cultural heritage value or interest (CHVI);
- Evaluation of potential project impacts; and
- Provision of suggested strategies for the future conservation of identified cultural heritage resources.

A windshield survey was conducted and all of the potential cultural heritage resources were evaluated against the criteria of Ontario Regulation 9/06. It was determined that they all have CHVI. Those cultural heritage resources identified in Hillsburgh (H) were classified as H-BHRs and H-CHLs, while those identified in Erin (E) were classified as E-BHRs and E-CHLs.

H-BHR 5 and E-BHRs 2, 4, 5 are participating properties (proposed well sites), whereas H-BHRs 1-4 and 6-9, and E-BHRs 1, 3, and 6-11 are located on properties that abut the project

areas. Three CHLs, E-CHLs 1-3, were identified within the Erin Village study area. There were no CHLs identified in Hillsburgh.

All potential impacts to the properties within the project areas and those abutting were evaluated for potential project impacts. The heritage attributes of all the identified BHRs and CHLs will not be directly negatively impacted by the proposed construction of well sites. The heritage attributes of the BHRs and CHLs are largely defined by intrinsic values (e.g., those rooted in the architecture of the buildings or associative values). These values will continue to exist with or without the installation of the proposed well site infrastructure. It was determined that one potential impact of the proposed well sites is that they are not sympathetic with the historic fabric and appearance of the BHRs and CHLs. Further, Erin Well Site 3 is planned adjacent to E-CHL-1 (McAllister Family Cemetery) which may impact this known archaeological resource.

The following conservation/mitigation strategies are suggested based on the results of this Cultural Heritage Evaluation Report:

- To ensure adequate screening of the Erin 3 and 5 well houses, which are proposed in proximity to E-CHL-1 and E-BHR-5, respectively, it is recommended that screening options more opaque than chain link fencing (e.g. wood fencing, row of vegetation) be explored bordering well house elevations closest to the heritage resources;
- Existing vegetation screening the proposed well sites should be maintained during the design and construction phases;
- If it is later determined that the Mountainview Well Site is a viable well site, abutting properties will need to be evaluated to identify any BHRs and CHLs with the potential to be impacted by the proposed construction;
- ARA is concurrently completing a Stage 1 and 2 archaeological assessment for the Urban Centre Water Servicing Class EA, and through this report any potential impacts to E-CHL-1 (McAllister Family Cemetery) resulting from the construction of the Erin Well Site 3 adjacent to the cemetery will be evaluated;
- Previously-unrecognized cultural heritage resources with CHVI discussed in this report *may* be worthy of inclusion on the Municipal Heritage Register; and
- This Cultural Heritage Evaluation Report should be provided to the planners responsible for heritage matters at the Town of Erin and Wellington County.

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## GLOSSARY OF ABBREVIATIONS

ARA – Archaeological Research Associates Ltd.  
 BHR – Built Heritage Resource  
 CHER – Cultural Heritage Evaluation Report  
 CHVI – Cultural Heritage Value or Interest  
 CHL – Cultural Heritage Landscape  
 EA – Environmental Assessment  
 GRCA – Grand River Conservation Authority  
 MCL – (Former) Ministry of Culture  
 MTC – (Former) Ministry of Tourism and Culture  
 MTCS – Ministry of Tourism, Culture and Sport  
 OHT – Ontario Heritage Trust  
 O. Reg. – Ontario Regulation  
 PPS – Provincial Policy Statement

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## **PERSONNEL**

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## 1.0 PROJECT CONTEXT

Under a contract initiated in November 2017, Archaeological Research Associates Ltd. (ARA) was retained by Triton Engineering to complete a Cultural Heritage Evaluation Report (CHER) for structures and landscapes with the potential to be impacted by the construction of the proposed Hillsburgh and Erin Well Sites located in the Town of Erin, Ontario as a requirement of the Municipal Class Environmental Assessment (Class EA).

Each of the proposed well site locations has the potential to include the construction of a well house that will be similar in construction to the existing Well E7 in Erin Village. It will include a ground level reservoir for disinfection treatment with a masonry flat-roofed superstructure. The anticipated dimensions of the structure will be in the range of 20 m to 25 m long by 10 m to 15 m wide (C. Furlong, personal communication January 2018).

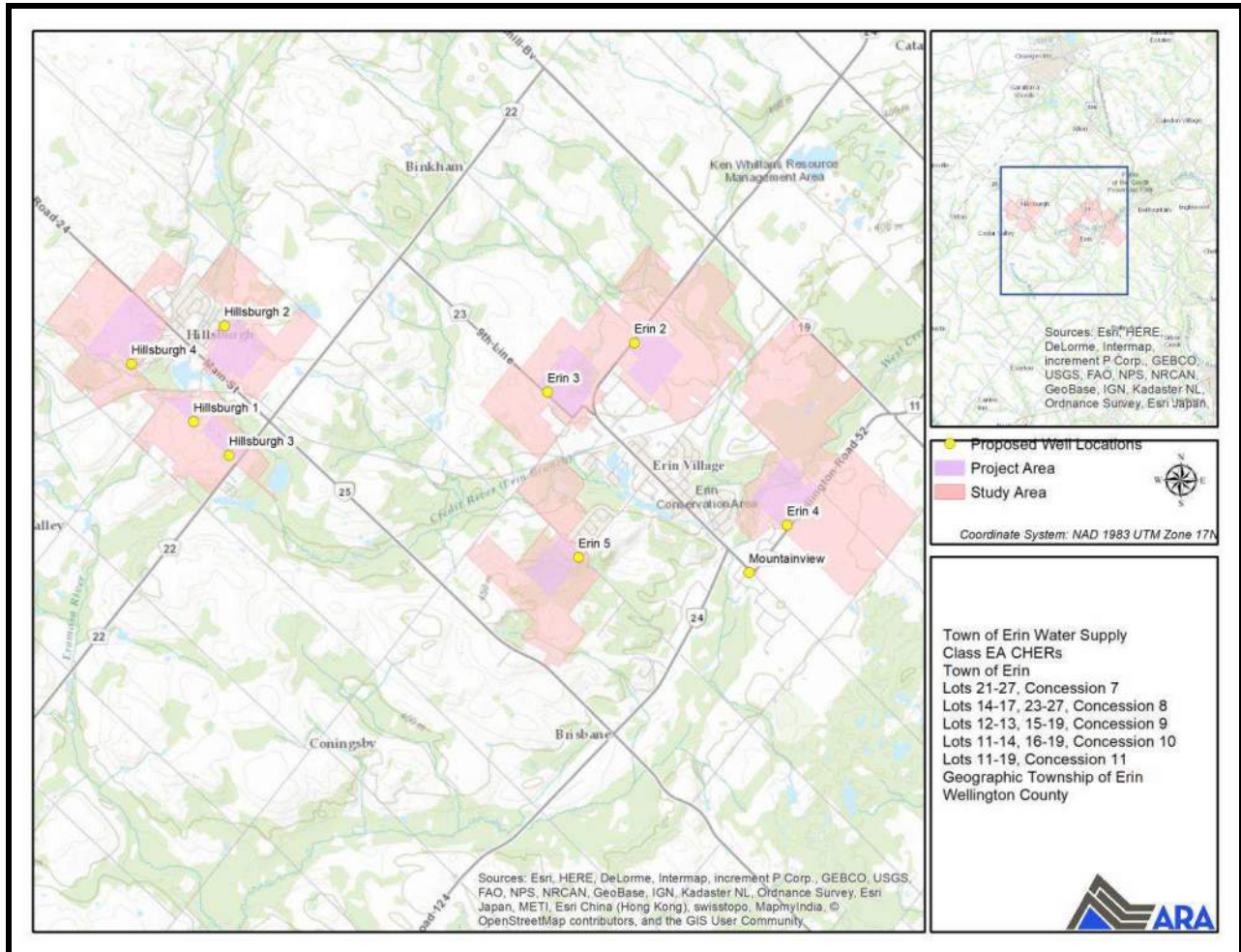
The project area for this project is clustered into two study areas: 1) former village of Hillsburgh and 2) former Erin Village. Both study areas consist of the project areas (participating property parcels) as well as all property parcels abutting the project areas.

The Hillsburgh project area consists of four proposed well locations. The Erin project area consists of five proposed well locations (see Map 1). As there are two distinct clusters that make up the project area, this report will refer to the Hillsburgh Project Area – Proposed Well Sites and the Erin Project Area – Proposed Well Sites. In legal terms, the proposed well sites are located on Lots 21-27, Concession 7; Lots 14-17, 23-27, Concession 8; Lots 12-13, 15-19, Concession 9; Lots 11-14, 16-19, Concession 10; and Lots 11-19, Concession 11, Geographic Township of Erin, Wellington County, Ontario.

Triton Engineering was directed to complete the Ministry of Tourism, Culture and Sport (MTCS) screening checklist of *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* to assist with determining whether an Environmental Assessment (EA) project may impact cultural heritage resources. It was determined that some properties in proximity to Hillsburgh 1, 3 and 4 Well Sites and Erin Well Site 5 are located within the Grand River Watershed (a Canadian Heritage River). In addition, many of the well sites are located adjacent to properties with structures that are over 40 years old. As such, a CHER was triggered.

The purpose of this assessment is to identify and evaluate the cultural heritage resources within the study area that may be impacted by the Urban Centre Water Servicing Municipal Class Environmental Assessment (Class EA), Town of Erin for future well sites. This assessment was conducted in accordance with the aims of the *Environmental Assessment Act*, R.S. O. 1990, the Official Plans of Wellington County and the Town of Erin, the *Provincial Policy Statement (PPS)* (2014) and the *Ontario Heritage Act*, R.S.O. 1990, c. O.18.

All notes, photographs and records pertaining to the heritage assessment are currently housed in ARA's processing facility located at 1480 Sandhill Drive – Unit 3, Ancaster, Ontario. Subsequent long-term storage will occur at the same location.



**Map 1: Project Area and Study Area in the Town of Erin**  
 (Produced by ARA under licence using ArcGIS® software by Esri, © Esri)

## 2.0 METHOD

The framework for this assessment report is provided by provincial planning legislation and policies as well as regional and local municipal Official Plans and guidelines. According to the *Environmental Assessment (EA) Act*, the environment includes “any building, structure, machine or other device or thing made by humans.” This study is conducted as part of a streamlined self-assessment EA process called a Class EA, which applies to routine projects grouped into classes for the Municipal Class EA. The classes range from A (e.g., minor undertakings) to C (e.g., construction of large new facilities). The Municipal Class EA applies to municipal infrastructure undertakings including roads, water and wastewater projects.

The *PPS 2014* promotes the conservation of cultural heritage resources through policies in section 2.6 such that, “Significant built heritage resources and significant cultural heritage landscapes shall be conserved” as per policy 2.6.1 (2014:29).

The *Wellington County Official Plan*, Part 4 – General County Policies, Section 4.1 – Cultural Heritage and Archaeological Resources, contains policies that address cultural heritage resources. Namely policy 4.1.5e outlines the following:

“Wellington County will encourage the conservation of significant built heritage resources through heritage designations and planning policies which protect these resources” (2017:21).

Further, infrastructure projects and their potential impact on cultural heritage resources are referenced in policy 4.1.5g, which states:

“Where a property has been identified as a protected heritage property, development and site alteration may be permitted on adjacent lands where the proposed development and site alteration has been evaluated and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved. Mitigative measures and/or alternative development approaches may be required in order to conserve the heritage attributes of the protected heritage property affected by the adjacent development or site alteration” (2017:21).

Section 3.3 – Cultural Heritage Resources of the *Town of Erin Official Plan* has policies promoting the conservation of cultural heritage resources, such as policy 3.3.2a that encourages:

“The protection of those heritage resources which contribute in a significant way, to the identity and character of the Town,” as well as policy 3.3.2c that encourages “new development, redevelopment and public works to be sensitive to, and in harmony with, Erin’s heritage resources” (2012:15).

Through careful analysis of the heritage values and attributes of an identified resource, coupled with an analysis of project impacts and an outline of potential mitigation measures, the aims of the *Environmental Assessment Act* and these Official Plans can be met.

## 2.1 Key Concepts

The following concepts require clear definition in advance of the methodological overview; proper understanding is fundamental for any discussion pertaining to cultural heritage resources:

- **Cultural Heritage Value or Interest (CHVI)**, also referred to as Heritage Value, is identified if a property meets one of the criteria outlined in O. Reg. 9/06, namely historic or associate value, design or physical value and/or contextual value. Provincial significance is defined under O. Reg. 10/06 of the *Ontario Heritage Act (OHA)*.
- **Built Heritage Resource (BHR)** is defined in the *PPS* as: “a building, structure, monument, installation or any manufactured remnant that contributes to a property’s cultural heritage value or interest as identified by a community, including an Aboriginal community. Built heritage resources are generally located on property that has been designated under Parts IV or V of the *OHA*, or included on local, provincial and/or federal registers” (MMAH 2014:39).
- **Cultural Heritage Landscape (CHL)** is defined in the *PPS* as: “a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community. The area may involve features such as structures, spaces, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Examples may include, but are not limited to, heritage conservation districts designated under the *Ontario Heritage Act*; villages, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trailways, viewsheds, natural areas and industrial complexes of heritage significance; and areas recognized by federal or international designation authorities (e.g., a National Historic Site or District designation, or a UNESCO World Heritage Site)” (MMAH 2014:40).

It is recognized that the heritage value of a CHL is often derived from its association with historical themes that characterize the development of human settlement in an area (Scheinman 2006). In Ontario, typical themes that may carry heritage value within a community include, but are not limited to: 1) Pre-Contact habitation, 2) early European exploration, 3) early European and First Nations contacts, 4) pioneer settlement, 5) development of transportation networks, agriculture and rural life, 6) early industry and commerce, and/or 7) urban development. Individual CHLs may be related to a number of these themes simultaneously.

The *Operational Guidelines for the Implementation of the World Heritage Convention* defines several types of CHLs: 1) designed and created intentionally by man, 2) organically evolved landscapes that fall into two-subcategories (relic/fossil or continuing), and 3) associative cultural landscapes (UNESCO 2008:86). The (former) Ministry of Culture (MCL) *Information Sheet #2 Cultural Heritage Landscapes* (MCL 2006c) repeats these definitions to describe landscapes in Ontario.

- **Conserved** means “the identification, protection, management and use of built heritage resources, cultural heritage landscapes and archaeological resources in a manner that ensures their cultural heritage value or interest is retained under the *Ontario Heritage Act*. This may be achieved by the implementation of recommendations set out in a conservation plan, archaeological assessment, and/or heritage impact assessment. Mitigative measures and/or alternative development approaches can be included in these plans and assessments” (MMAH 2014:40).
- **Heritage Attributes** are defined in the *OHA* as: “the principal features or elements that contribute to a protected heritage property’s cultural heritage value or interest, and may include the property’s built or manufactured elements, as well as natural landforms, vegetation, water features, and its visual setting (including significant views or vistas to or from a protected heritage property means, in relation to real property, and to the buildings and structures on the real property, the attributes of the property, buildings and structures that contribute to their cultural heritage value or interest” (Government of Ontario 2009).
- **Significant**, in reference to cultural heritage, is defined as: “resources that have been determined to have cultural heritage value or interest for the important contribution they make to our understanding of the history of a place, an event, or a people” (MMAH 2014:49).

## 2.2 Types of Recognition

BHRs and CHLs are broadly referred to as cultural heritage resources. A variety of types of recognition exist to commemorate and/or protect cultural heritage resources in Ontario.

The National Historic Sites program commemorates important sites, people or events that had a nationally significant effect on, or illustrate a nationally important aspect of, the history of Canada. The Minister of Canadian Heritage on the advice of the Historic Sites and Monuments Board of Canada (HSMBC) makes recommendations to the program. Another form of recognition at the federal level is the Canadian Heritage Rivers System program. It is a federal program to recognize and conserve rivers with outstanding natural, cultural and recreational heritage. It is important to note that neither these federal commemoration programs offer protection from alteration or destruction.

The Ontario Heritage Trust (OHT) operates the Provincial Plaque Program, which has over 1,250 provincial plaques recognizing key people, places and events that have shaped the province (OHT 2018). Additionally, properties owned by the province may be recognized as a “provincial heritage property” (MTCS 2010). A cultural heritage resource may also be protected through an OHT or municipal easement. In addition, many municipal heritage committees and historical societies provide plaques for local places of interest.

Under *Section 27* of the *OHA*, a municipality must keep a Municipal Heritage Register. A Register lists designated properties (those protected by Part IV (individual properties) or Part V (Heritage Conservation Districts) designations under the *OHA*, as well as other properties

of cultural heritage value or interest in the municipality. Properties on this list that are not formally designated are commonly referred to as “listed.” Listed properties are flagged for planning purposes and are afforded a 60-day delay in demolition if a demolition request is received by the municipality.

## **2.3 Approach**

The *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* indicates a need to describe the “affected environment,” which is defined as “a spatially defined area within which land will be altered as a result of the proponent’s development” (MCL 1992:3). As such, ARA completes in-depth research and an evaluation of any potential cultural heritage resource within the project area. ARA’s business practice also considers a larger study area that considers abutting properties. This ensures that every BHR and CHL that may be subject to potential indirect project impacts are identified.

A combination of background research, consultation with the local community and field survey is essential to identify and effectively evaluate properties with potential BHRs and CHLs in a meaningful and objective format.

### **2.3.1 Historical Research**

Background information is obtained from aerial photographs, historical maps (e.g., illustrated atlases), archival sources (e.g., historical publications and records), published secondary sources (online and print) and local historical organizations.

### **2.3.2 Consultation**

Consultation with the local community is essential for determining the community value of cultural heritage resources. At project commencement, ARA contacts the relevant local and regional municipalities to inquire about: 1) protected properties in the study area, 2) properties with other types of recognition in the study area, 3) previous studies relevant to the current study, and 4) other heritage concerns regarding the study area or project area. Where possible, information is also sought directly from the MTCS and OHT.

### **2.3.3 Field Survey**

The field survey component of an assessment involves the collection of primary data through systematic photographic documentation of all potential cultural heritage resources within the study area, as identified through historical research and consultation. Generally, potential cultural heritage resources are identified by applying a 40-year rolling timeline. This timeline is considered an industry best practice (e.g., MTO 2008). A construction date of 40 years does not, however, automatically attribute CHVI to a resource; rather it indicates that it should be flagged as a potential resource and evaluated for CHVI.

Additional cultural heritage resources may also be identified during the survey itself. Photographs capturing all properties with potential BHRs and CHLs are taken, as are general

views of the surrounding landscape. The site visit also assists in confirming the location of each potential cultural heritage resource and helps to determine the relationship between resources. Given that such surveys are limited to areas of public access (e.g., roadways, intersections, non-private lands, etc.), there is always the possibility that obscured cultural heritage resources may be missed or that heritage attributes may be refined upon closer inspection.

## 2.4 Evaluation of Significance

### 2.4.1 Heritage Value

In order to objectively identify cultural heritage resources, O. Reg. 9/06 made under the *OHA* sets out three principal criteria with nine sub-criteria for determining CHVI (MCL 2006a:20-27). The criteria set out in the regulation were developed to identify and evaluate properties for designation under the *OHA*. Best practices in evaluating properties that are not yet protected employ O. Reg. 9/06 to determine if they have CHVI. These criteria include: design or physical value, historical or associative value, and contextual value.

Design or Physical Value manifests when a feature:

- is a rare, unique, representative or early example of a style, type, expression, material or construction method;
- displays a high degree of craftsmanship or artistic value; or
- displays a high degree of technical or scientific achievement.

Historical or Associative Value appears when a resource:

- has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the community;
- yields or has the potential to yield information that contributes to the understanding of a community or culture; or
- demonstrates or reflects work or ideas of an architect, builder, artist, designer or theorist who is significant to the community.

Contextual Value is implied when a feature:

- is important in defining, maintaining or supporting the character of an area;
- is physically, functionally, visually or historically linked to its surroundings; or
- is a landmark.

If a potential cultural heritage resource (BHR or CHL) is found to meet any one of these criteria, it can then be considered an identified resource.

### 2.4.2 Provincial Significance

Issued under the *OHA*, O. Reg. 10/06 outlines the criteria to determine if a property is of provincial significance. To be considered a “heritage property of provincial significance” a site must meet one or more of the following criteria:

- The property represents or demonstrates a theme or pattern in Ontario’s history;
- The property yields, or has the potential to yield, information that contributes to an understanding of Ontario’s history;
- The property demonstrates an uncommon, rare or unique aspect of Ontario’s cultural heritage;
- The property is of aesthetic, visual or contextual importance to the province;
- The property demonstrates a high degree of excellence or creative, technical or scientific achievement at a provincial level in a given period;
- The property has a strong or special association with the entire province or with a community that is found in more than one part of the province. The association exists for historic, social, or cultural reasons or because of traditional use;
- The property has a strong or special association with the life or work of a person, group or organization of importance to the province or with an event of importance to the province; or
- The property is located in unorganized territory and the Minister determines that there is a provincial interest in the protection of the property. O. Reg. 10/06, s. 1 (2).

## 2.5 Evaluation of Impacts

Any potential project impacts on identified BHRs or CHLs must be evaluated, including direct and indirect impacts. *InfoSheet #5: Heritage Impact Assessments and Conservation Plans* (2006b:3) provides an overview of several major types of negative impacts, including but not limited to:

- Destruction of any, or part of any, significant heritage attributes;
- Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance;
- Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden;
- Isolation of a heritage attribute from its surrounding environment, context or significant relationship;
- Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features;
- A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces; and
- Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.



## 2.6 Mitigation Strategies

If potential impacts on identified heritage resources are determined, proposed conservation or mitigative/avoidance measures must be recommended.

The Ministry of Culture's *InfoSheet #5: Heritage Impact Assessments and Conservation Plans* (2006b:3) lists several specific methods of minimizing or avoiding a negative impact on a cultural heritage resource, including but not limited to:

- Alternative development approaches;
- Isolating development and site alteration from significant built and natural features and vistas;
- Design guidelines that harmonize mass, setback, setting, and materials;
- Limiting height and density;
- Allowing only compatible infill and additions;
- Reversible alterations; and
- Buffer zones, site plan control, and other planning mechanisms.

## 2.7 Summary of Approach

The approach outlined herein is supported by the best practices, guidelines and policies of the following:

- The *Provincial Policy Statement* (2014);
- The *Ontario Heritage Act* (R.S.O. 1990);
- *Environmental Assessment Act* (R.S.O. 1990);
- *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (MCL 1992);
- The *Ontario Heritage Tool Kit* series (MCL 2006a);
- *Town of Erin Official Plan* (2012); and
- *Wellington County Official Plan* (2017).

The Urban Centre Water Servicing Class EA, Town of Erin CHER was directed by P.J. Racher, M.A., CAHP. It was managed by J. McDermid, B.A. The heritage evaluations were conducted by P.J. Racher, J. McDermid, L. Benjamin, M.A.E.S., CAHP and C. Richer, B.A., M.Sc.Pl. The site visit was completed by J. McDermid and L. Benjamin, and the historic research was completed by S. Clarke, B.A. Curriculum Vitae for key personnel can be found in Appendix B.

### 3.0 HISTORICAL CONTEXT

Wellington County has a long history of settlement including Pre-Contact and Post-Contact Indigenous campsites and villages. However, the cultural heritage resources located within the study areas are tied to the history of the initial settlement and growth of Euro-Canadian populations in the County and Town. Accordingly, this historical context section spans the early Euro-Canadian settlement history through to the present. The early history of the study areas can be effectively discussed in terms of major historical events. The principal characteristics associated with these events are summarized in Table 1 below.

**Table 1: County and Town Settlement History**  
(Smith 1846; Coyne 1895; Lajeunesse 1960; Cumming 1972; Ellis and Ferris 1990; Surtees 1994; AO 2011)

Historical Event	Timeframe	Characteristics
Early Contact	Early 17 <sup>th</sup> century	Brûlé explores the area in 1610; Champlain visits in 1613 and 1615/1616; Iroquoian-speakers (Huron, Petun and Neutral) and Algonkian-speakers (Anishnabeg) encountered; European goods begin to replace traditional tools
Five Nations Invasion	Mid-17 <sup>th</sup> century	Haudenosaunee (Five Nations) invade ca. 1650; Neutral, Huron and Petun Nations are defeated/removed; vast Iroquoian hunting territory established in the second half of the 17 <sup>th</sup> century; Explorers continue to document the area
Anishnabeg Influx	Late 17 <sup>th</sup> and early 18 <sup>th</sup> century	Ojibway, Odawa and Potawatomi expand into Haudenosaunee lands in the late 17 <sup>th</sup> century; Nanfan Treaty between Haudenosaunee and British in 1701; Anishnabeg occupy the area and trade directly with the French and English
Fur Trade Development	Early and mid-18 <sup>th</sup> century	Growth and spread of the fur trade; Peace between the French and English with the Treaty of Utrecht in 1713; Ethnogenesis of the Métis; Hostilities between French and British lead to the Seven Years' War in 1754; French surrender in 1760
British Control	Mid-18 <sup>th</sup> century	<i>Royal Proclamation</i> of 1763 recognizes the title of the First Nations to the land; Numerous treaties arranged by the Crown; First acquisition is the Seneca surrender of the west side of the Niagara River in August 1764
Loyalist Influx	Late 18 <sup>th</sup> century	United Empire Loyalist influx after the American Revolutionary War (1775–1783); British develop interior communication routes and acquire additional lands; 'Between the Lakes Purchase' in 1784 orchestrated by Haldimand to obtain lands for Six Nations; <i>Constitutional Act</i> of 1791 creates Upper and Lower Canada
County Development	Late 18 <sup>th</sup> and early 19 <sup>th</sup> century	Area initially adjacent to York County's 'West Riding,' Additional lands acquired in the second 'Between the Lakes Purchase' in 1792; Became part of York County's 'West Riding' in 1798; Additional lands obtained in the 'Lake Simcoe-Nottawasaga Purchase' and 'Ajetance Purchase' in 1818, the 'Huron Tract Purchase' in 1827 and the 'Saugeen Tract Purchase' in 1836; Wellington District and Waterloo County created in 1840; Wellington County created after the abolition of the district system in 1849
Township Formation	Early 19 <sup>th</sup> century	South part of Erin was surveyed by Kennedy in 1819, and the north part by O'Reilly and Burt; First settlers included A. Patterson, G. Roszel, N. Roszel (1820), W. How (1821), the Trouts (1822) and the McMillans (1824); 75 households, 1 grist mill and 1 saw mill in 1830, with a population of 368
Township Development	Mid-19 <sup>th</sup> and early 20 <sup>th</sup> century	The population of Erin reached 1,368 by 1841; Road from Erin to Guelph completed in 1844; 1 grist mill and 4 saw mills in operation by 1846; 13,131 ha taken up at that time, with 3,215 ha under cultivation; Traversed by the Credit Valley Railway Elora Branch (ca. 1880); Communities at Crewson's Corner, Ballinafad, Ospringe, Brisbane, Erin, Coningsby, Hillsburgh and Mimosa

### 3.1 Town of Erin

The Town of Erin is an amalgamated town, composed of the former Villages of Erin and Hillsburgh (both the location of the study areas), and the hamlets of Ballinafad, Brisbane, Cedar Valley, Crewson's Corners, Ospringe, Orton and parts of the former Township of Erin (Town of Erin 2017).

The project areas are situated within the historic communities of Erin and Hillsburgh. Erin Village was founded by Daniel McMillan in 1824. The first sawmill was built by the Trout family in 1826; they also opened a small store and made potash. Mr. McMillan rented and subsequently bought the sawmill site, later building a new mill and adding a small gristmill. Other early businesses in Erin Village include the store that was started by Miss Caldwell in 1836, a dry goods store started by William Cornock (who also established a distillery in 1839 and secured the first post office). Daniel McMillan constructed the first houses in Erin, as well as the Globe Hotel and the Queens Hotel. The Erin Village was incorporated in 1879. Another important development was the construction of the Credit Valley Railway, circa 1880 (Cumming 1972:10).

Hillsburgh, situated on a branch of the Credit River, had a station on the C.P.R. In 1906, there were three churches, a number of stores, two hotels, a flour mill, and a tannery located in the village. At that time, Hillsburgh was surrounded by agricultural lands, and was an important shipping point and recreational area for trout fishermen (Cumming 1972:5).

### 3.2 Study Area

In an attempt to reconstruct the historic land uses of the project areas and study areas, ARA examined two historical maps that documented past residents, structures (e.g., homes, businesses and public buildings) and features between the mid-19<sup>th</sup> and early 20<sup>th</sup> centuries, and one aerial image from the mid-20<sup>th</sup> century. Specifically, the resources outlined in Table 2 were consulted.

**Table 2: Historic Maps and Aerials Consulted**

Year	Map Title	Reference
1861	Map of the County of Wellington, Canada West	Leslie & Wheelock
1877	Erin, Topographical and Historical Atlas of the County of Wellington, Ont.	McGill University
1954	Aerial Photo	U of T

The limits of the project areas and study areas are shown on 1) georeferenced versions of the consulted historical maps, and 2) a georeferenced version of the aerial image from 1954 (see Map 2-Map 7).

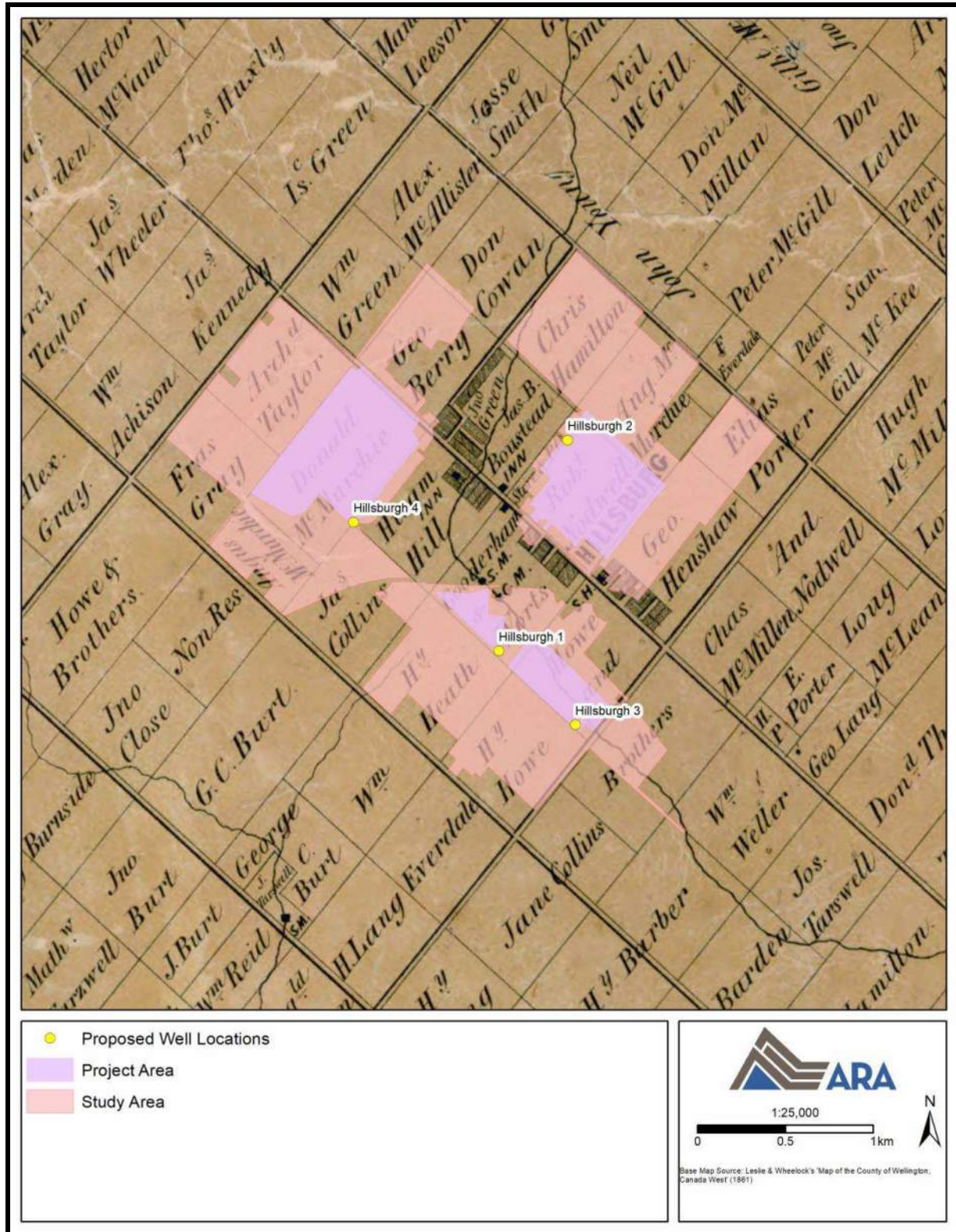
The 1861 *Map of the County of Wellington, Canada West* indicates that road allowances for Main Street and other thoroughfares were laid out in Erin. The small rural village appears to be

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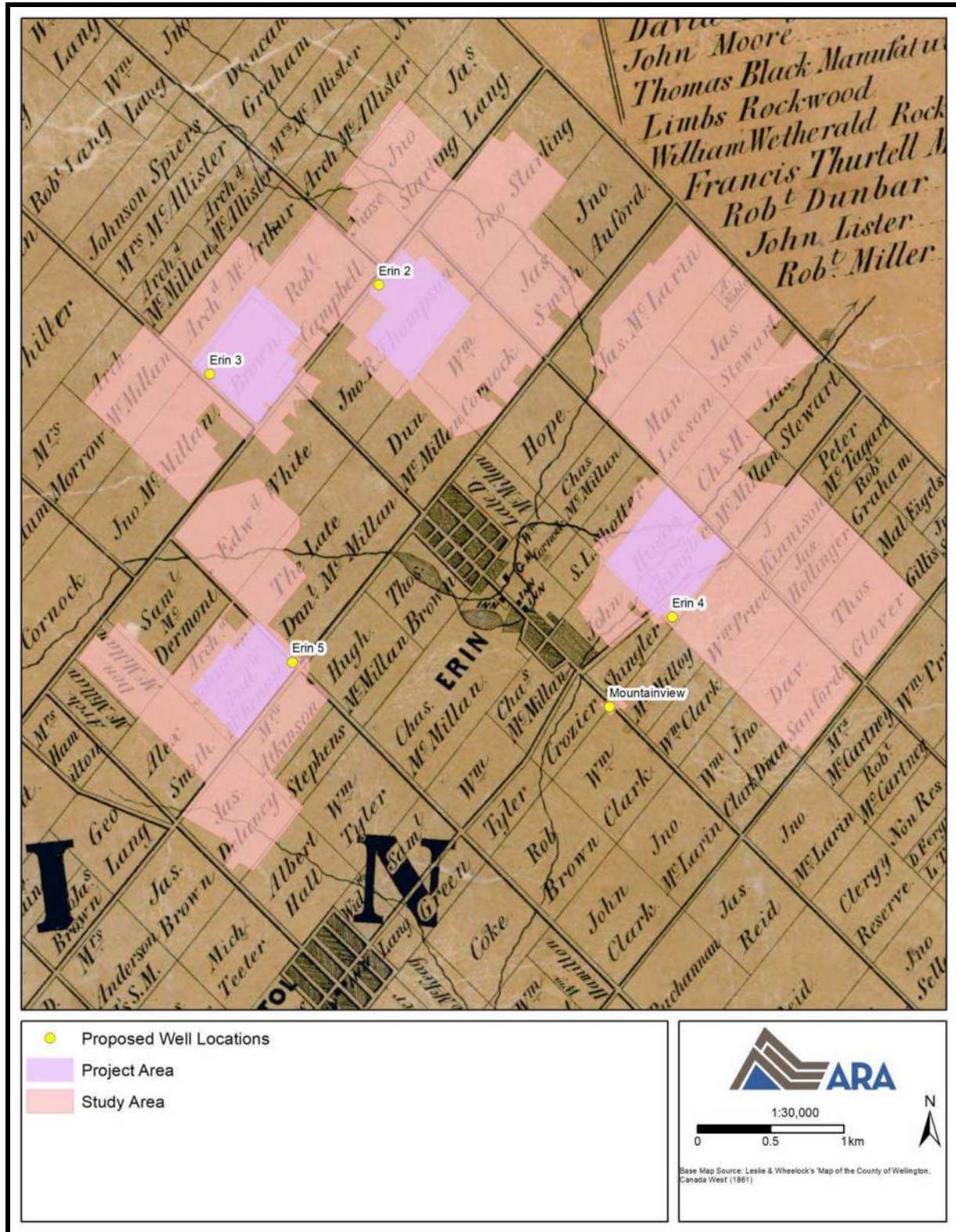
well developed, with three separate inns located on Main Street. Hillsburgh is also well developed at this time, with road allowances laid out for Main Street/Wellington Road 24 and other thoroughfares. There were two inns in Hillsburgh in 1861 as well as a store and post office and a saw mill and grist mill on land owned by Gooderham & Worts.

The 1877 map titled *Erin* indicates that by this time, the railway was running east-west, north of the small rural village. Various farmhouses can be seen throughout the agricultural lands surrounding Erin. The railway also runs northwest past Hillsburgh. Multiple saw or grist mills are located west and south of the village. As with Erin, farmhouses are located throughout the agricultural lands surrounding Hillsburgh.

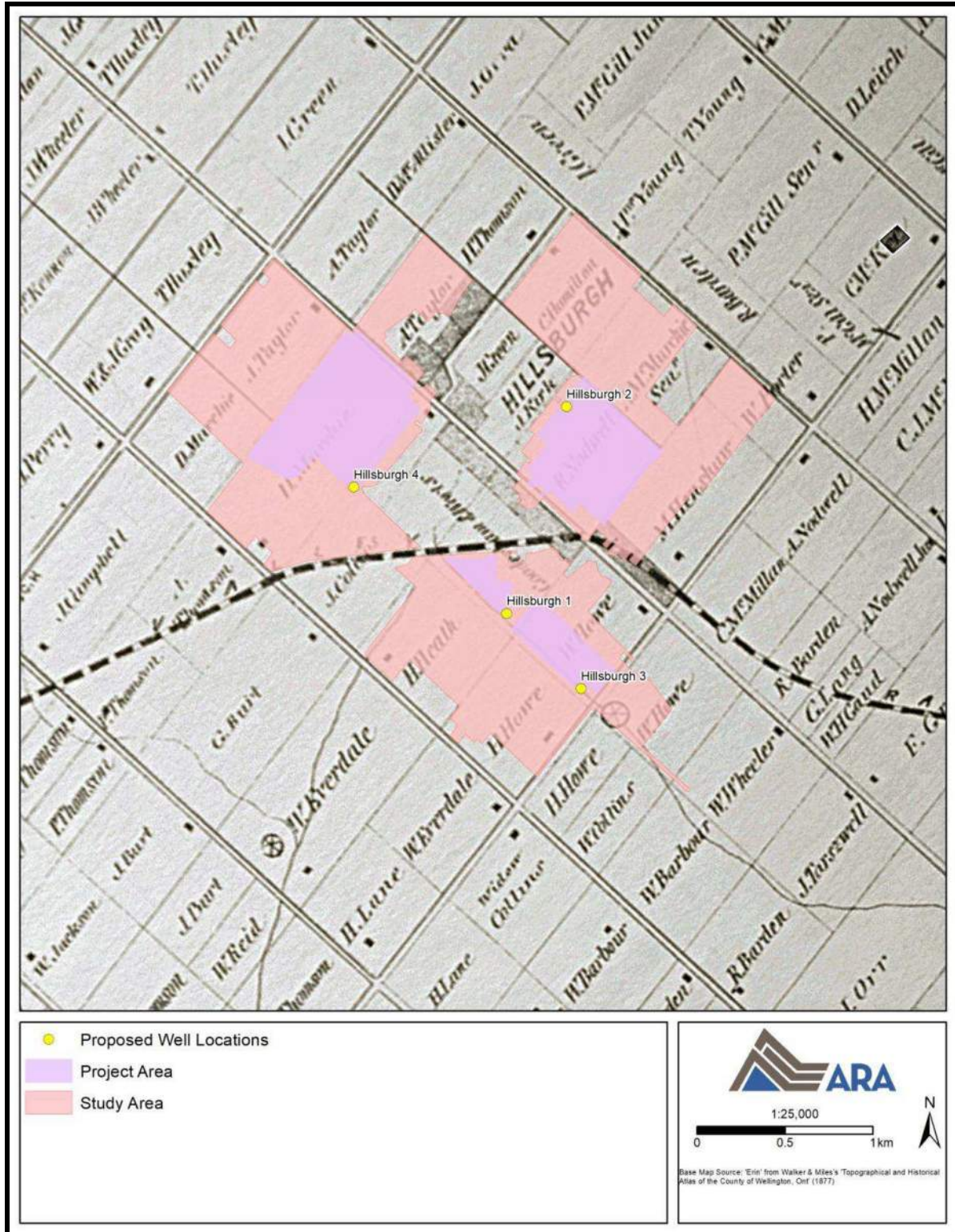
By 1954, the settlement of Erin had grown significantly, with development along Main Street. Large rural lots were subdivided; however, some smaller lots still appeared to be used for agricultural activities at this time. Hillsburgh has also grown since 1877, although not to the same degree as Erin. The study areas in 1954 were predominantly comprised of agricultural lands.



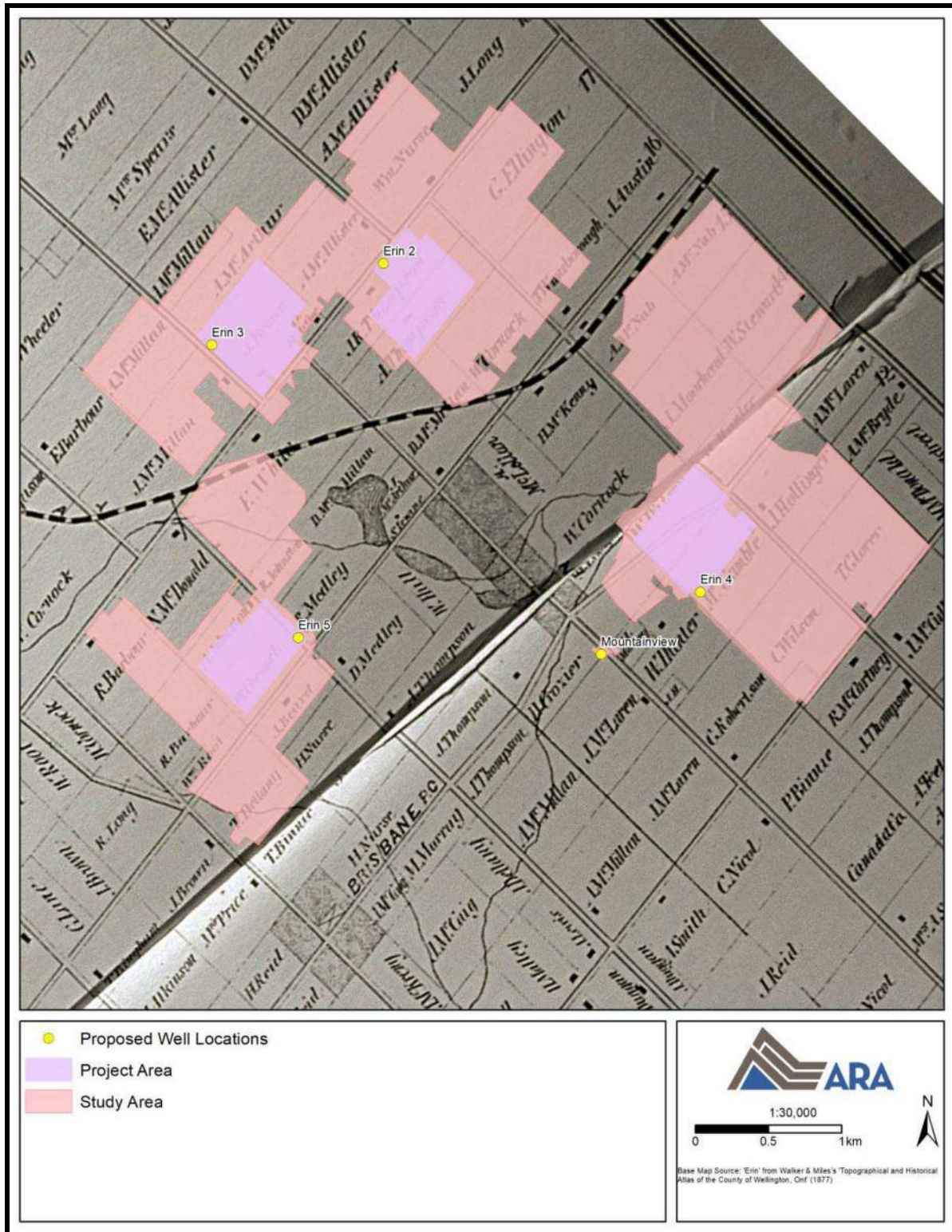
**Map 2: Detail of Leslie and Wheelock’s Map of the County of Wellington, Canada West (1861), Showing the Hillsburgh Study Areas and Well Sites (Leslie & Wheelock 1861)**



**Map 3: Detail of Leslie and Wheelock’s Map of the County of Wellington, Canada West (1861), Showing the Erin Study Areas and Well Sites (Leslie & Wheelock 1861)**

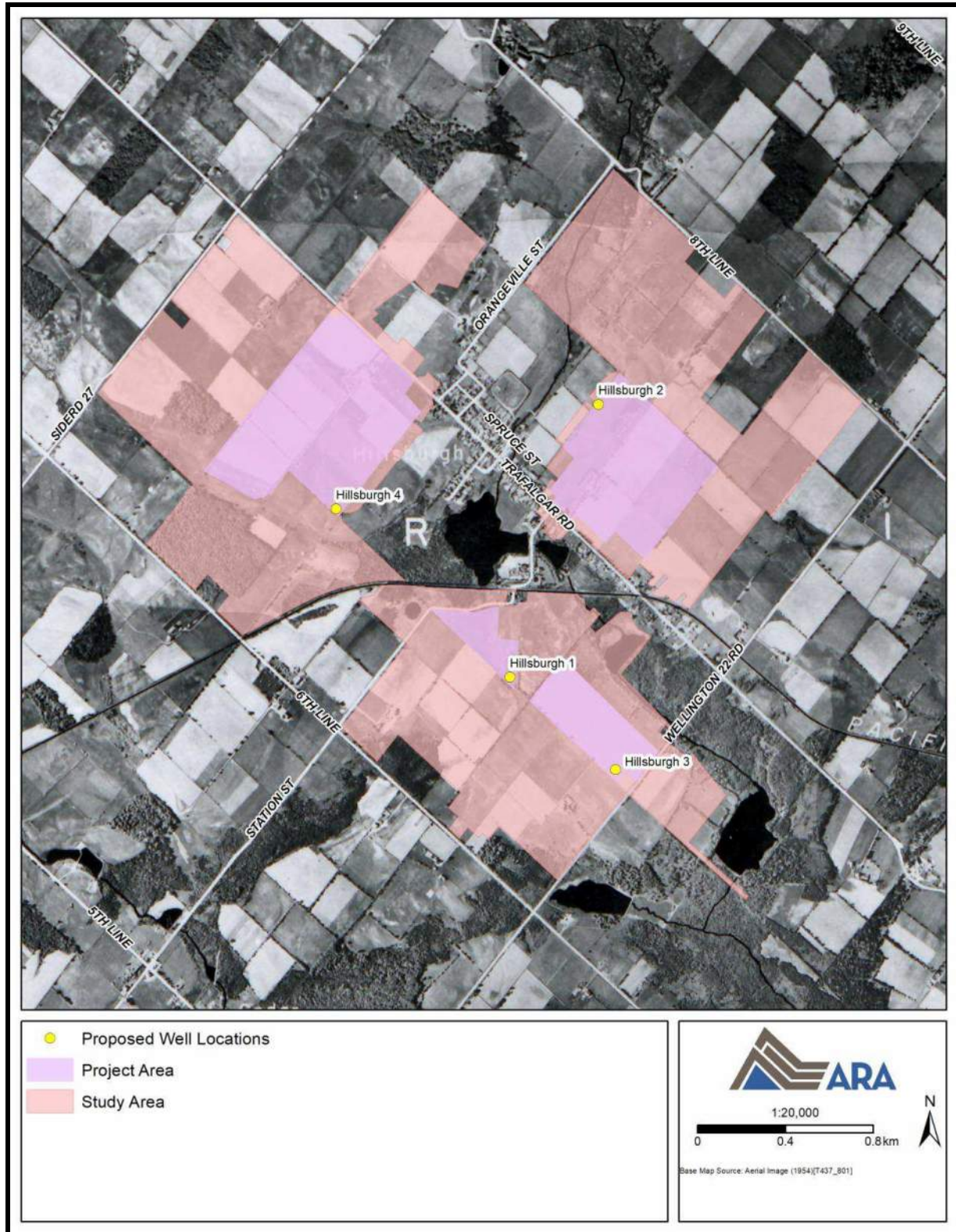


**Map 4: Detail of the map of Erin from Walker & Miles Topographical and Historical Atlas of the County of Wellington, Ont. (1877), Showing the Hillsburgh Study Areas and Well Sites (McGill University 2001)**

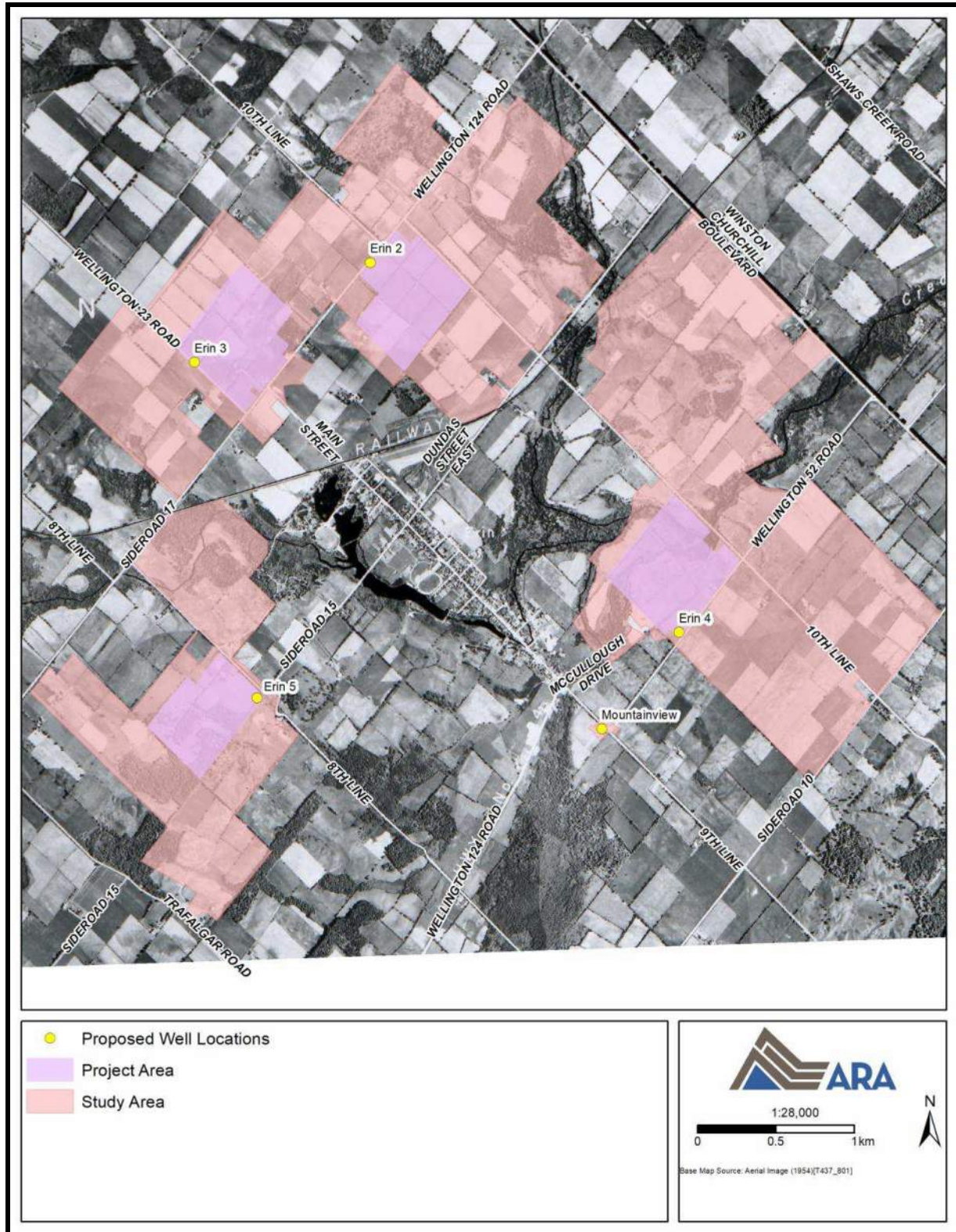


**Map 5: Detail of the map of Erin from Walker & Miles Topographical and Historical Atlas of the County of Wellington, Ont. (1877), Showing the Erin Study Areas and Well Sites**  
(McGill University 2001)





**Map 6: Historic Aerial Image (1954), Showing the Hillsburgh Study Areas and Well Sites**  
 (University of Toronto 1954)



**Map 7: Historic Aerial Image (1954), Showing the Erin Study Areas and Well Sites (University of Toronto 1954)**

## 4.0 HERITAGE CONTEXT

To determine whether any previously-identified properties with CHVI are located within, adjacent to or in proximity to the limits of the project areas, ARA consulted a number of heritage groups and online heritage resources.

### 4.1 Consultation

The former Ministry of Culture’s current list of Heritage Conservation Districts was consulted. No designated districts were identified in the study area (MTCS 2018). The list of properties designated by the MTCS under Section 34.5 of the *OHA* was consulted. No properties in the study area are listed. The OHT *Plaque Database* and the Parks Canada *Directory of Federal Heritage Designations* were searched. Neither the project areas nor adjacent properties located within the study areas are commemorated with an OHT plaque, nor are any recognized as National Historic Sites (OHT 2018; Parks Canada 2018).

ARA staff contacted the Planner for the Town of Erin and was subsequently notified that they are no longer employed by the municipality. As a result, the Towns’ Clerk was contacted via email on December 7, 2017, with a follow up email sent on January 4, 2018. Triton Engineering’s Project Manager responded to ARA on behalf of the Town’s Clerk on January 4, 2018 and shared the heritage inventory table tracking document and Heritage Register for the Town of Erin. It was also reported that: “There are only two properties on the heritage register and they are not near any of the proposed well sites...There are no officially designated heritage districts in the Town of Erin although many of the buildings in the downtown cores of Hillsburgh and Erin Village are on the heritage inventory table. There have been no notices for designation on any of the properties. Some of the properties are protected by a 0.3 m easement along the road rights-of-way to prevent landowners from constructing entrances to the lands without permission from the Town and the County. Also, the Elora-Cataract Trail (former railway) runs through Erin Village and Hillsburgh” (Triton Engineering 2018). ARA requested that project information be shared with the Town’s Heritage Committee via the Clerk. At the time of report submission, feedback had not been received from the Committee.

The County of Wellington’s Manager of Development Planning responded directly to Triton Engineering’s Project Manager regarding ARA’s request for information and reported that: “They typically do not deal with heritage issues. Heritage is the responsibility of the lower tier municipality, which in this case is the Town of Erin. The County does not have a heritage registry...there are only two designated heritage sites in the Town of Erin (Stanley Park gates and a place near Crewson’s Corners). Neither of these locations are near the proposed well sites” (Triton Engineering 2017a).

ARA staff also reached out to the OHT on December 7, 2017 and received a response from the Trust’s Heritage Planner on the same day confirming that there are no Trust-protected properties within or adjacent to the study areas.

## 4.2 Grand River as a Canadian Heritage River

Triton Engineering was directed to complete the MTCS screening checklist, *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* (2016), to assist in determining if an EA project may impact cultural heritage resources. It was determined that a small portion of the project area for Hillsburgh 1 and 3 Well Sites and Erin Well Site 5, and properties abutting Hillsburgh 1, 3 and 4 Well Sites and Erin Well Site 5 are located in proximity to the Grand River Watershed (a Canadian Heritage River) (GRCA 2018).

The Grand River was designated as a Canadian Heritage River in 1994 as the first urban river to be considered as part of the program. The designation includes the major tributaries of the river, including the Nith, Speed, Conestogo and Eramosa Rivers. Four of the proposed well sites are located near the edge of the watershed boundary, traversed by the West Credit River, 623 m northeast of the Eramosa River. The Grand River is located approximately 12.3 km to the west of the most westerly Hillsburgh study area.

As part of the Heritage River designation process, a study was conducted by the University of Waterloo's Heritage Resources Centre (1989). The study's inventory describes the outstanding human heritage features associated with the Grand River (Lower Grand, Six Nations, Brantford, Paris, Cambridge, Kitchener-Waterloo, Nith Valley, Fergus/Elora, Guelph and Eramosa (Heritage Resources Centre 1989:95). The study area at the northeastern edge of the watershed is not mentioned as a key feature of the Grand River Heritage River designation, nor does it appear on the "Areas of Significance" map (see Image 1). The *Canadian Heritage Rivers System Nomination Document* (GRCA 1990) and the *Heritage River Inventory* (GRCA 2013) do not list any features of the study area. Further, the *Town of Erin Official Plan* and *Wellington County Official Plan* do not mention this designation. As such, it is determined that although a very small portion of the study areas do contain property parcels that are located within a Canadian Heritage River Watershed (Grand River), they do not contribute to the river's designation.

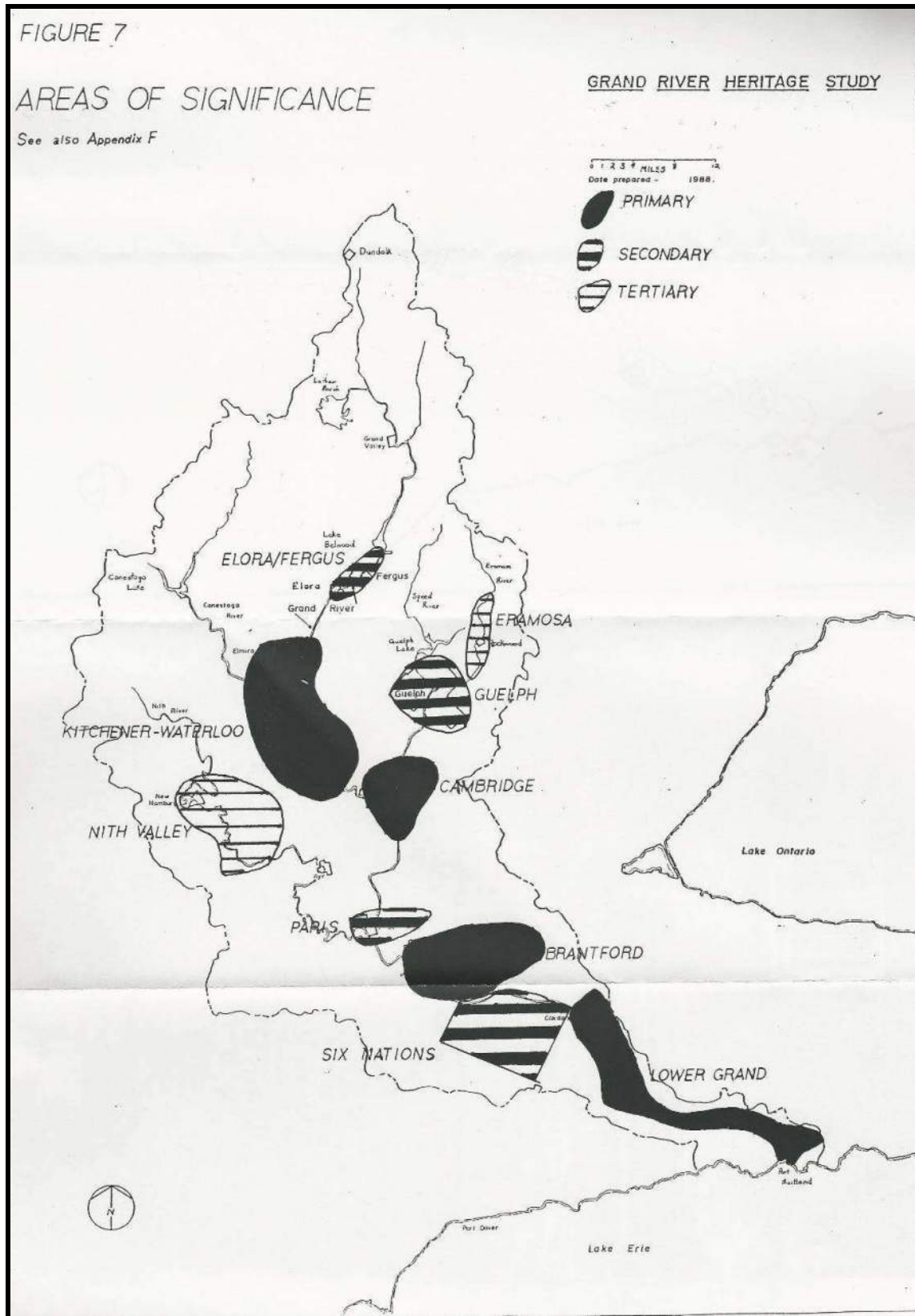


Image 1: Grand River Heritage Survey Areas of Significance  
(Heritage Resources Centre 1989: Figure 7)

## 5.0 HERITAGE ASSESSMENT

The project areas are clustered in two study areas in the former villages of Hillsburgh and Erin. The study areas include the project areas (proposed well sites), as well as parcels abutting the project areas. The Hillsburgh project areas consist of four proposed well locations (see Map 8), while the Erin project areas consist of five proposed well locations (see Map 9). As there are two distinct clusters that make up the project areas, this report will refer to the Hillsburgh Project Areas (H-BHRs and H-CHLs) and the Erin Project Areas (E-BHRs and E-CHLs).

A site visit was conducted on November 29, 2017 to photograph and document the well sites and surroundings, and to record any local features that could enhance ARA's understanding of their setting in the landscape and contribute to the cultural heritage evaluation process. As noted in Method Section 2.3.3, properties with potential cultural heritage resources were examined during the field survey and those that were determined at that time not to possess heritage interest were eliminated. This type of preliminary investigation (a windshield survey) was appropriate given the scale of the study areas. The heritage staff conducting the assessments reached conclusions regarding CHVI based on visual evidence and on their significant experience evaluating BHRs and CHLs using the criteria outlined in O. Reg. 9/06 of the *OHA*. A standardized checklist based on O. Reg. 9/06 was created for all properties with potential cultural heritage resources. This checklist aided in the evaluation process and was used to judge whether a given resource (BHR or CHL) possessed design or physical value, historical or associative value, or contextual value.

Below, Sections 5.1 and 5.2 provide a heritage assessment of each project area (participating property) and abutting cultural heritage resources identified in both the Hillsburgh and Erin study areas.

Information sheets for each individual BHR and CHL and can be found in Appendix A. These information sheets include the location, description and photographic documentation of each property. Photographs were taken from publicly accessible lands.

### 5.1 Hillsburgh Project Area – Proposed Well Sites

#### 5.1.1 Hillsburgh Well Site 1 – Station Street (Lot 24, Concession 7)

The project area for the proposed Hillsburgh Well Site 1 is composed of a triangular parcel of cultivated agricultural land that contains no structures and is flanked by rows of mature trees on its north and west boundaries (see Image 2). An access road from a shared driveway with the neighbouring property at 14 Station Street runs north-south across the property and terminates at its southern point. The property is located on the south side of Station Street/Side Road 24 (Lot 24, Concession 7), west of Trafalgar Road North. The well site is proposed at the southern point of the triangular lot, set back approximately 200 m from Station Street/Side Road 24. Research did not find any historical associations linked to this property. In correspondence with the County, Town and OHT, the property was not identified as having community value. As such, the property of the proposed Hillsburgh Well Site 1 does not appear to possess CHVI.

A B&B and forested wetland are located to the north of the project area; a contemporary rural residential structure is located on a large treed lot to the east; cultivated agricultural fields are located to the south; and an agricultural complex with a two-storey vernacular farmhouse constructed circa 1861-1877 (H-BHR-2) is located to the west (see Section 5.3 and Appendix A for more information on individual BHRs).



**Image 2: View of Hillsburgh Well Site 1, Station Street**  
(Google Imagery 2018; View Facing South)

### **5.1.2 Hillsburgh Well Site 2 – 63A Trafalgar Road North**

The project area for the proposed Hillsburgh Well Site 2 is located at 63A Trafalgar Road North on the north side of Trafalgar Road North, at the terminus of Station Street. The property is accessed by a driveway shared with 63 Trafalgar Road North. Much of the property is composed of cultivated agricultural fields with a small portion of wood lot surrounding the farmhouse and a portion of the northwest corner of the lot (see Image 3).

The property contains a one-and-a-half-storey red brick Gothic Revival farmhouse constructed in 1888. The structure has a side gable roof and projecting front gable with a window, and two chimneys on either side of the house. It was determined that this property associated with the proposed Hillsburgh Well Site 2 possesses CHVI (H-BHR-5).

The house is setback from the road approximately 200 m among agricultural fields and is screened from Trafalgar Road North by dense vegetation. There appears to be one outbuilding on the property, located slightly south of the farmhouse.

A rural agricultural complex with a one-and-a-half-storey vernacular residential field stone structure constructed circa 1850 (H-BHR-7), another rural agricultural complex with a square

sandstone residential structure and bank barn constructed circa 1880 (H-BHR-8), and cultivated agricultural fields are located to the north of the project area; cultivated agricultural fields are located to the east; Hillsburgh's main street, Trafalgar Road North, is located to the south and includes a number of contemporary residential structures as well as historic homes, such as 63 Trafalgar Road North, a two-storey red brick structure with Italianate elements constructed in 1895 (H-BHR-4) and 68 Trafalgar Road North, a two-storey red brick Gothic Revival structure constructed in 1892 (H-BHR-6); the Century Church Theatre (H-BHR-3), former Christian Disciples Church, constructed in 1906 is also located to the south of the project area at a 72 Trafalgar Road North; and a variety of contemporary residential uses are located to the west, including single-detached houses and multi-unit structures (see Section 5.3 and Appendix A for more information on individual BHRs).

The well site is planned near the northwest corner of the lot at the dead end of Currie Drive, behind 31 Douglas Crescent. The well house is proposed to be set a significant distance from the residential portion of the property (approximately 350 m to the north) and approximately 480 m from Hillsburgh's historic main street and associated BHRs.



**Image 3: View of Hillsburgh Well Site 2, 63A Trafalgar Road**  
(November 29, 2017; View Facing Northeast)

### **5.1.3 Hillsburgh Well Site 3 – Wellington County Road 22 (Lot 23, Concession 7)**

The project area for the proposed Hillsburgh Well Site 3 is composed of a rectangular parcel of cultivated agricultural land that contains no structures and is flanked by mature trees on all sides (see Image 4). The property has no civic address. It is located adjacent to 9354 Wellington Road 22 on the north side of Wellington County Road 22 (Lot 23, Concession 7), west of



Trafalgar Road North. The well site is proposed adjacent to the western boundary of the property line, set back approximately 150 m from Wellington County Road 22. Research did not find any historical associations linked to this property. In correspondence with the County, Town and OHT, the property was not identified as having community value. As such, the property of the proposed Hillsburgh Well Site 3 does not appear to possess CHVI.

Cultivated agricultural fields and the Hillsburgh Well Site 1 are located to the north of the project area; a forested wetland, including a pond, is located to the east; a contemporary rural residential structure is located on a large treed lot and flanked by uncultivated agricultural fields to the south; and an agricultural complex with a two-storey vernacular farmhouse constructed circa 1861-1877 (H-BHR-2) is located to the west (see Section 5.3 and Appendix A for more information on individual BHRs).



**Image 4: View of Hillsburgh Well Site 3, Wellington County Road 22**  
(Google Imagery 2018; View Facing Northwest)

#### ***5.1.4 Hillsburgh Well Site 4 – 5916 Trafalgar Road North***

The project area for the proposed Hillsburgh Well Site 4 is composed of an irregularly shaped parcel of rolling agricultural land that contains no structures (see Image 5). The property is located at 5916 Trafalgar Road North on the west side of Trafalgar Road North, north of Upper Canada Drive. A rural agricultural complex with a two-storey red brick vernacular residential structure with Gothic Revival details constructed post-1887 (H-BHR-9) and a one-and-a-half-storey red brick Gothic Revival farmhouse and bank barn constructed post-1877 (H-BHR-1) is located to the north of the project area; cultivated agricultural fields and a contemporary residential development are located to the east; a contemporary residential development is located to the south; and cultivated agricultural fields and wood lots are located to the west (see Section 5.3 and Appendix A for more information on individual BHRs).

The well site is proposed in the southwest corner of the lot at the terminus of Upper Canada Drive, near 70 Upper Canada Drive. The well house is proposed to be set a significant distance from the residential portion of neighbouring BHRs to the north. Research did not find any historical associations linked to this property. In correspondence with the County, Town and OHT, the property was not identified as having community value. As such, the property of the proposed Hillsburgh Well Site 4 does not appear to possess CHVI.



**Image 5: View of Hillsburgh Well Site 4, 5916 Trafalgar Road**  
(Google Imagery 2018; View Facing West)

## 5.2 Erin Project Areas – Proposed Well Sites

### 5.2.1 Erin Well Site “Mountainview” – 5378 9<sup>th</sup> Line

The project area for the “Mountainview” proposed well site contains no structures and is surrounded by contemporary low-density residential buildings (see Image 6). The property is located on the southwest corner of 9<sup>th</sup> Line/Main Street and Kenneth Avenue on a grassed lot flanked by mature trees. At the time of site inspection, a well had been drilled and was not producing an acceptable amount of water to consider it a viable option (Triton Engineering 2017b). As such, it is unlikely to be retained and further unlikely that a well house will be constructed on site. Due to the low probability of the property becoming a functional well site, abutting properties were not evaluated for CHVI. Research did not find any historical associations linked to this property. In correspondence with the County, Town and OHT, the property was not identified as having community value. As such, the property of the proposed Mountainview well site does not appear to possess CHVI.

### **5.2.1 Erin Well Site 2 – Wellington Road 124 (Lot 17, Concession 10)**

The project area for the proposed Erin Well Site 2 contains no structures and is an actively cultivated agricultural field divided evenly into sections by rows of mature vegetation (see Image 7). The well location is proposed near the centre of the property line parallel to the southeast side of Wellington Road 124. The property, located on the south side of Wellington Road 124 (Lot 17, Concession 10), is surrounded by an agricultural complex with a one-and-a-half-storey Gothic Revival farmhouse constructed in 1887 (E-BHR 7) to the north; agricultural fields with the ruins of a former barn and silo (E-BHR-8) and an agricultural complex with a historic barn (E-BHR-6) and circa 1940s residential bungalow to the east; cultivated agricultural fields to the south; and low-density commercial/industrial uses to the west (see Section 5.3 and Appendix A for more information on individual BHRs). Research did not find any historical associations linked to this property. In correspondence with the County, Town and OHT, the property was not identified as having community value. As such, the property of the proposed Erin Well Site 2 does not appear to possess CHVI.

### **5.2.1 Erin Well Site 3 – 9614 Side Road 17**

The project area for the proposed Erin Well Site 3 contains a two-storey vernacular farmhouse with board and batten cladding on an irregular plan with an asymmetrical façade. It is estimated that the house was constructed between 1861-1877. The structure has a low-pitched front and side gable roof with a stone chimney, rectangular window openings and an enclosed front porch and rear addition (see Image 8). The residential structure is located at 9614 Side Road 17 on the north side of Side Road 17 at the terminus of Shamrock Road. A wood clad outbuilding is located on the property in close proximity to the house at the end of a gravel driveway. Aside from manicured lawns surrounding the residential portion of the lot, the majority of the property is composed of cultivated agricultural fields flanked by buffers of mature vegetation. The participating property associated with the proposed Erin Well Site 3 located at 9614 Side Road 17 does possess CHVI. More detailed information about this property can be found in the Information Sheet for E-BHR-4 in Appendix A

The McAllister Family Cemetery (E-CHL-1) and a farmstead and agricultural fields are located to the north of the project area; contemporary residential structures, agricultural fields and a rural agricultural complex with a one-and-a-half-storey Gothic Revival farmhouse constructed in 1887 (E-BHR-7) is located to the east; low density commercial/industrial uses are located to the south; and contemporary residential structures, low density commercial/industrial uses, the Erin Pioneer Cemetery (E-CHL-2), and a rural agricultural complex with a one-and-a-half-storey Gothic Revival farmhouse constructed circa 1880 (E-BHR-9) are located to the west (see Section 6.0 for more information on individual BHRs and CHLs). The well site is proposed on the northwest side of the lot, close to the property boundary at Wellington Road 23 and set a significant distance from the residential portion of the property (approximately 550 m to the northwest) and approximately 150 m from the McAllister Family Cemetery (E-CHL-1).



**Image 6: View of Mountainview Well Site, 5378 9<sup>th</sup> Line  
(November 29, 2017; View Facing Southeast)**



**Image 7: View of Erin Well Site 2, Wellington Road 124  
(Google Imagery 2018; View Facing Southeast)**



**Image 8: View of the Farmhouse at Erin Well Site 3, 9614 Side Road 17**  
(November 29, 2017; View Facing Northwest)

### ***5.2.2 Erin Well Site 4 – 9682 Wellington Road 52***

The project area for the proposed Erin Well Site 4 contains a two-storey rusticated concrete block farmhouse (see Image 9). It is estimated that the house was constructed after 1900. The structure has a hip roof, rectangular plan, asymmetrical façade and rectangular window openings with plain sills. A wood barn with a wide front gable roof and attached lean-to is located just west of the house (see Image 10). Both structures are situated on a hill setback a short distance from the road and are set among brushy vegetation and mature trees. As such, the participating property associated with the proposed Erin Well Site 4 located at 9682 Wellington Road 52 does possess CHVI. More detailed information about this property can be found in the Information Sheet for E-BHR-2 in Appendix A. The majority of the property is composed of cultivated agricultural fields intersected by a wood lot, creek and associated wetlands traversing the lot from east-west.

A concrete bowstring arch bridge constructed circa 1910-1930 abuts the project area and spans the creek over 10<sup>th</sup> Line (E-BHR-1). A treed wetland is located to the north of the project area; a contemporary farmstead, treed wetland, and a rural agricultural complex with a two-storey farmhouse with Edwardian and Queen Anne details constructed circa 1900 are located to the east (E-BHR-3); cultivated agricultural fields and a quarry are located to the south; and a contemporary residential subdivision and treed wetland are located to the west (see Section 5.3 and Appendix A for more information on individual BHRs). The well site is proposed in the southwest corner of the lot, close to the property boundary at Wellington Road 52 at the base of a hill approximately 320 m to the northeast of the residence. Mature vegetation flanking the property boundary parallel to Wellington Road 52 screens the view to well site from the residential portion of the property.



**Image 9: View of the Farmhouse at Erin Well Site 4, 9682 Wellington Road 52  
(November 29, 2017; View Facing Northwest)**



**Image 10: View of the Barn at Erin Well Site 4, 9682 Wellington Road 52  
(November 29, 2017; View Facing North)**

### **5.2.3 Erin Well Site 5 – 5520 8<sup>th</sup> Line**

The project area for the proposed Erin Well Site 5 contains an agricultural complex including a large bank barn and contemporary residential bungalow located at 5520 8<sup>th</sup> Line (see Image 11). It is estimated that the barn was constructed circa 1880. The bank barn has a rectangular plan, gable roof and covered shelter for animals projecting from the south elevation. The barn is clad in vertical wood barn board and an entryway and rectangular window openings are located in the field stone foundation. The barn is setback a short distance from 8<sup>th</sup> Line and is surrounded by fenced horse paddocks. The red brick one-storey bungalow appears to have been constructed circa the 1970s and has a side gable roof, simple window fenestration and a centrally placed front door. The house is set back further from the road than the barn and is screened by dense vegetation making it difficult to view from 8<sup>th</sup> Line. The participating property associated with the proposed Erin Well Site 5 located at 5520 8<sup>th</sup> Line does possess CHVI. More detailed information about this property can be found in the Information Sheet for E-BHR-5 in Appendix A. The agricultural complex is located on the west side of 8<sup>th</sup> Line at the terminus of Erin Heights Drive. Most of the property is composed of cultivated agricultural fields and wood lots.

A contemporary residential structure, wood lot and cultivated agricultural fields are located to the north of the project area; a contemporary residential subdivision and the Erin Heights Golf Course (E-CHL-3) are located to the east; a contemporary residential structure, wood lot and modified residential log cabin (E-BHR-11) are located to the south; and an agricultural complex and two-storey Queen Anne farmhouse constructed circa 1861-1877 (E-BHR-10), cultivated agricultural fields, and a wood lot are located to the west (see Section 5.3 and Appendix A for more information on individual BHRs). The well site is proposed in the northeast corner of the lot, close to the property boundary at 8<sup>th</sup> Line and set approximately 175 m southeast of the bank barn.



**Image 11: View of Agricultural Complex located at Erin Well Site 5, 5520 8<sup>th</sup> Line  
(November 29, 2017; View Facing West)**

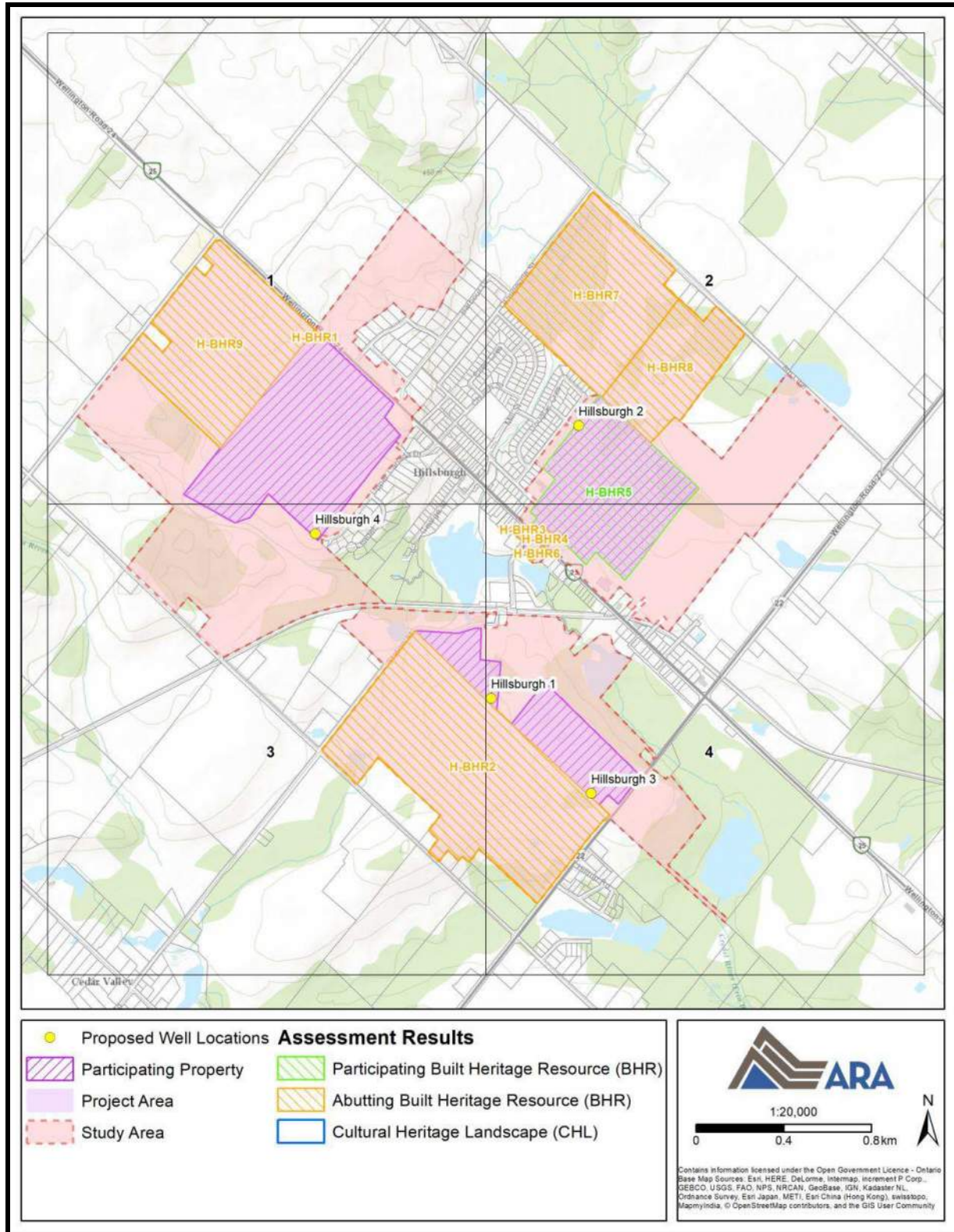
### 5.3 Heritage Assessment Summary

As a result of consultation and field survey, the following heritage resources were identified as having potential CHVI: H-BHR 5 and E-BHRs 2, 4, 5 are participating properties (proposed well sites), whereas H-BHRs 1-4 and 6-9 and E-BHRs 1, 3, 6-11 and are located on properties that abut the project locations. Three CHLs, E-CHLs 1-3, were also identified within the Erin Village study area. No CHLs were identified in the Hillsburgh study area. As noted above, ARA examined properties adjacent to the project area within the study area for potential resources to ensure that all potential impacts of the project are adequately addressed.

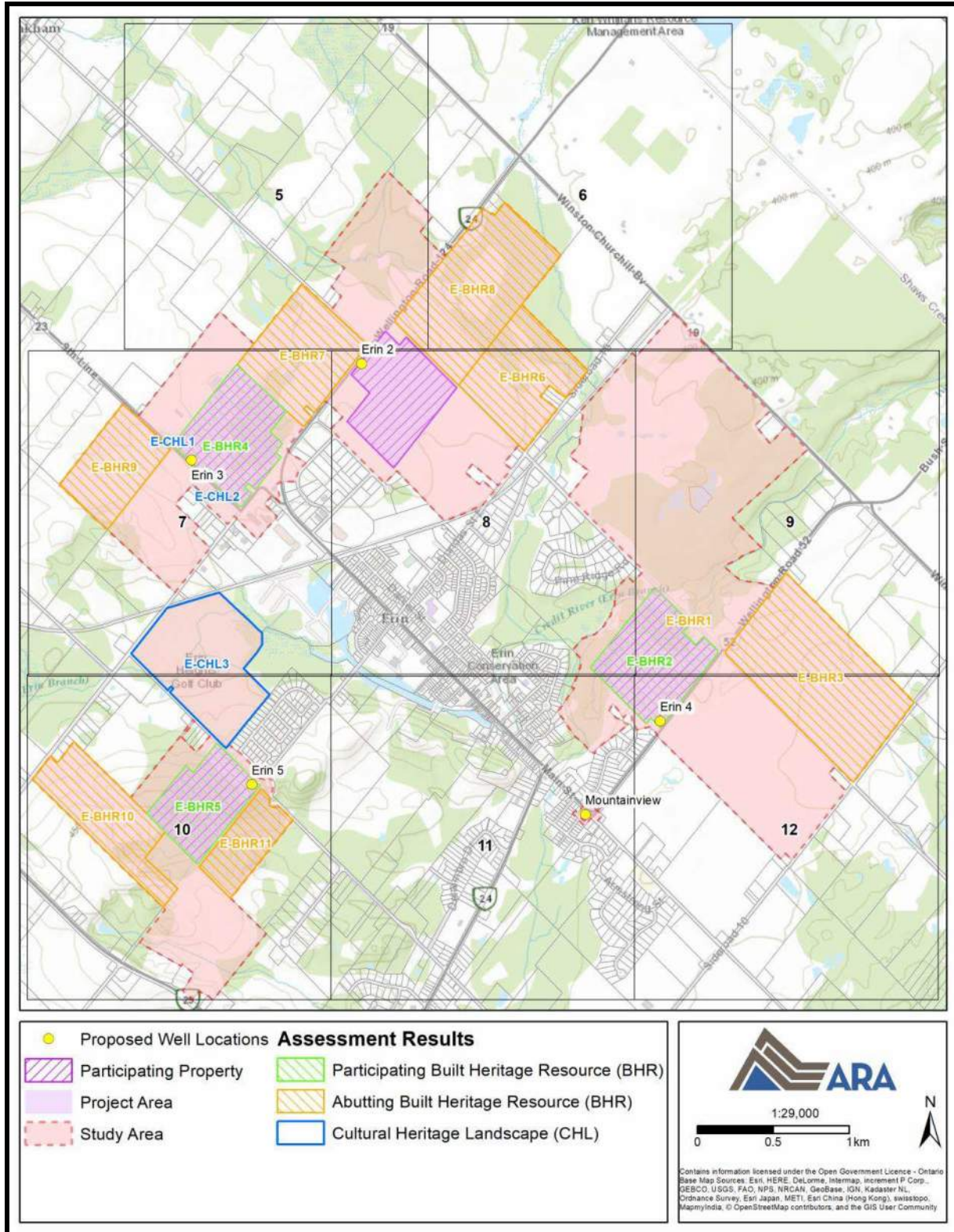
A summary of the results of the evaluation of the BHRs and CHLs against the criteria set out in O. Reg. 9/06 can be found in Table 3 and Table 4, and information sheets detailing the evaluation of each heritage resource can be found in Appendix A.

The assessment determined that all BHRs and CHLs met one or more of the O. Reg. 9/06 criteria. Accordingly, these can now be classified as properties with *identified* BHRs (E-BHR 1-11 and H-BHR 1-9) and CHLs (E-CHL 1-3). An overview of the locations of all identified BHRs and CHLs in the Hillsburgh Village study area appear on Map 8 and those in the Erin Village study area are illustrated on Map 9. More detailed information on the location of identified cultural heritage resources in both study areas are provided in the corresponding tiles numbered 1-12 (see Map 10-Map 21).

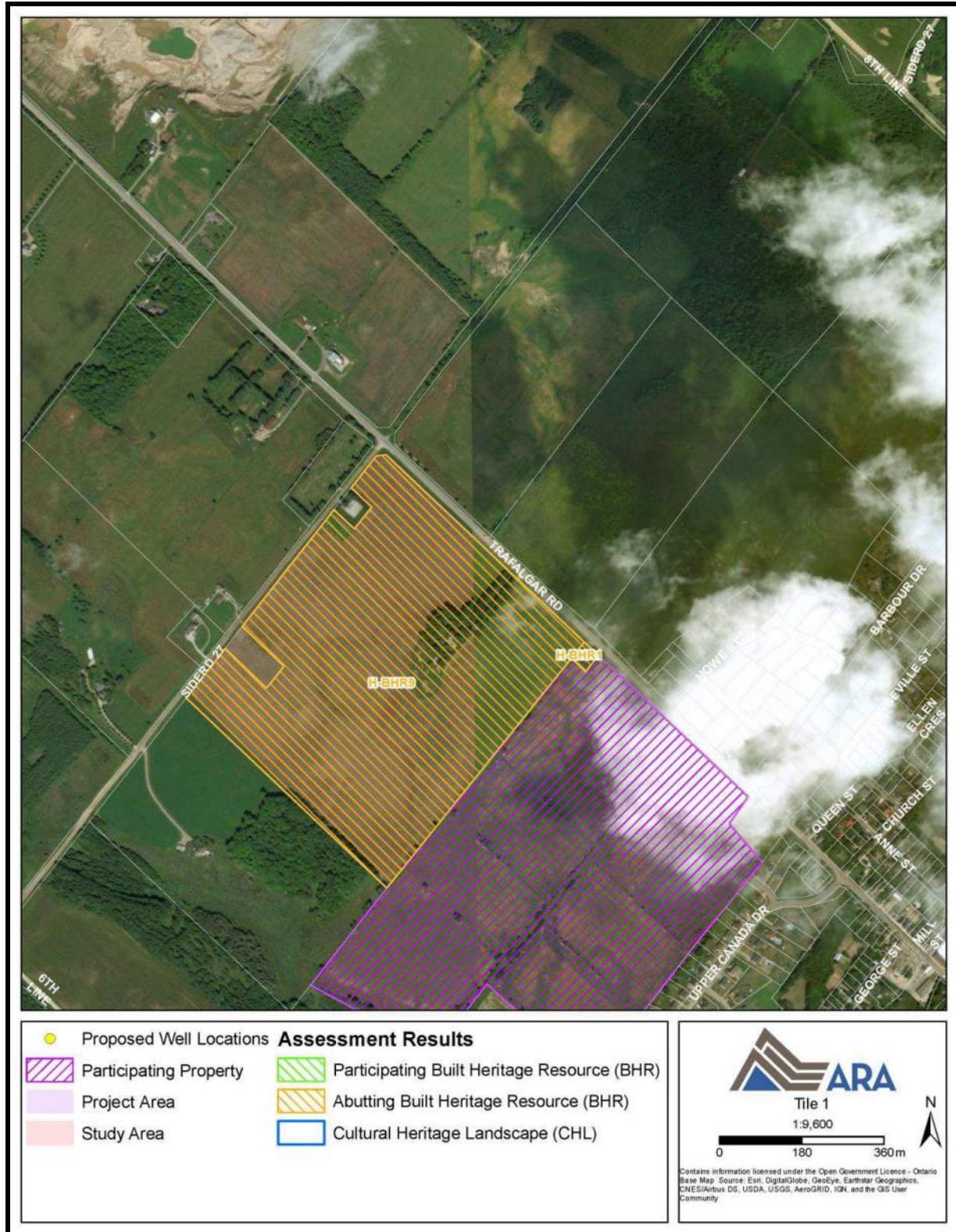




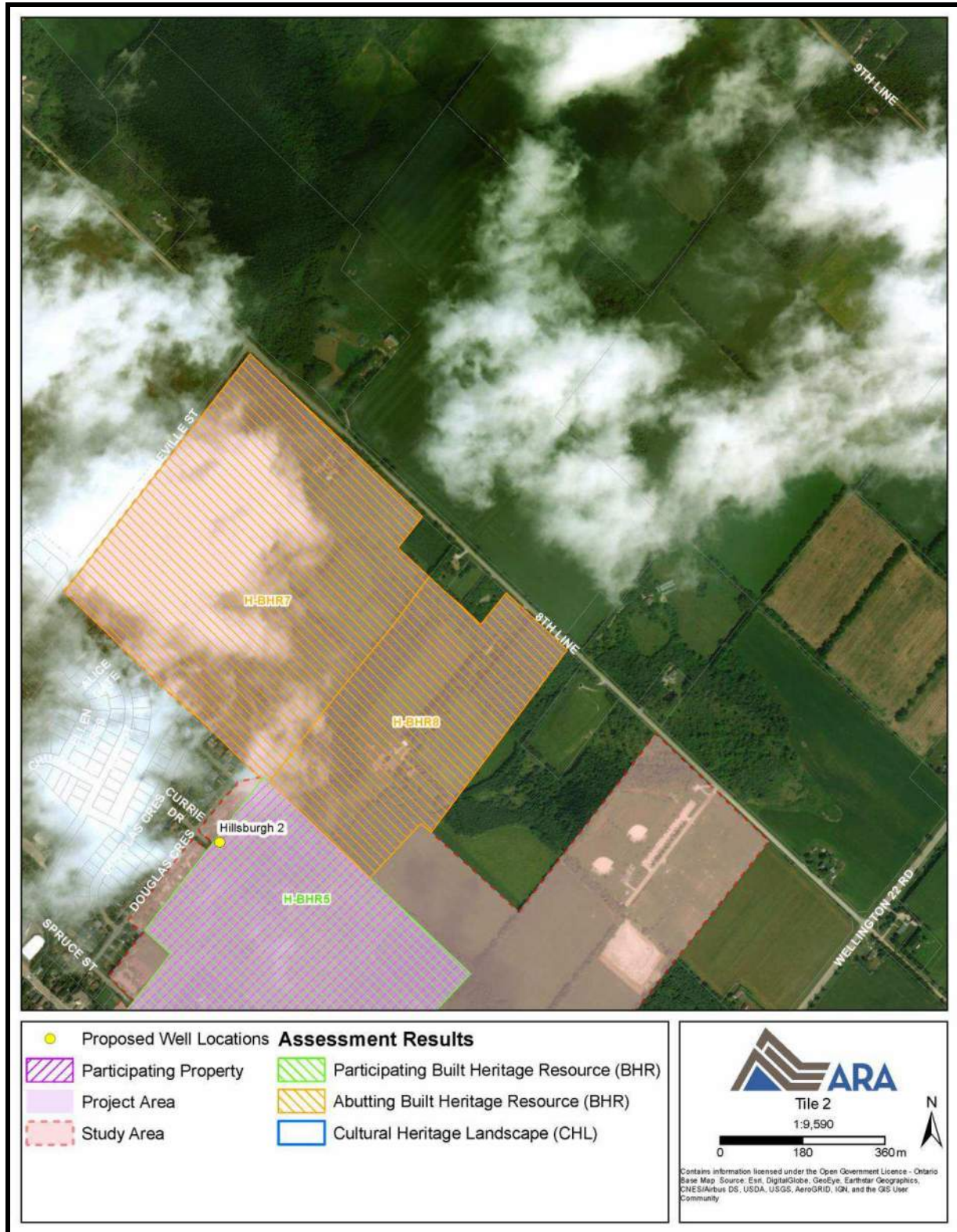
**Map 8: Hillsburgh Study Areas with BHRs Indicated**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



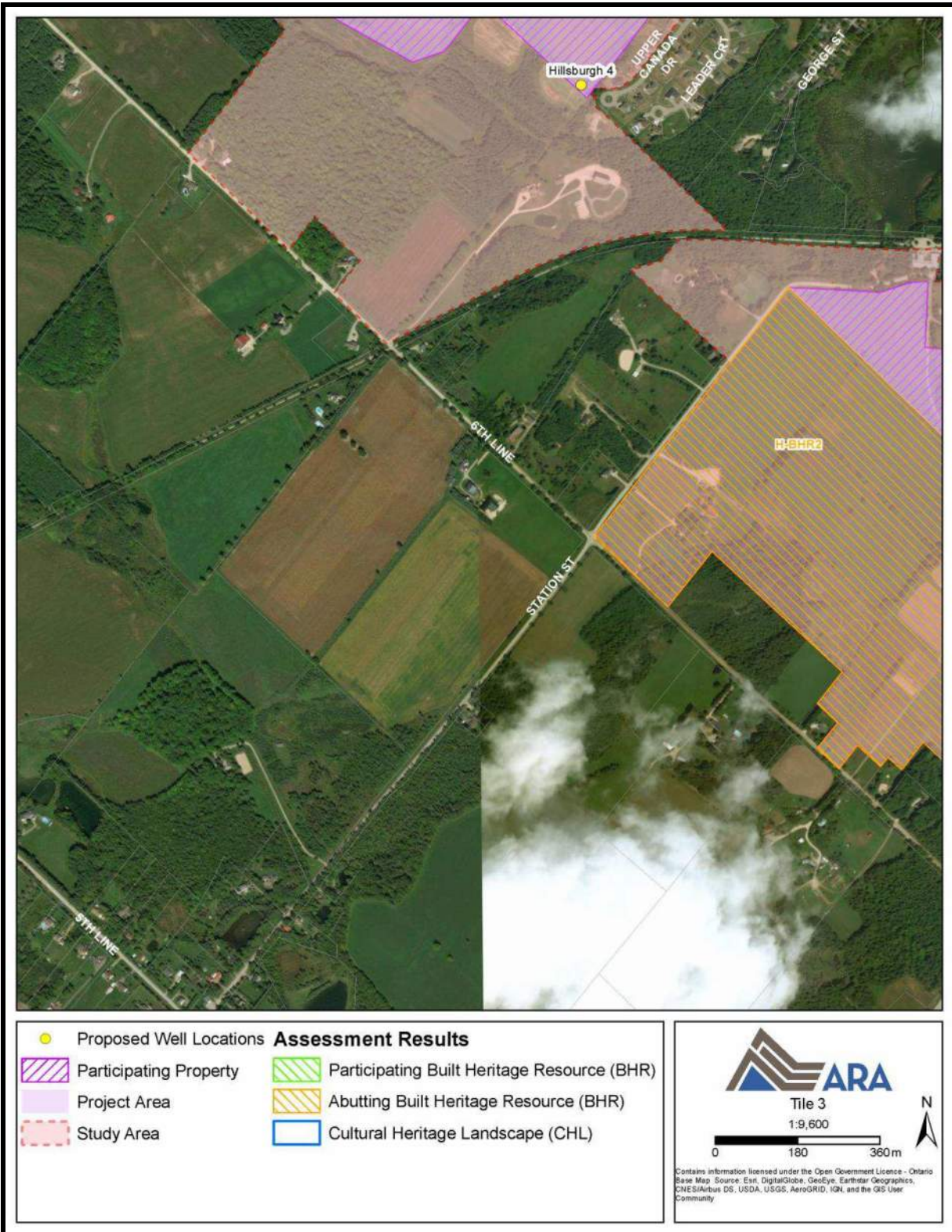
**Map 9: Erin Study Areas with BHRs and CHLs Indicated**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



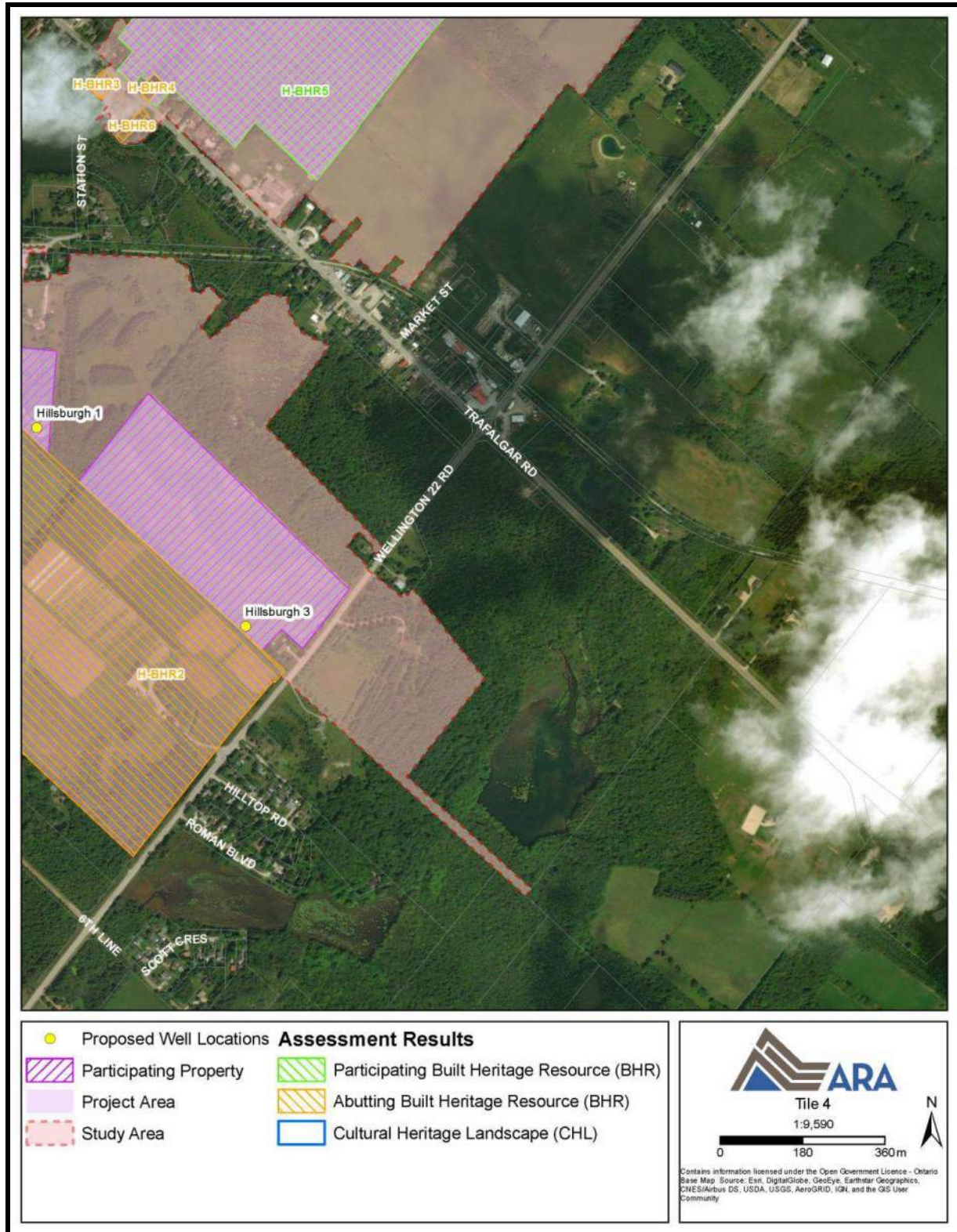
**Map 10: Hillsburgh Study Areas with BHRs Indicated – Tile 1**  
 (Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



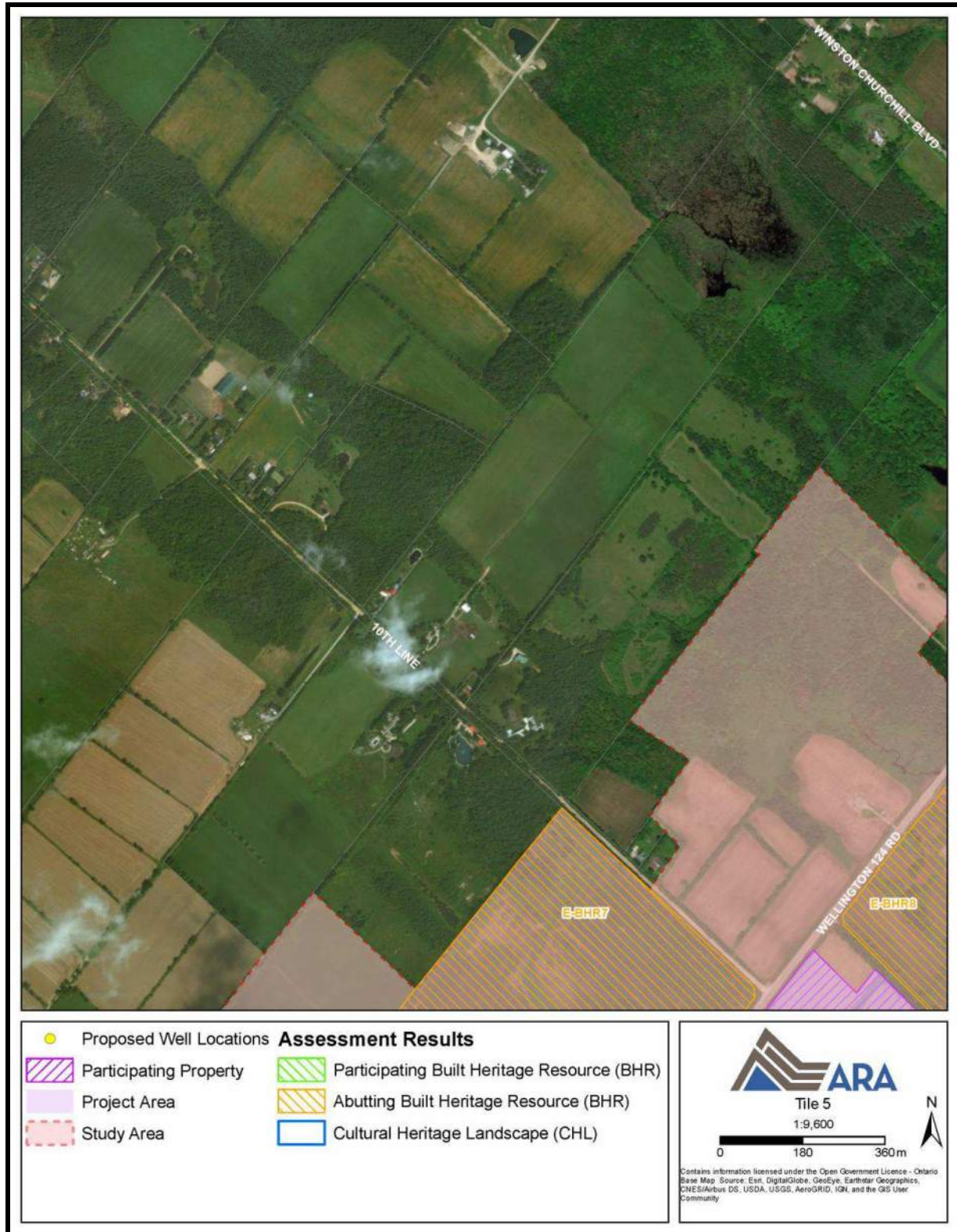
**Map 11: Hillsburgh Study Areas with BHRs Indicated – Tile 2**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



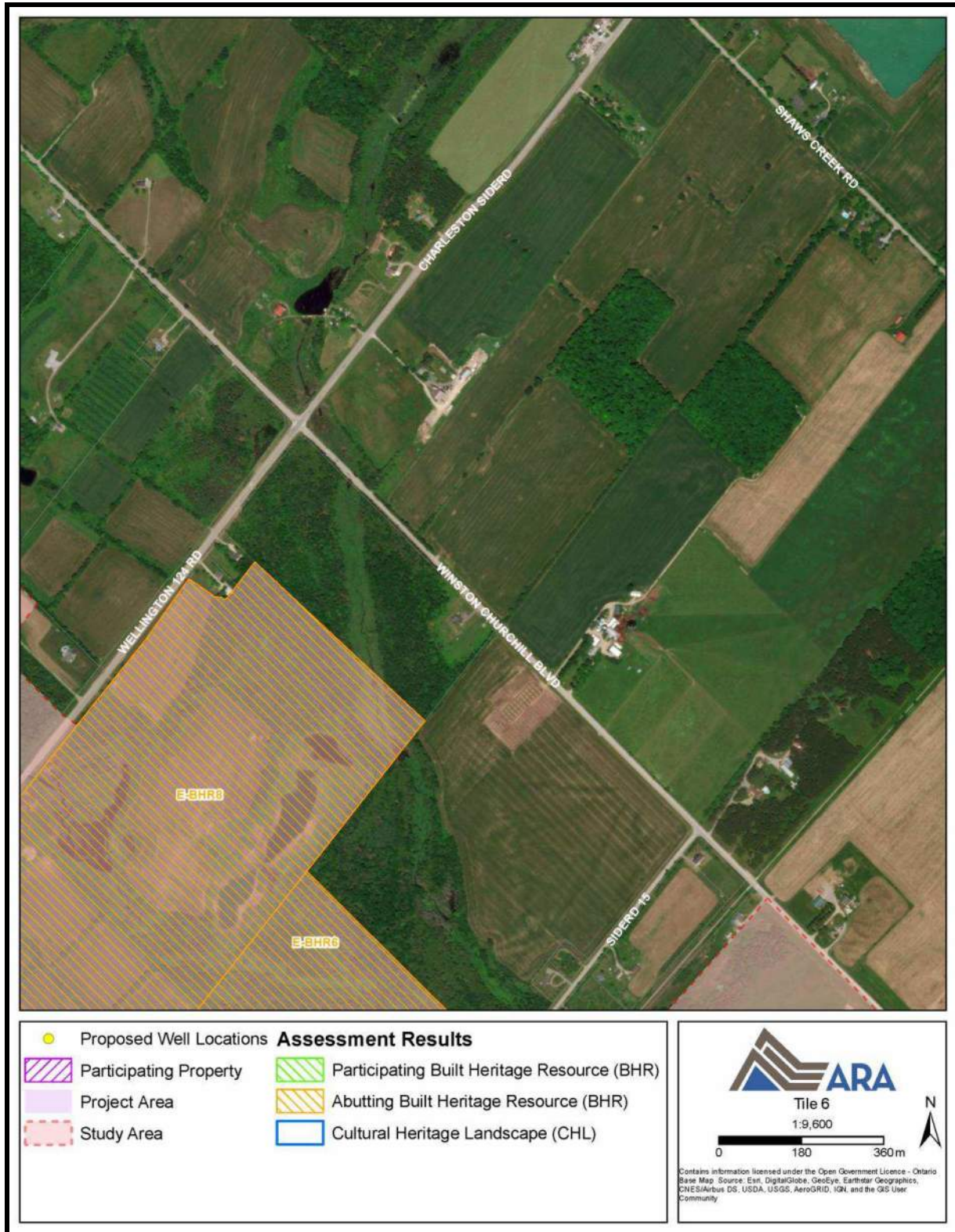
**Map 12: Hillsburgh Study Areas with BHRs Indicated – Tile 3**  
 (Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



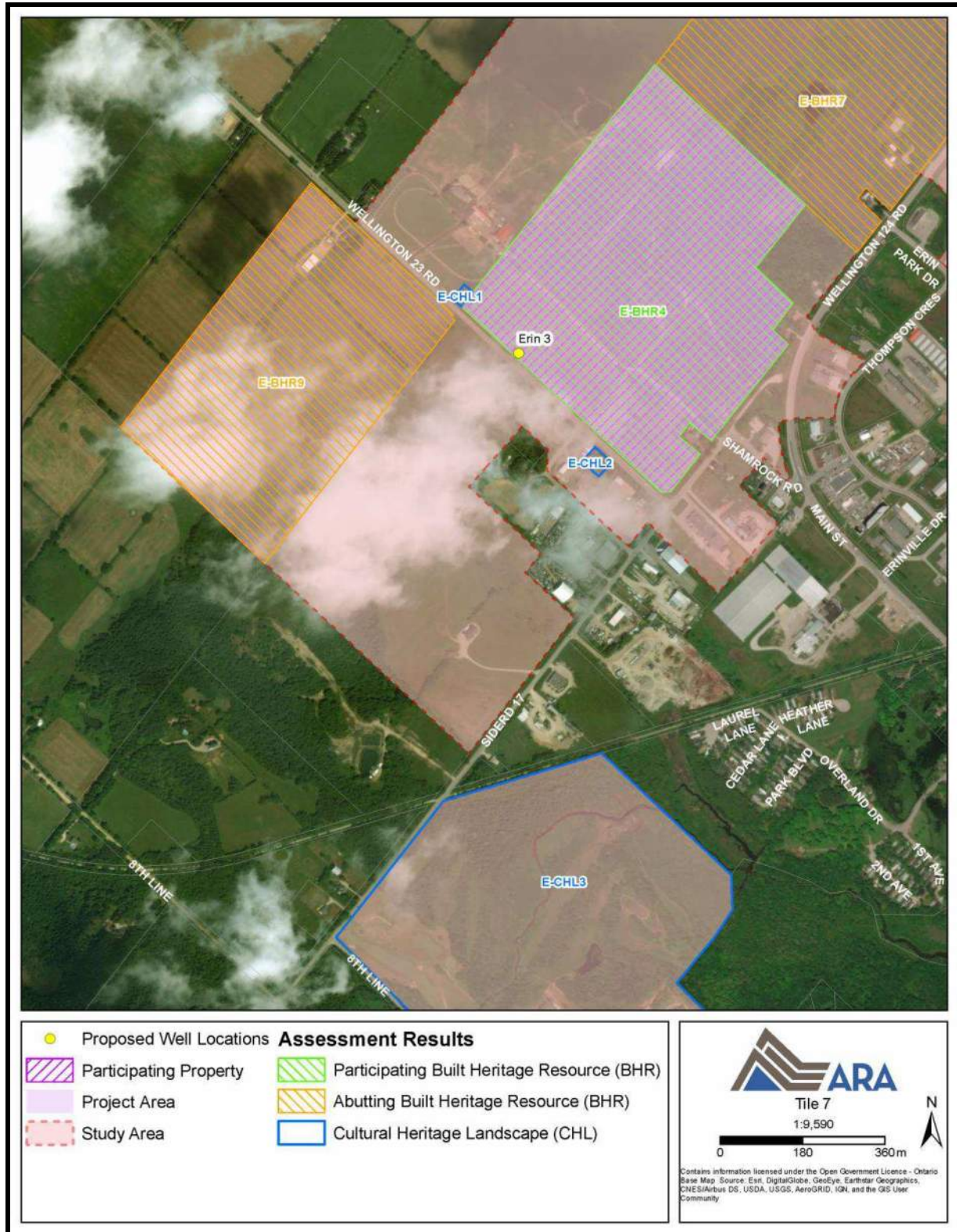
**Map 13: Hillsburgh Study Areas with BHRs Indicated – Tile 4**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



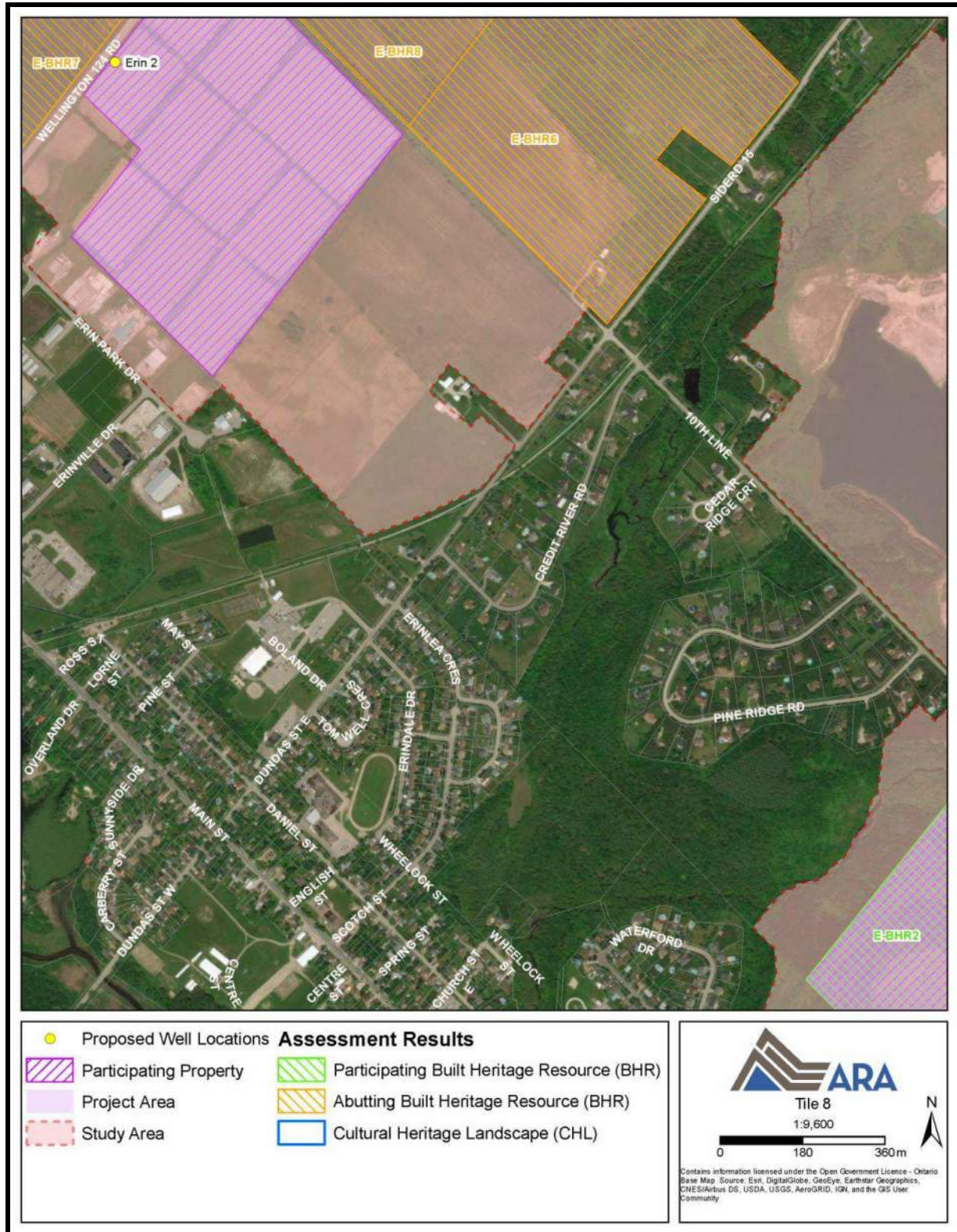
**Map 14: Erin Study Areas with BHRs Indicated – Tile 5**  
 (Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



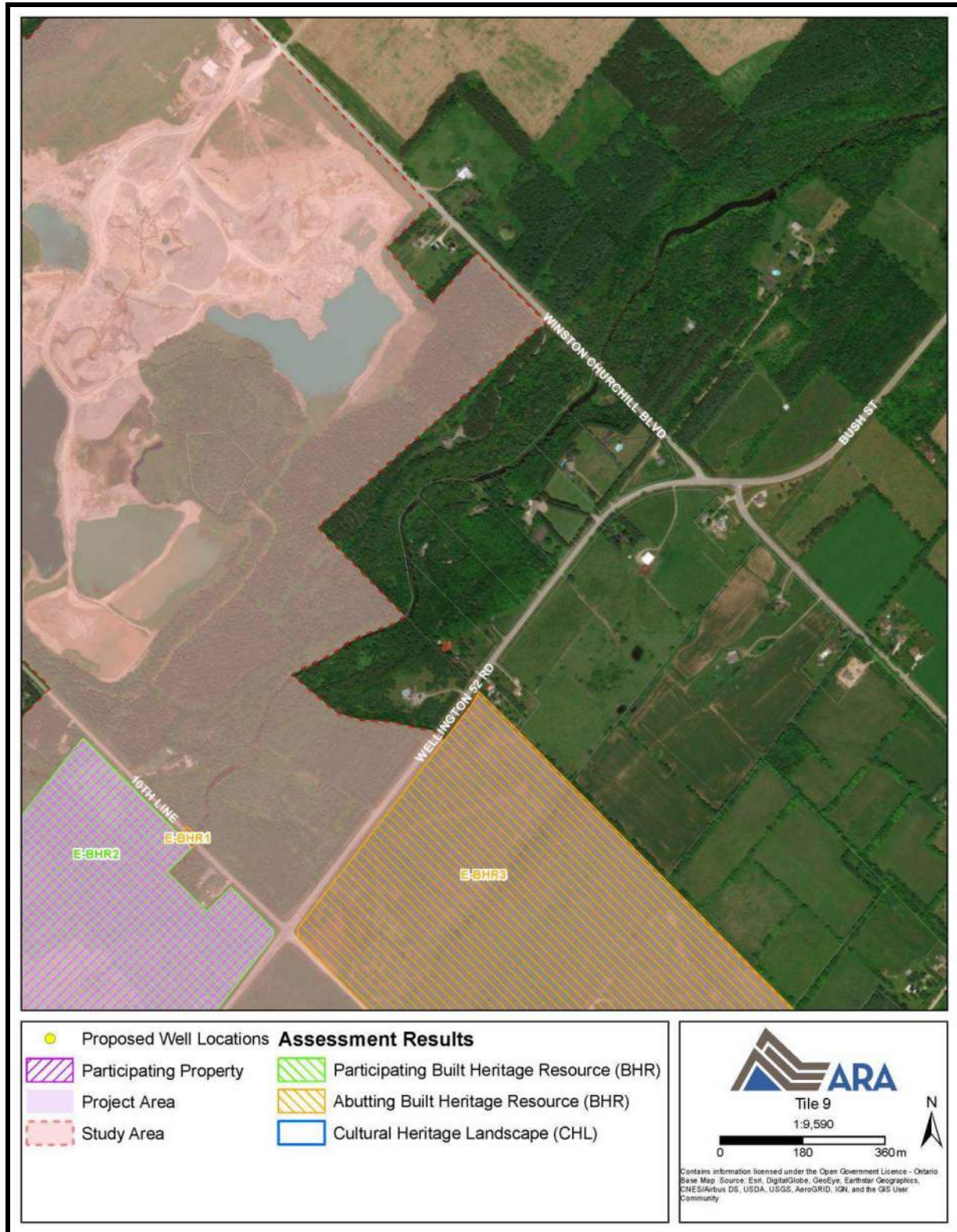




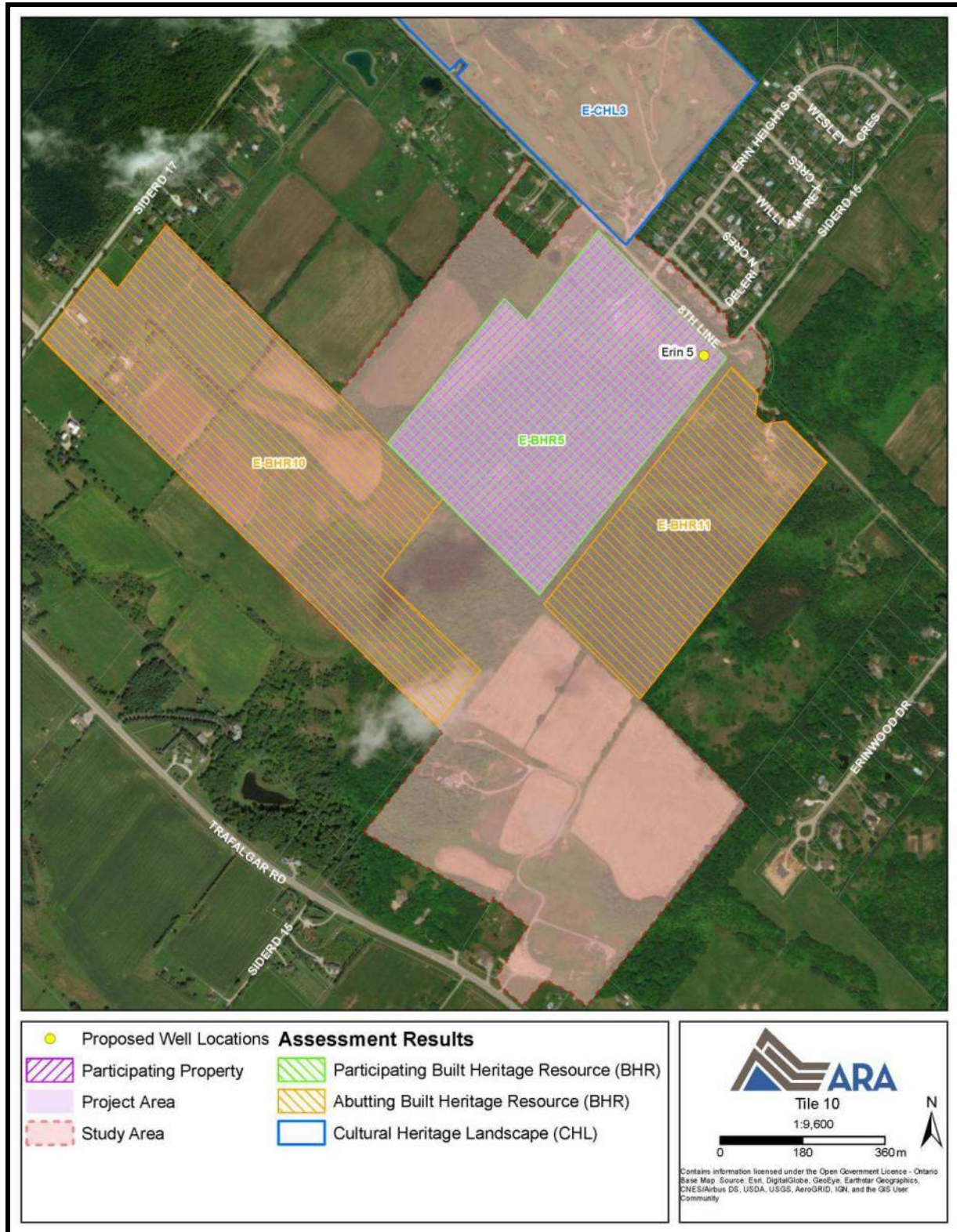
**Map 16: Erin Study Areas with BHRs and CHLs Indicated – Tile 7**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



**Map 17: Erin Study Areas with BHRs Indicated – Tile 8**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



**Map 18: Erin Study Areas with BHRs Indicated – Tile 9**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



**Map 19: Erin Study Areas with BHRs and CHLs Indicated – Tile 10**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



**Map 20: Erin Study Areas with BHRs Indicated – Tile 11**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



**Map 21: Erin Study Areas with BHRs Indicated – Tile 12**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)

**Table 3: BHRs and CHLs with CHVI**

Type and Number	Address/Name	Participating/ Abutting	CHVI (Y/N)	Criteria Met
H-BHR 1	5938 Trafalgar Road North	Abutting	Yes	Design or Physical Value, Contextual Value
H-BHR 2	9313 Station Street	Abutting	Yes	Design or Physical Value, Contextual Value
H-BHL 3	72 Trafalgar Road North/ Century Church Theatre	Abutting	Yes	Design or Physical Value, Historical or Associative Value, Contextual Value
H-BHR 4	63 Trafalgar Road North	Abutting	Yes	Design or Physical Value, Contextual Value
H-BHR 5	63A Trafalgar Road North	Participating	Yes	Design or Physical Value, Contextual Value
H-BHR 6	68 Trafalgar Road North	Abutting	Yes	Design or Physical Value, Contextual Value
H-BHR 7	5882 8th Line	Abutting	Yes	Design or Physical Value, Contextual Value
H-BHR 8	5848 8th Line	Abutting	Yes	Design or Physical Value, Contextual Value
H-BHR 9	5952 Wellington Road 24	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHR 1	10th Line north of Wellington Road 52	Abutting	Yes	Design or Physical Value, Historical or Associative Value, Contextual Value
E-BHR 2	9682 Wellington Road 52	Participating	Yes	Design or Physical Value, Contextual Value
E-BHR 3	5345 10th Line	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHR 4	9614 Side Road 17	Participating	Yes	Design or Physical Value, Contextual Value
E-BHR 5	5520 8th Line	Participating	Yes	Design or Physical Value, Contextual Value
E-BHR 6	5507 10th Line	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHR 7	9660 Wellington Road 124	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHR 8	9727 Wellington Road 124	Abutting	Yes	Contextual Value
E-BHR 9	5644 Wellington Road 23	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHR 10	9445 Side Road 17	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHR 11	5488 8th Line	Abutting	Yes	Design or Physical Value, Historical or Associative Value
E-CHL 1	5621 Wellington Road 23/ McAllister Family Cemetery	Abutting	Yes	Design or Physical Value, Historical or Associative Value, Contextual Value
E-CHL 2	5590 Wellington Road 23/ Erin Pioneer Cemetery	Abutting	Yes	Design or Physical Value, Historical or Associative Value, Contextual Value
E-CHL 3	5525 8th Line/ Erin Heights Golf Course	Abutting	Yes	Design or Physical Value, Historical or Associative Value, Contextual Value

**Table 4: Identified BHR and CHL Value Statements and Heritage Attributes**

Type and Number	Address/Name	Value Statement(s)	Heritage Attributes*
H-BHR 1	5938 Trafalgar Road North	<p>Representative example of a one-and-a-half-storey Gothic Revival farmhouse and agricultural complex.</p> <p>Elaborate detail and a high degree of craftsmanship displayed in the construction of the architectural elements of the Gothic Revival farmhouse.</p> <p>Supports the rural agricultural character of the area.</p>	<p>Key heritage attributes include: one-and-a-half-storey red brick Gothic Revival farmhouse; rectangular plan; three-bay symmetrical façade with two-bay side elevations; cut stone foundation; side gable roof; red brick chimney; yellow brick quoins and decorative band along the roofline; lancet window in the steeply pitched projecting centre gable with decorative vergeboard; two-over-two segmentally arched window openings with decorative yellow brick voussoirs and stone sills; covered front porch with decorative wood lintels; entrance door flanked by sidelights; one-storey bank barn with side gable roof, two centrally placed doors and barn board cladding; additional outbuildings; setback from the road on a manicured lawn surrounded by mature trees and agricultural fields.</p>
H-BHR 2	9313 Station Street	<p>Representative of an early agricultural complex with a farmhouse, outbuildings, barns and silo.</p> <p>Supports the rural agricultural character of the area.</p>	<p>Key heritage attributes include: two-storey vernacular farmhouse with gambrel roof; rectangular plan; red brick chimney; open front porch spanning the length of the façade; rectangular window openings; outbuildings, barns, silo ruin; setback from the road surrounded by manicured lawns, mature vegetation, agricultural fields.</p>
H-BHL 3	72 Trafalgar Road North/ Century Church Theatre	<p>Representative example of a vernacular church structure with Edwardian and Italianate influences.</p> <p>Associated with the Christian Disciples Church. Sixty-three charter members from the Coningsby congregation were part of the church when it was built in 1906 (Town of Erin n.d.). Also associated with the Erin Arts Foundation that now operates the building as the Century Church Theatre.</p> <p>Has the potential to yield information that contributes to an understanding of the Christian community and culture in Erin, specifically the Coningsby congregation.</p> <p>Supports the rural “small town” character of the area.</p> <p>Functionally linked to the community through its use as a live theatre venue. Historically linked to its surroundings as a former church.</p> <p>The structure is a landmark on the historic Trafalgar Road streetscape.</p>	<p>Key heritage attributes include: two-storey red brick structure with a multiple roof lines and gables; rectangular plan; asymmetrical façade; dentils; red brick buttresses; date stone; Italianate bell tower with hip roof, brick corbelling, paired arched windows; arched stained glass windows with brick voussoirs and rusticated stone sills; rectangular window openings with concrete voussoirs and rusticated stone sills; pedimented entryway supported by round columns on both sides of the façade; location on historic Trafalgar Road streetscape.</p>



Type and Number	Address/Name	Value Statement(s)	Heritage Attributes*
H-BHR 4	63 Trafalgar Road North	Representative example of a residential structure with Italianate elements.  Supports the character of Hillsburgh's historic main street.	Key heritage attributes include: two-storey, three-bay red brick residential structure with Italianate elements; L-shaped plan; hip roof; wide overhanging eaves; paired brackets; red brick chimney; decorative yellow brick quoining; segmentally arched two-over-two windows with stone sills and decorative yellow and red brick voussoirs; porch over entrance with hip roof and decorative vergeboard; transom over informal entrance; set back from the road on a rise of land.
H-BHR 5	63A Trafalgar Road North	Representative example of a Gothic Revival farmhouse.  Supports the rural agricultural character of the area.	Key heritage attributes include: one-and-a-half-storey red brick Gothic Revival farmhouse; side gable roof and projecting front gable with window; two chimneys; setback from the road surrounded by dense vegetation and agricultural fields.
H-BHR 6	68 Trafalgar Road North	Representative example of a two-storey Gothic Revival residential structure.  Elaborate detail and a high degree of craftsmanship displayed in the construction of the architectural elements of the Gothic Revival house.  Supports the residential character of Hillsburgh's historic main street.	Key heritage attributes include: two-storey red brick Gothic Revival residential structure; L-shaped plan; asymmetrical façade; cut stone foundation; steeply pitched gables; red brick chimney; date stone; open porch; decorative vergeboard; yellow brick quoins; segmentally arched window openings with stone sills and decorative yellow and red brick voussoirs; two-over-two and one-over-one windows; segmentally arched door opening with decorative yellow and red brick voussoirs; bay window with cornice, brackets and corbelled red and yellow brickwork; set back from the street surrounded by mature trees.
H-BHR 7	5882 8th Line	Representative example of a mid-nineteenth century vernacular stone residential structure.  Supports the rural agricultural character of the area.	Key heritage attributes include: one-and-a-half-storey vernacular residential field stone structure; rectangular plan; side gable roof with return eaves; chimney, rectangular window openings with plain sills and lintels; stone and metal entrance gates; split rail fence; set back from the road; screened by mature vegetation; located on a manicured lawn surrounded by agricultural fields.
H-BHR 8	5848 8th Line	Representative example of an agricultural complex, including a bank barn and square sandstone home.  Supports the rural agricultural character of the area.	Key heritage attributes include: square sandstone residential structure; bank barn; long driveway flanked by vegetation.
H-BHR 9	5952 Wellington Road 24	Representative example of a vernacular residential structure with Gothic Revival details.  Supports the rural agricultural character of the area.	Key heritage attributes include: two-storey red brick vernacular residential structure with Gothic Revival details; square plan; front gable roof; red brick chimney; cut stone quoining; tall rectangular and segmentally arched door and window openings; rusticated stone lintels; simple stone sills; second storey balcony with decorative railing and vergeboard; setback from the road and accessed by a long driveway flanked by mature trees; surrounded by manicured lawns and agricultural fields.

Type and Number	Address/Name	Value Statement(s)	Heritage Attributes*
E-BHR 1	10th Line north of Wellington Road 52	<p>Rare example of a concrete bowstring arch bridge, a design of particular importance to Wellington County where the style was once prolific. Today, few such structures remain, making this bridge a rare example.</p> <p>Direct association with the theme of technical advancement in bridge construction and the use of concrete, as well as transportation and agriculture. This type of bridge is indicative of “the transition from horse-drawn vehicles to motorized vehicles and farm equipment” (HRC 2013:7).</p> <p>Yields information regarding changes in methods of transportation and agricultural technologies.</p> <p>Charles Mattaini is credited with bringing the concrete bowstring arch design and advancements in the use of concrete in bridge construction to southern Ontario from his birthplace in Italy. He built many structures of this type in Wellington County between 1903 and 1929 (HRC 2013:7).</p> <p>Supports the rural agricultural character of the area. Is part of a group of similar concrete bowstring arch bridges in Wellington County.</p> <p>Physically and functionally linked to its surroundings by providing a crossing over a waterway. Historically linked to its surroundings by its association with advancements in transportation and agricultural technologies.</p>	<p>Key heritage attributes include: single-span concrete bowstring arch bridge.</p>
E-BHR 2	9682 Wellington Road 52	<p>Representative example of a vernacular farmhouse with Edwardian influences.</p> <p>Supports the rural agricultural character of the area.</p>	<p>Key heritage attributes include: two-storey rusticated concrete block farmhouse with a hip roof, rectangular plan, asymmetrical façade and rectangular window openings with plain sills; wood barn with a wide front gable roof and attached lean-to shelter; structures situated on a hill among vegetation and mature trees setback a short distance from the road.</p>
E-BHR 3	5345 10th Line	<p>Representative example of a two-storey rural residential structure with Edwardian and Queen Anne details.</p> <p>Supports the rural agricultural character of the area.</p>	<p>Key heritage attributes include: two-storey red brick cladding; yellow brick quoining; rectangular plan; hip roof; wide overhanging eaves; two red brick chimneys; corner entryway flanked by quoining with a second-storey wood balcony and decorative vergeboard; rectangular window openings with decorative brick voussoirs and plain stone sills; outbuildings; split rail fence; setback a short distance from the road among rural agricultural fields.</p>
E-BHR 4	9614 Side Road 17	<p>Representative example of a vernacular farmhouse.</p> <p>Supports the rural agricultural character of the area.</p>	<p>Key heritage attributes include: two-storey vernacular farmhouse with board and batten siding; irregular plan; asymmetrical façade; low pitched front and side gable roof; stone chimney; rectangular window openings.</p>

Type and Number	Address/Name	Value Statement(s)	Heritage Attributes*
E-BHR 5	5520 8th Line	Representative example of an agricultural complex with a bank barn. Supports the rural agricultural character of the area.	Key heritage attributes include: bank barn with a gable roof and an open shelter attached to the first storey; rectangular plan; vertical barn board cladding; field stone foundation; entryway and rectangular window openings; setback from the road among agricultural lands.
E-BHR 6	5507 10th Line	Representative example of an agricultural complex. Supports the rural agricultural character of the area	Key heritage attributes include: agricultural complex with a bank barn with gable roof and vertical barn board; outbuildings; setback from the road among agricultural lands.
E-BHR 7	9660 Wellington Road 124	Representative example of a Gothic Revival farmhouse. Elaborate detail and a high degree of craftsmanship displayed in the construction of the architectural elements of the Gothic Revival farmhouse. Supports the rural agricultural character of the area.	Key heritage attributes include: one-and-a-half-storey Gothic Revival farmhouse with an L-shaped plan and addition; date stone; red brick cladding; yellow brick quoining and corbelling; cross gable roof; steeply pitched front gable on the single-storey side wing; decorative vergeboard; rectangular window openings with plain sills and decorative yellow brick voussoirs; bay window; whitewashed barns with low gambrel roofs; silo; setback from the road on a manicured lawn; surrounded by mature vegetation; flanked by a tree lined driveway; split rail fence.
E-BHR 8	9727 Wellington Road 124	Supports the rural agricultural character of the area.	Key heritage attributes include: concrete silo ruin; setback from the road among agricultural lands and mature vegetation.
E-BHR 9	5644 Wellington Road 23	Representative example of a Gothic Revival farmhouse. Supports the rural agricultural character of the area.	Key heritage attributes include: one-and-a-half-storey building with a side and front gable roof; L-shaped plan constructed on sloped land; red brick cladding; painted quoining; concrete block chimney; decorative brickwork located beneath roofline; three-bay façade with projecting centre bay with steeply pitched gable and former lancet window opening; rectangular window openings with plain sills and decoratively painted lintels; front entrance with transom and sidelights; setback from the road and screened by mature trees; multiple outbuildings; split-rail fence.
E-BHR 10	9445 Side Road 17	Representative example of a Queen Anne residential structure and agricultural complex. Supports the rural agricultural character of the area.	Key heritage attributes include: two-storey Queen Anne residential structure; asymmetrical façade; multiple rooflines, including a hip roof, side gable roof and steeply pitched gable roof over the entryway; wide, overhanging eaves; wrap-around verandah; simple rectangular windows and openings; turret with rectangular bay windows; second-storey oval window; setback a significant distance from the road; several outbuildings on the property; surrounded by manicured lawns and agricultural fields.
E-BHR 11	5488 8th Line	Rare and early example of a log cabin. Has the potential to yield information that contributes to an understanding of the early settlers of Erin Township and their construction methods and settlement patterns.	Key heritage attributes include: one-and-a-half-storey log cabin; rectangular plan; side gable roof; setback from the road on a lot surrounded by mature trees.

Type and Number	Address/Name	Value Statement(s)	Heritage Attributes*
E-CHL 1	5621 Wellington Road 23/ McAllister Family Cemetery	<p>Representative example of a rural family cemetery in a historically agricultural community.</p> <p>Associated with the early settlers of Erin Township.</p> <p>Yields information of members of the McAllister family buried in the cemetery.</p> <p>Visually linked to its surroundings due to its early establishment in Erin Township and historically linked to its surroundings as the resting place of early settlers of the community.</p>	Key heritage attributes include: shape and texture of the original topography; variety and design of commemorative memorials, including headstones, inscriptions, stone types and stone placement.
E-CHL 2	5590 Wellington Road 23/ Erin Pioneer Cemetery	<p>Representative example of a local pioneer cemetery.</p> <p>Association with prominent early settlers of Erin Township, including Daniel McMillan (founder of Erin Village).</p> <p>Yields information regarding the early settlers of the community that are buried in the cemetery.</p> <p>Visually linked to the surroundings due to its early establishment in Erin Township. Historically linked to the surroundings as the resting place of early settlers of the community.</p>	Key heritage attributes include: shape and texture of the original topography; the variety and design of the commemorative memorials, including headstones, inscriptions, stone types and stone placement.
E-CHL 3	5525 8th Line/ Erin Heights Golf Course	<p>Representative example of a mid-twentieth century golf course designed in the picturesque style with rolling hills, fairways dotted with maple and willow trees.</p> <p>Representative example of recreational structures associated with a mid-twentieth century golf course, including the set of six rustic stone cabins.</p> <p>Representative example of a rural Edwardian residential structure.</p> <p>Has the potential to yield information that contributes to an understanding of community and recreation in Erin Township beginning in the 1950s.</p> <p>The topography of rolling hills provides a visual link to its surroundings. Functionally linked to its surroundings through the landscapes historic recreation function as a golf course.</p> <p>The golf course is known as the “Pearl in the Caledon Hills” (EHGC n.d.).</p>	Key heritage attributes include: 18-hole golf course set on a fairway of rolling hills; maple and willow trees; split-rail fence; two-storey red brick Edwardian structure with a hip roof, brick chimney, square and rectangular window openings; six single-storey cedar log cabins with mortar and stone cladding, side gable roofs and wood quoins, rectangular and square window openings with plain lintels and sills.

\*Heritage attributes may include, but are not limited to, those listed in this table.

## 6.0 DEVELOPMENT PLAN

The Town of Erin requires water infrastructure upgrades and is evaluating potential well locations in Erin and Hillsburgh.

The proposed upgrades include:

- New well site locations have the potential to include the construction of well houses similar in construction to Well E7 in Erin Village (see Image 12);
- New ground level reservoirs for disinfection treatment;
- Masonry superstructures with anticipated dimensions in the range of 20 m to 25 m long by 10 m to 15 m wide and flat roofs;
- Chain link fence surrounding the well house.



**Image 12: Example of Well House Construction**  
(Triton Engineering: Email dated January 4, 2018)

## 7.0 ANALYSIS OF POTENTIAL IMPACTS

As discussed in Section 2.0, impacts can be classified as either direct or indirect. Direct impacts (those that physically affect the heritage resources themselves) include, but are not limited to: initial project staging, excavation/levelling operations, construction of access roads and renovations or repairs to existing structures. Indirect impacts include but are not limited to: alterations that are not compatible with the historic fabric and appearance of the area, the creation of shadows that alter the appearance of an identified heritage attribute, the isolation of a heritage attribute from its surrounding environment, the obstruction of significant views and vistas, and other less-tangible impacts.

The definition of negative impacts presented in *InfoSheet #5: Heritage Impact Assessments and Conservation Plans* (MCL 2006b:3) can be effectively adapted into criteria for identifying both types of impacts. The results of this evaluation of impacts to the identified BHRs in the Hillsburgh study area are summarized in Table 5, and those to the identified BHRs and CHLs in the Erin study area are summarized in Table 6.

**Table 5: Impact Evaluation of BHRs in Hillsburgh Project Area**  
(Adapted from MCL 2006b:3)

Type of Negative Impact	Applicable to Identified BHRs/CHLs? (Y/N)	Comments
Destruction of any, or part of any, significant heritage attributes.	N	There is no planned destruction of the heritage attributes of the BHRs by the proposed well sites.
Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance.	N	The proposed well sites will not impact the historic fabric and appearance of the BHRs. Identified participating BHRs are located 350 m away from the proposed well sites and are screened by vegetation and the landscape's topography.
Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden.	N	No shadows will be cast near any of the identified BHRs. All BHRs are located a distance away from the proposed wells.
Isolation of a heritage attribute from its surrounding environment, context or significant relationship.	N	None of the heritage attributes outlined in Table 4 will be isolated from their surrounding environment, context or significant relationship.
Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features.	N	The proposed project infrastructure will not result in the direct or indirect obstruction of any significant views or vistas within, from, or of built and natural features associated with the BHRs. As Table 4 demonstrates, significant views and vistas are not heritage attributes of any of the properties with identified BHRs.
A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces.	N	No rezoning will occur.
Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.	N	These potential impacts have been addressed in separate environmental and archaeological reports.

**Table 6: Impact Evaluation of BHRs and CHLs in Erin Project Area**  
(Adapted from MCL 2006b:3)

Type of Negative Impact	Applicable to Identified BHRs/CHLs? (Y/N)	Comments
Destruction of any, or part of any, significant heritage attributes.	N	There is no planned destruction of the heritage attributes of the BHRs or CHLs by the proposed well sites.
Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance.	Y	The proposed infrastructure construction at the well sites is not sympathetic with the historic fabric and appearance of the BHRs and CHLs. However, identified BHRs and CHLs in proximity are located a distance away and the impact will be minimal. Identified participating BHRs are located between 175 to 550 m away from the proposed well sites and many are screened by vegetation and the landscape's topography. E-BHR-5 (Erin Well Site 5 participating property) and E-CHL-1 (abutting Erin Well Site 3) are located closest to the well sites with no vegetation or topographical features to screen the proposed well houses.
Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden.	N	No shadows will be cast near any of the identified BHRs or CHLs. All BHRs and CHLs are located a distance (175 m to 550m) away from the proposed wells houses.
Isolation of a heritage attribute from its surrounding environment, context or significant relationship.	N	None of the heritage attributes outlined in Table 4 will be isolated from their surrounding environment, context or significant relationship.
Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features.	N	The proposed project infrastructure will not result in the direct or indirect obstruction of any significant views or vistas within, from, or of built and natural features associated with the BHRs or CHLs. As Table 4 demonstrates, significant views and vistas are not heritage attributes of any of the properties with identified BHRs or CHLs.
A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces.	N	No rezoning will occur.
Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.	Y	These potential impacts have been addressed in separate environmental and archaeological reports. ARA is concurrently completing a Stage 1 and 2 archaeological assessment for the Urban Centre Water Servicing Class EA, and through this report any potential impacts to E-CHL-1 (McAllister Family Cemetery) resulting from the construction of the Erin Well Site 3 adjacent to the cemetery will be evaluated.

As Table 5 and Table 6 summarize, the heritage attributes of H-BHR 1-9, E-BHR 1-11 and E-CHL 1-3 will not be directly impacted by the proposed development. The heritage attributes of the BHRs and CHLs are largely defined by intrinsic values (e.g., those rooted in the architecture

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of the buildings or historical associations). These values will continue to exist with or without the construction of infrastructure at the proposed well sites.

However, the planned upgrades are not sympathetic with the historic fabric and appearance of the identified BHRs and CHLs. In addition, construction of Erin Well Site 3 adjacent to E-CHL-1 (McAllister Family Cemetery) which may impact this known archaeological resource.



## 8.0 MITIGATION MEASURES

When adverse impacts to cultural heritage resources are unavoidable as a result of a proposed project, it is necessary to examine the feasibility of mitigation strategies and implement the most appropriate action. Table 7 presents generally-accepted mitigation options or alternatives as they apply to the identified impacts on the cultural heritage resources (BHRs and CHLs) identified within the project areas.

**Table 7: Mitigation Measures**  
(Adapted from MCL 2006b:4)

Method	Description	Applicable? (Y/N)	Mitigation Measures Proposed
Alternative development approaches.	This measure allows for alternative development approaches that can be considered during the preliminary design phases. Alternatives can involve a different configuration or alignment of the proposed development.	N	Not applicable. The proposed well sites do not have any direct impacts on the BHRs or CHLs.
Isolating development and site alteration from significant built and natural features and vistas.	This measure involves installing natural or built buffers to protect heritage resources and views.	Y	The proposed well houses are set back from BHRs and CHLs and will not result in isolation or the obstruction of significant views.  Currently, vegetation buffers and topography screens the well site from adjacent BHRs and CHLs. Construction activities should be planned so these screenings are maintained.  The exception is E-BHR-5 (Erin Well Site 5 participating property) and E-CHL-1 (abutting Erin Well Site 3) which are located closest to the well sites with no vegetation or topographical features to screen the proposed well houses. The introduction of additional screening such as shrubs, trees or fencing (i.e. wood fencing) to screen the well house elevations closest to the heritage resources may enhance the views from these resources.
Design guidelines that harmonize mass, setback, setting and materials.	This measure ensures that any proposed development is compatible with the cultural heritage resources in the study area and also with the landscape character.	N	Not applicable. The proposed well sites are set back from BHRs and CHLs.
Limiting height and density.	This measure ensures that any cultural heritage resources are not visually obscured or dwarfed by the proposed new development.	N	Not applicable. The proposed well houses will be one storey and will not visually obscure or dwarf any BHRs or CHLs.
Allowing only compatible infill and additions.	This measure ensures that any proposed development is compatible with the existing cultural heritage resources in the study area.	N	Not applicable.

Method	Description	Applicable? (Y/N)	Mitigation Measures Proposed
Reversible alterations.	This measure streams from the Principles in the Conservation of Historic Properties, the ability for a resource or landscape to return to its original condition.	N	The proposed infrastructure at the well sites are reversible.
Buffer zones, site plan control, and other planning mechanisms.	This measure ensures that any proposed development includes buffers and project layout can be discussed at the site plan stage.	N	Not applicable. The proposed infrastructure at the well sites will not affect the adjacent cultural heritage resources.

As outlined in Table 7 one potential impact of the proposed well sites is that they are not sympathetic with the historic fabric and appearance of the BHRs and CHLs. One way to address this impact is the introduction of additional screening such as shrubs, trees or fencing (i.e. wood fencing) to ensure adequate screening of the Erin 3 and 5 well houses, which are proposed in proximity to E-CHL-1 and E-BHR-5. This screening may also enhance the view from both cultural heritage resources.

In addition to the above suggested mitigation measures, ARA is concurrently completing a Stage 1 and 2 archaeological assessment for the Urban Centre Water Servicing Class EA, and through this report any potential impacts to E-CHL-1 (McAllister Family Cemetery) resulting from the construction of the Erin Well Site 3 adjacent to the cemetery will be evaluated.

## 9.0 RECOMMENDATIONS AND CONCLUSIONS

The following BHRs in the Erin and Hillsburgh Village study areas were identified as having potential CHVI: H-BHR 5 and E-BHRs 2, 4, 5 are participating properties (proposed well sites), whereas H-BHRs 1-4 and 6-9, and E-BHRs 1, 3, and 6-11 are located on properties that abut the project locations. Three CHLs, E-CHLs 1-3, were also identified as having potential CHVI within the Erin Village study area. There were no CHLs identified in the Hillsburgh study area.

All potential impacts to the properties within the project areas and those abutting were evaluated for potential project impacts. The heritage attributes of all the identified BHRs and CHLs will not be directly negatively impacted by the proposed construction of well sites. The heritage attributes of the BHRs and CHLs are largely defined by intrinsic values (e.g., those rooted in the architecture of the buildings or associative values). These values will continue to exist with or without the installation of the proposed well site infrastructure. It was determined that one potential impact of the proposed well sites is that they are not sympathetic with the historic fabric and appearance of the BHRs and CHLs. Further, Erin Well Site 3 is planned adjacent to E-CHL-1 (McAllister Family Cemetery) which may impact this known archaeological resource.

The following conservation/mitigation strategies are suggested based on the results of this Cultural Heritage Evaluation Report:

- To ensure adequate screening of the Erin 3 and 5 well houses, which are proposed in proximity to E-CHL-1 and E-BHR-5, respectively, it is recommended that screening options more opaque than chain link fencing (e.g. wood fencing, row of vegetation) be explored bordering well house elevations closest to the heritage resources;
- Existing vegetation screening the proposed well sites should be maintained during design and construction phases;
- If it is later determined that the Mountainview Well Site is a viable well site, abutting properties will need to be evaluated to identify any BHRs and CHLs with the potential to be impacted by the proposed construction;
- ARA is concurrently completing a Stage 1 and 2 archaeological assessment for the Urban Centre Water Servicing Class EA, and through this report any potential impacts to E-CHL-1 (McAllister Family Cemetery) resulting from the construction of the Erin Well Site 3 adjacent to the cemetery will be evaluated;
- Previously-unrecognized cultural heritage resources with CHVI discussed in this report *may* be worthy of inclusion on the Municipal Heritage Register; and
- This Cultural Heritage Evaluation Report should be provided to the planners responsible for heritage matters at the Town of Erin and Wellington County.

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**Appendix A: Identified Built Heritage Resources and Cultural Heritage Landscapes**

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 1**

<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	5938 Trafalgar Road North
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 26, Concession 7
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 4)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	After 1877
<b>Description</b>	<ul style="list-style-type: none"> <li>• One-and-a-half-storey red brick Gothic Revival farmhouse</li> <li>• Rear addition</li> <li>• Rectangular plan</li> <li>• Three-bay symmetrical façade with two-bay side elevations</li> <li>• Cut stone foundation</li> <li>• Side gable roof</li> <li>• Red brick chimney</li> <li>• Yellow brick quoins and decorative band along the roofline</li> <li>• Lancet window in the steeply pitched projecting centre gable with decorative vergeboard</li> <li>• Two-over-two segmentally arched window openings with decorative yellow brick voussoirs and stone sills</li> <li>• Covered front porch with decorative wood lintels</li> <li>• Entrance door flanked by sidelights</li> <li>• One-storey bank barn with a side gable roof, two centrally placed doors and barn board cladding</li> <li>• Additional outbuildings located on the property</li> <li>• Setback from the road on a manicured lawn surrounded by mature trees and agricultural fields</li> </ul>
<b>Photo(s)</b>	






EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a one-and-a-half-storey Gothic Revival farmhouse and agricultural complex.
	Displays a high degree of craftsmanship or artistic value	✓	Elaborate detail and a high degree of craftsmanship displayed in the construction of the architectural elements of the Gothic Revival farmhouse.
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-a-half-storey red brick Gothic Revival farmhouse; rectangular plan; three-bay symmetrical façade with two-bay side elevations; cut stone foundation; side gable roof; red brick chimney; yellow brick quoins and

	decorative band along the roofline; lancet window in the steeply pitched projecting centre gable with decorative vergeboard; two-over-two segmentally arched window openings with decorative yellow brick voussoirs and stone sills; covered front porch with decorative wood lintels; entrance door flanked by sidelights; one-storey bank barn with side gable roof, two centrally placed doors and barn board cladding; additional outbuildings; setback from the road on a manicured lawn surrounded by mature trees and agricultural fields.
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<b>REFERENCE MATERIALS</b>	
<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index.</b> Provided by the Town of Erin through Triton Engineering.</p>

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 2**


DESCRIPTION OF PROPERTY	
<b>Street Address</b>	9313 Station Street
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 24, Concession 7
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 1, Hillsburgh Well Site 3)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	Circa 1861-1877 (farm house)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Two-storey vernacular farmhouse with a gambrel roof</li> <li>• Rectangular plan</li> <li>• Metal cladding</li> <li>• Red brick chimney</li> <li>• Open one-storey front porch spanning the length of the façade</li> <li>• Rectangular window openings</li> <li>• Outbuildings, barns and the ruin of a silo on the property</li> <li>• Set back from the road surrounded by manicured lawns, mature vegetation and agricultural fields</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative of an early agricultural complex with a farmhouse, outbuildings, barns and silo.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey vernacular farmhouse with gambrel roof; rectangular plan; red brick chimney; open front porch spanning the length of the façade; rectangular window openings; outbuildings, barns, silo ruin; setback from the road surrounded by manicured lawns, mature vegetation, agricultural fields.

REFERENCE MATERIALS	
<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countryatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countryatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 3**

<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	72 Trafalgar Road North
<b>Name</b>	Century Church Theatre
<b>Lot and Concession</b>	Lot 24, Concession 7
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory Part of the Hillsburg(h) Heritage Walking Trail (Town of Erin n.d.)
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 2)
<b>Type of Property</b>	Institutional
<b>Date(s)</b>	1906 (Town of Erin n.d.)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Representative example of a vernacular church structure with Edwardian and Italianate influences</li> <li>• Former Christian Disciples Church (Town of Erin 2006:23; Town of Erin n.d.)</li> <li>• Two-storey red brick structure with a multiple roof lines and gables</li> <li>• Rectangular plan</li> <li>• Asymmetrical façade</li> <li>• Dentils decorating the gable roof of the façade</li> <li>• Red brick buttresses</li> <li>• Date stone (1906)</li> <li>• Italianate bell tower with a hip roof, brick corbelling and paired arched windows</li> <li>• Arched stained glass windows with brick voussoirs and rusticated stone sills on the upper level</li> <li>• Rectangular window openings with simple rectangular concrete voussoirs and rusticated stone sills on the lower level</li> <li>• Pedimented entryway supported by round columns on both sides of the façade</li> <li>• Location on the historic Trafalgar Road streetscape</li> </ul>
<b>Photo(s)</b>	


			
<b>Date of Photo(s)</b>	November 29, 2017		

<b>EVALUATION OF PROPERTY</b>			
<b>Criteria</b>	<b>Description</b>	<b>✓</b>	<b>Value Statement(s)</b>
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a vernacular church structure with Edwardian and Italianate influences.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community	✓	Associated with the Christian Disciples Church. Sixty-three charter members from the Coningsby congregation were part of the church when it was built in 1906 (Town of Erin n.d.).  Also associated with the Erin Arts Foundation that now operates the building as the Century Church Theatre.
	Yields or has the potential to yield information that contributes to the understanding of a community or culture	✓	Has the potential to yield information that contributes to an understanding of the Christian community and culture in Erin, specifically the Coningsby congregation.
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural “small town” character of the area.
	Is physically, functionally, visually or historically linked to its surroundings	✓	Functionally linked to the community through its use as a live theatre venue. Historically linked to its surroundings as a former church.
	Is a landmark	✓	The structure is a landmark on the historic Trafalgar Road streetscape.

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey red brick structure with a multiple roof lines and gables; rectangular plan; asymmetrical façade; dentils; red brick buttresses; date stone; Italianate bell tower with hip roof, brick corbelling, paired arched windows; arched stained glass windows with brick voussoirs and rusticated stone sills; rectangular window openings with concrete voussoirs and rusticated stone sills; pedimented entryway supported by round columns on both sides of the façade; location on historic Trafalgar Road streetscape.

REFERENCE MATERIALS	
<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin n.d. <b>Hillsburg(h) Heritage Walking Trail.</b> Accessed online at: <a href="http://headwaters.ca/wp-content/uploads/sites/3/2012/08/hillsburgh-heritage-walking-trail-aug-12-2016.pdf">http://headwaters.ca/wp-content/uploads/sites/3/2012/08/hillsburgh-heritage-walking-trail-aug-12-2016.pdf</a></p> <p>2006 <b>Heritage Inventory Index.</b> Provided by the Town of Erin through Triton Engineering.</p>

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 4**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	63 Trafalgar Road North
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 24, Concession 8
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 2)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	1895 (Town of Erin 2006:24)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Two-storey, three-bay red brick residential structure with Italianate elements</li> <li>• Single-storey rear addition clad in wood shingles</li> <li>• L-shaped plan</li> <li>• Hip roof</li> <li>• Overhanging eaves and paired brackets</li> <li>• Red brick chimney</li> <li>• Decorative yellow brick quoining</li> <li>• Segmentally arched two-over-two windows with stone sills and decorative yellow and red brick voussoirs</li> <li>• Porch over entrance with hip roof and decorative vergeboard</li> <li>• Transom over informal entrance</li> <li>• Set back from the road on a rise of land</li> <li>• Stone retaining wall and split rail fence adjacent to the sidewalk</li> </ul>
<b>Photo(s)</b>	




		
<b>Date of Photo(s)</b>	November 29, 2017	

<b>EVALUATION OF PROPERTY</b>			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a residential structure with Italianate elements.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the character of Hillsburgh’s historic main street.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

<b>RESULTS OF HERITAGE ASSESSMENT</b>	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey, three-bay red brick residential structure with Italianate elements; L-shaped plan; hip roof; wide overhanging eaves; paired brackets; red brick chimney; decorative yellow brick quoining; segmentally arched two-over-two windows with stone sills and decorative yellow and red brick voussoirs; porch over entrance with hip roof and decorative vergeboard; transom over informal entrance; set back from the road on a rise of land.

REFERENCE MATERIALS	
Source(s)	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index.</b> Provided by the Town of Erin through Triton Engineering.</p>

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 5**


<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	63A Trafalgar Road North
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 24, Concession 8
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Participating (Hillsburgh Well Site 2)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	1888 (farm house)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Representative example of a red brick Gothic Revival farmhouse</li> <li>• One-and-a-half-storey structure</li> <li>• Two red brick chimneys</li> <li>• Side gable roof and projecting front gable with window</li> <li>• Surrounded by dense vegetation and agricultural fields</li> <li>• Structure is setback from the road, behind 63 Trafalgar Road North (H-BHR-4) to the east, and is barely visible from the road</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a Gothic Revival farmhouse.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-a-half-storey red brick Gothic Revival farmhouse; side gable roof and projecting front gable with window; two chimneys; setback from the road surrounded by dense vegetation and agricultural fields.

REFERENCE MATERIALS	
<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countryatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countryatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 6**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	68 Trafalgar Road North
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 24, Concession 8
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 2)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	1892 (date stone)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Two-storey red brick Gothic Revival residential structure</li> <li>• L-shaped plan</li> <li>• Asymmetrical façade</li> <li>• Cut stone foundation</li> <li>• Steeply pitched gables with decorative vergeboard</li> <li>• Red brick chimney</li> <li>• Date stone (1892)</li> <li>• Open porch with decorative vergeboard</li> <li>• Yellow brick quoins</li> <li>• Segmentally arched window openings, most two-over-two windows, with stone sills and decorative yellow and red brick voussoirs</li> <li>• Segmentally arched door opening with decorative yellow and red brick voussoirs</li> <li>• Bay window with cornice, brackets and corbelled red and yellow brickwork</li> <li>• Set back from the street surrounded by mature trees</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a two-storey Gothic Revival residential structure.
	Displays a high degree of craftsmanship or artistic value	✓	Elaborate detail and a high degree of craftsmanship displayed in the construction of the architectural elements of the Gothic Revival

			house.
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the residential character of Hillsburgh's historic main street.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey red brick Gothic Revival residential structure; L-shaped plan; asymmetrical façade; cut stone foundation; steeply pitched gables; red brick chimney; date stone; open porch; decorative vergeboard; yellow brick quoins; segmentally arched window openings with stone sills and decorative yellow and red brick voussoirs; two-over-two and one-over-one windows; segmentally arched door opening with decorative yellow and red brick voussoirs; bay window with cornice, brackets and corbelled red and yellow brickwork; set back from the street surrounded by mature trees.

#### REFERENCE MATERIALS

<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>
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**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 7**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5882 8 <sup>th</sup> Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 25, Concession 8
<b>Recognition</b>	Listed on the Town of Erin’s Heritage Inventory
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 2)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	Circa 1850 (Town of Erin 2006:11)
<b>Description</b>	<ul style="list-style-type: none"> <li>• One-and-a-half-storey vernacular residential field stone structure</li> <li>• Rectangular plan</li> <li>• Side gable roof with return eaves</li> <li>• Chimney</li> <li>• One-storey rear addition with a gable roof</li> <li>• Rectangular window openings with plain sills and lintels</li> <li>• Stone and metal entrance gates</li> <li>• Split rail fence</li> <li>• Set back from the road and screened by mature vegetation</li> <li>• Located on a manicured lawn surrounded by agricultural fields</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017


EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a mid-nineteenth century vernacular stone residential structure.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-a-half-storey vernacular residential field stone structure; rectangular plan; side gable roof with return eaves; chimney, rectangular window openings with plain sills and lintels; stone and metal entrance gates; split rail fence; set back from the road; screened by mature vegetation; located on a manicured lawn surrounded by agricultural fields.

REFERENCE MATERIALS	
<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index</b>. Provided by the Town of Erin through Triton Engineering.</p>



**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 8**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5848 8 <sup>th</sup> Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 24, Concession 8
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 2)
<b>Type of Property</b>	Agricultural
<b>Date(s)</b>	Circa 1880 (Town of Erin 2006:11)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Long driveway flanked by vegetation</li> <li>• 1954 aerial photograph indicates that the site may have been an agricultural complex at that time (University of Toronto 1954)</li> <li>• Although no structures are visible from the road, the Town of Erin’s heritage inventory indicates that there is a square sandstone residential structure and a bank barn located on the property (Town of Erin 2006:11)</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of an agricultural complex, including a bank barn and square sandstone residence.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or		

	culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: square sandstone residential structure; bank barn; long driveway flanked by vegetation.

#### REFERENCE MATERIALS

<b>Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .
	McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .
	Town of Erin 2006 <b>Heritage Inventory Index.</b> Provided by the Town of Erin through Triton Engineering.
	University of Toronto 1954 <b>1954 Air Photos of Southern Ontario.</b> Accessed online at: <a href="https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index">https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index</a> .

**HILLSBURGH - BUILT HERITAGE RESOURCE NO. 9**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5952 Wellington Road 24
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 27, Concession 7
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Village of Hillsburgh)
<b>Participating or Abutting</b>	Abutting (Hillsburgh Well Site 4)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	After 1887
<b>Description</b>	<ul style="list-style-type: none"> <li>• Two-storey red brick vernacular residential structure with Gothic Revival details</li> <li>• Square plan</li> <li>• Front gable roof</li> <li>• Red brick chimney</li> <li>• Cut stone quoining</li> <li>• Tall rectangular and segmentally arched door and window openings with rusticated stone lintels and simple stone sills</li> <li>• Second storey balcony above the entryway door with decorative railing and vergeboard</li> <li>• Two-car garage addition</li> <li>• Setback from the road and accessed by a long driveway flanked by mature trees</li> <li>• Surrounded by manicured lawns and agricultural fields</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a vernacular residential structure with Gothic Revival details.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative</b>	Has direct associations with a theme, event, belief, person, activity,		

<b>Value</b>	organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey red brick vernacular residential structure with Gothic Revival details; square plan; front gable roof; red brick chimney; cut stone quoining; tall rectangular and segmentally arched door and window openings; rusticated stone lintels; simple stone sills; second storey balcony with decorative railing and vergeboard; setback from the road and accessed by a long driveway flanked by mature trees; surrounded by manicured lawns and agricultural fields.

#### REFERENCE MATERIALS

<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index</b>. Provided by the Town of Erin through Triton Engineering.</p>
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**ERIN – BUILT HERITAGE RESOURCE NO. 1**

<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	10 <sup>th</sup> Line north of Wellington Road 52
<b>Name</b>	Bowstring Bridge
<b>Lot and Concession</b>	Lot 13, Concession 10; Lot 3, Concession 11
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 4)
<b>Type of Property</b>	Civic/Infrastructure
<b>Date(s)</b>	Circa 1910-1930s (Beynon 2013)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Simple, utilitarian single-span concrete bowstring arch bridge</li> <li>• Possible design and/or construction by Charles Mattaini who is credited with bringing the concrete bowstring design to southern Ontario</li> <li>• Structural arch located above the surface of the bridge</li> <li>• Imprints of wooden boards used to set the concrete on site are still visible on the bridge</li> <li>• Road surface of the bridge is level with the banks it spans</li> <li>• Narrow width allows for a single lane of traffic</li> <li>• Although once quite common, the bridge represents one of few remaining concrete bowstring arch bridges remaining in Wellington County</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
Design or Physical Value	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Rare example of a concrete bowstring arch bridge, a design of particular importance to Wellington County where the style was once prolific. Today, few such structures remain, making this bridge a rare example.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
Historical or Associative Value	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community	✓	Direct association with the theme of technical advancement in bridge construction and the use of concrete, as well as transportation and agriculture. This type of bridge is indicative of “the transition from horse-drawn vehicles to motorized vehicles and farm equipment” (HRC 2013:7).
	Yields or has the potential to yield information that contributes to the understanding of a community or culture	✓	Yields information regarding changes in methods of transportation and agricultural technologies.
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community	✓	Charles Mattaini is credited with bringing the concrete bowstring arch design and advancements in the use of concrete in bridge construction to southern Ontario from his birthplace in Italy. He built many structures of this type in Wellington County between 1903 and 1929 (HRC 2013:7).
Contextual Value	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area. Is part of a group of similar concrete bowstring arch bridges in Wellington County.
	Is physically, functionally, visually or historically linked to its surroundings	✓	Physically and functionally linked to its surroundings by providing a crossing over a waterway. Historically linked to its surroundings by its association with advancements in transportation and agricultural technologies.
	Is a landmark		

## RESULTS OF HERITAGE ASSESSMENT


CHVI Evaluation	Has CHVI.
Heritage Attributes	Key heritage attributes include: single-span concrete bowstring arch bridge.

## REFERENCE MATERIALS

Source(s)	Beynon, D. 2013 <b>Disappearing bowstring bridges of Centre Wellington</b> . Accessed online at: <a href="http://www.southwesternontario.ca/opinion-story/5985733-disappearing-bowstring-bridges-of-centre-wellington/">www.southwesternontario.ca/opinion-story/5985733-disappearing-bowstring-bridges-of-centre-wellington/</a> .
	Heritage Resources Centre (HRC) 2013 <b>Arch, Truss &amp; Beam: The Grand River Watershed Heritage Bridge Inventory</b> . Accessed online at: <a href="http://www.grandriver.ca/en/our-watershed/resources/Documents/CHRS/CHRS_2013_BridgeInventory.pdf">www.grandriver.ca/en/our-watershed/resources/Documents/CHRS/CHRS_2013_BridgeInventory.pdf</a> .

	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>
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**ERIN – BUILT HERITAGE RESOURCE NO. 2**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	9682 Wellington Road 52
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 13, Concession 10
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Participating (Erin Well Site 4)
<b>Type of Property</b>	Residential/Agricultural
<b>Date(s)</b>	After 1900
<b>Description</b>	<ul style="list-style-type: none"> <li>• Example of a rural agricultural complex, including a residence</li> <li>• The two-storey rusticated concrete block vernacular residence with Edwardian influences</li> <li>• Hip roof</li> <li>• Rectangular plan</li> <li>• Asymmetrical façade with enclosed front porch</li> <li>• Rectangular window openings with plain sills</li> <li>• Wood barn with a wide front gable roof and attached lean-to shelter</li> <li>• Situated on a hill among vegetation and mature trees setback a short distance from the road</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017




EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
Design or Physical Value	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a vernacular farmhouse with Edwardian influences.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
Historical or Associative Value	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
Contextual Value	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
CHVI Evaluation	Has CHVI.
Heritage Attributes	Key heritage attributes include: two-storey rusticated concrete block farmhouse with a hip roof, rectangular plan, asymmetrical façade and rectangular window openings with plain sills; wood barn with a wide front gable roof and attached lean-to shelter; structures situated on a hill among vegetation and mature trees setback a short distance from the road.

REFERENCE MATERIALS	
Source(s)	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>

**ERIN – BUILT HERITAGE RESOURCE NO. 3**


DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5345 10 <sup>th</sup> Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 12, Concession 11
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 4)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	Circa 1880-barn; 1900-house (Town of Erin 2006:14)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Two-storey farmhouse with Edwardian and Queen Anne details (circa 1900)</li> <li>• Rectangular plan</li> <li>• Hip roof</li> <li>• Two red brick chimneys</li> <li>• Wide overhanging eaves</li> <li>• Red brick cladding and decorative yellow brick quoining</li> <li>• Corner entryway flanked by quoining with a second-storey wood balcony and decorative vergeboard</li> <li>• Rectangular window openings with decorative brick voussoirs and plain stone sills</li> <li>• Adjacent property features including utilitarian wood outbuildings with gable roofs; bank barn circa 1880; and split rail fence (Town of Erin 2006:14)</li> <li>• Setback a short distance from the road among rural agricultural fields</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a two-storey rural residential structure with Edwardian and Queen Anne details.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey red brick cladding; yellow brick quoining; rectangular plan; hip roof; wide overhanging eaves; two red brick chimneys; corner entryway flanked by quoining with a second-storey wood balcony and decorative vergeboard; rectangular window openings with decorative brick voussoirs and plain stone sills; outbuildings including bank barn; split rail fence; setback a short distance from the road among rural agricultural fields.

REFERENCE MATERIALS	
<b>Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b> . Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .
	McGill University 2001 <b>Township of Erin</b> . Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .
	Town of Erin 2006 <b>Heritage Inventory Index</b> . Provided by the Town of Erin through Triton Engineering.

**ERIN – BUILT HERITAGE RESOURCE NO. 4**


DESCRIPTION OF PROPERTY	
<b>Street Address</b>	9614 Side Road 17
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 18, Concession 10
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Participating (Erin Well Site 3)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	Circa 1861-1877
<b>Description</b>	<ul style="list-style-type: none"> <li>• Two-storey vernacular farmhouse with board and batten cladding</li> <li>• Irregular plan</li> <li>• Asymmetrical façade</li> <li>• Low pitched front and side gable roof</li> <li>• Stone chimney</li> <li>• Enclosed front porch</li> <li>• Rectangular window openings</li> <li>• Outbuildings are located on the property</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a vernacular farmhouse.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey vernacular farmhouse with board and batten siding; irregular plan; asymmetrical façade; low pitched front and side gable roof; stone chimney; rectangular window openings.

REFERENCE MATERIALS	
<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>

**ERIN – BUILT HERITAGE RESOURCE NO. 5**


<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	5520 8 <sup>th</sup> Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 16, Concession 8
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Participating (Erin Well Site 5)
<b>Type of Property</b>	Agricultural
<b>Date(s)</b>	Circa 1880 (Town of Erin 2006:11)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Representative of a rural agricultural complex with a contemporary bungalow residence surrounded by agricultural fields</li> <li>• Two-storey bank barn with a side gable roof and open shelter attached to the first storey</li> <li>• Rectangular plan</li> <li>• Field stone foundation</li> <li>• Vertical wooden barn board cladding</li> <li>• Three entryways on the first storey flanked by rectangular window openings</li> <li>• Setback and visible from the road, accessed by a gravel driveway</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of an agricultural complex with a bank barn.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: bank barn with a gable roof and an open shelter attached to the first storey; rectangular plan; vertical barn board cladding; field stone foundation; entryway and rectangular window openings; setback from the road among agricultural lands.

REFERENCE MATERIALS	
<b>Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b> . Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .
	McGill University 2001 <b>Township of Erin</b> . Accessed online at: <a href="http://digital.library.mcgill.ca/counyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/counyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .
	Town of Erin 2006 <b>Heritage Inventory Index</b> . Provided by the Town of Erin through Triton Engineering.

**ERIN – BUILT HERITAGE RESOURCE NO. 6**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5507 10 <sup>th</sup> Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 16, Concession 11
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory (Barn only)
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 2)
<b>Type of Property</b>	Agricultural
<b>Date(s)</b>	Barn circa 1880 (Town of Erin 2006:14)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Representative of an agricultural complex</li> <li>• Bank barn with a gable roof (circa 1880) clad with vertical wood barn board</li> <li>• Red brick, circa 1940s vernacular residential structure</li> <li>• Two utilitarian/agricultural outbuildings</li> <li>• Setback from the road among agricultural lands</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of an agricultural complex.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of		



	an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT


<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: agricultural complex with a bank barn with gable roof and vertical barn board; outbuildings; setback from the road among agricultural lands.

#### REFERENCE MATERIALS

<b>Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .
	McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .
	Town of Erin 2006 <b>Heritage Inventory Index.</b> Provided by the Town of Erin through Triton Engineering.

**ERIN – BUILT HERITAGE RESOURCE NO. 7**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	9660 Wellington Road 124
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 18, Concession 10
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 2, Erin Well Site 3)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	1887 (house)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Rural agricultural complex with a residential structure</li> <li>• Good example of a one-and-a-half-storey Gothic Revival farmhouse with a side addition and an L-shaped plan</li> <li>• Date stone (1887)</li> <li>• Red brick cladding with decorative yellow brick quoining and corbelling</li> <li>• Steeply pitched cross gable roof</li> <li>• Steeply pitched front gable on the single-storey side wing</li> <li>• Red brick chimneys</li> <li>• Decorative vergeboard on the front gable, bay window and front porch</li> <li>• Rectangular window openings with plain sills and decorative yellow brick voussoirs</li> <li>• Bay window</li> <li>• Whitewashed barns with low gambrel roofs</li> <li>• Silo</li> <li>• Setback from the road on a manicured lawn surrounded by mature vegetation and flanked by a tree lined driveway and split rail fence</li> </ul>
<b>Photo(s)</b>	

		
<b>Date of Photo(s)</b>	November 29, 2017	

<b>EVALUATION OF PROPERTY</b>			
<b>Criteria</b>	<b>Description</b>	✓	<b>Value Statement(s)</b>
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a Gothic Revival farmhouse.
	Displays a high degree of craftsmanship or artistic value	✓	Elaborate detail and a high degree of craftsmanship displayed in the construction of the architectural elements of the Gothic Revival farmhouse.
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		

	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-a-half-storey Gothic Revival farmhouse with an L-shaped plan and addition; date stone; red brick cladding; yellow brick quoining and corbelling; cross gable roof; steeply pitched front gable on the single-storey side wing; decorative vergeboard; rectangular window openings with plain sills and decorative yellow brick voussoirs; bay window; whitewashed barns with low gambrel roofs; silo; setback from the road on a manicured lawn; surrounded by mature vegetation; flanked by a tree lined driveway; split rail fence.

#### REFERENCE MATERIALS

<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index.</b> Provided by the Town of Erin through Triton Engineering.</p>
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**ERIN – BUILT HERITAGE RESOURCE NO. 8**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	9727 Wellington Road 124
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 17, Concession 11
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 2)
<b>Type of Property</b>	Agricultural (farm operations building only)
<b>Date(s)</b>	Post-1877
<b>Description</b>	<ul style="list-style-type: none"> <li>• Example of a former agricultural complex</li> <li>• Setback from the road in an agricultural field surrounded by mature vegetation</li> <li>• Ruins of a concrete silo</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method		
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		

<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: concrete silo ruin; setback from the road among agricultural lands and mature vegetation.

#### REFERENCE MATERIALS

<b>Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b> . Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .
	McGill University 2001 <b>Township of Erin</b> . Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .

**ERIN – BUILT HERITAGE RESOURCE NO. 9**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5644 Wellington Road 23
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 19, Concession 9
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 2, Erin Well Site 3)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	Circa 1880 (Town of Erin 2006:13)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Representative example of a Gothic Revival farmhouse</li> <li>• One-and-a-half-storey building with a side and front gable roof</li> <li>• L-shaped plan constructed on sloped land</li> <li>• Red brick cladding; corners appear to be painted to resemble yellow brick quoining</li> <li>• Concrete block chimney</li> <li>• Decorative brickwork located beneath the roofline appears to be original</li> <li>• Three-bay façade with projecting centre bay with steeply pitched gable and former lancet window opening</li> <li>• Rectangular window openings with plain sills and bricks painted to resemble decorative lintels</li> <li>• Front entrance with transom and sidelights</li> <li>• Setback from the road and screened by mature trees</li> <li>• Several outbuildings</li> <li>• Split-rail fence</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a Gothic Revival farmhouse.
	Displays a high degree of craftsmanship or artistic value		

	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-a-half-storey building with a side and front gable roof; L-shaped plan constructed on sloped land; red brick cladding; painted quoining; concrete block chimney; decorative brickwork located beneath roofline; three-bay façade with projecting centre bay with steeply pitched gable and former lancet window opening; rectangular window openings with plain sills and decoratively painted lintels; front entrance with transom and sidelights; setback from the road and screened by mature trees; multiple outbuildings; split-rail fence.

#### REFERENCE MATERIALS

<b>Source(s)</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index</b>. Provided by the Town of Erin through Triton Engineering.</p>
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**ERIN – BUILT HERITAGE RESOURCE NO. 10**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	9445 Side Road 17
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 17, Concession 8
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 5)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	After 1877
<b>Description</b>	<ul style="list-style-type: none"> <li>• Representative example of a Queen Anne residential structure located within a rural agricultural complex</li> <li>• Two-storey residential structure with an asymmetrical façade</li> <li>• Multiple rooflines, including a hip roof, side gable roof and steeply pitched gable roof over the entryway</li> <li>• Wide, overhanging eaves</li> <li>• Wrap-around verandah</li> <li>• Simple rectangular windows and openings</li> <li>• Turret with rectangular bay windows</li> <li>• Second-storey oval window</li> <li>• Setback a significant distance from the road</li> <li>• Several outbuildings on the property</li> <li>• Surrounded by manicured lawns and agricultural fields</li> </ul>
<b>Photo(s)</b>	

			
<b>Date of Photo(s)</b>	November 29, 2017.		

<b>EVALUATION OF PROPERTY</b>			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a Queen Anne residential structure and agricultural complex.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


<b>RESULTS OF HERITAGE ASSESSMENT</b>	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: two-storey Queen Anne residential structure; asymmetrical façade; multiple rooflines, including a hip roof, side gable roof and steeply pitched gable roof over the entryway; wide, overhanging eaves; wrap-around verandah; simple rectangular windows and openings; turret with rectangular bay windows; second-storey oval window; setback a significant distance from the road; several outbuildings on

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	the property; surrounded by manicured lawns and agricultural fields.
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REFERENCE MATERIALS	
<b>52Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .  McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .

**ERIN – BUILT HERITAGE RESOURCE NO. 11**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5488 8 <sup>th</sup> Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 15, Concession 8
<b>Recognition</b>	None
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 5)
<b>Type of Property</b>	Residential
<b>Date(s)</b>	Circa 1861-1877 (original farm house prior to additions/alterations)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Rare example of an early log cabin</li> <li>• One-and-a-half-storey structure</li> <li>• Rectangular plan</li> <li>• Side gable roof with a contemporary enclosed front porch, dormer and window additions</li> <li>• Setback from the road on a lot surrounded by mature trees</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Rare and early example of a log cabin.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or	✓	Has the potential to yield information that contributes to an understanding of the early settlers of Erin Township and their construction

	culture		methods and settlement patterns.
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area		
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-a-half-storey log cabin; rectangular plan; side gable roof; setback from the road on a lot surrounded by mature trees.

#### REFERENCE MATERIALS

<b>Source(s)</b>	Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West.</b> Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .
	McGill University 2001 <b>Township of Erin.</b> Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .

**ERIN - CULTURAL HERITAGE LANDSCAPE NO. 1**


DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5621 Wellington Road 23
<b>Name</b>	McAllister Family Cemetery
<b>Lot and Concession</b>	Lot 19, Concession 10
<b>Recognition</b>	Plaque erected in 1997
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 3)
<b>Type of Property</b>	Cemetery
<b>Date(s)</b>	1847-1874
<b>Description</b>	<ul style="list-style-type: none"> <li>• The land (NE ¼ 50 acres) was purchased by Archibald McAllister from Donald McMillan in 1843</li> <li>• Burials took place from 1847 to 1874</li> <li>• Stones indicate that burials are members of the McAllister family (OGS-Wellington County Branch 2014)</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
Design or Physical Value	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a rural family cemetery in a historically agricultural community.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
Historical or Associative Value	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community	✓	Associated with the early settlers of Erin Township.
	Yields or has the potential to yield information that contributes to the understanding of a community or culture	✓	Yields information regarding members of the McAllister family buried in the cemetery.
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
Contextual Value	Is important in defining, maintaining or supporting the character of an area		
	Is physically, functionally, visually or historically linked to its surroundings	✓	Visually linked to its surroundings due to its early establishment in Erin Township and historically linked to its surroundings as the resting place of early settlers of the community.
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
CHVI Evaluation	Has CHVI.
Heritage Attributes	Key heritage attributes include: shape and texture of the original topography; variety and design of commemorative memorials, including headstones, inscriptions, stone types and stone placement.

REFERENCE MATERIALS	
Source(s)	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Ontario Genealogical Society (OGS)-Wellington County Branch 2014 <b>McAllister Cemetery</b>. Accessed online at: <a href="https://ogs.on.ca/wp-content/uploads/sites/28/2017/10/4309.pdf">https://ogs.on.ca/wp-content/uploads/sites/28/2017/10/4309.pdf</a>.</p>

**ERIN - CULTURAL HERITAGE LANDSCAPE NO. 2**


DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5590 Wellington Road 23
<b>Name</b>	Erin Pioneer Cemetery (formerly the McMillan Cemetery)
<b>Lot and Concession</b>	Lot 18, Concession 10
<b>Recognition</b>	Plaque erected by the Erin Pioneer Cemetery Board with assistance from the former Ontario Ministry of Culture and Recreation (1980). Listed on the Town of Erin Heritage Inventory.
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 3)
<b>Type of Property</b>	Cemetery
<b>Date(s)</b>	1834-1935
<b>Description</b>	<ul style="list-style-type: none"> <li>• The cemetery was established on land donated by the McMillan family and was formerly known as the McMillan Cemetery</li> <li>• It was in use from 1834 to 1935</li> <li>• Many of Erin’s prominent early residents are buried here, including Daniel McMillan (known as the founder of Erin Village)</li> <li>• The property was the site of the second school constructed in Erin Township (EPCB 1980)</li> </ul>
<b>Photo(s)</b>	
<b>Date of Photo(s)</b>	November 29, 2017



EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
Design or Physical Value	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a local pioneer cemetery.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
Historical or Associative Value	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community	✓	Association with prominent early settlers of Erin Township, including Daniel McMillan (founder of Erin Village).
	Yields or has the potential to yield information that contributes to the understanding of a community or culture	✓	Yields information regarding the early settlers of the community that are buried in the cemetery.
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
Contextual Value	Is important in defining, maintaining or supporting the character of an area		
	Is physically, functionally, visually or historically linked to its surroundings	✓	Visually linked to the surroundings due to its early establishment in Erin Township. Historically linked to the surroundings as the resting place of early settlers of the community.
	Is a landmark		

RESULTS OF HERITAGE ASSESSMENT	
CHVI Evaluation	Has CHVI.
Heritage Attributes	Key heritage attributes include: shape and texture of the original topography; the variety and design of the commemorative memorials, including headstones, inscriptions, stone types and stone placement.
REFERENCE MATERIALS	
Source(s)	Erin Pioneer Cemetery Board (EPCB) 1980 <b>Erin Pioneer Cemetery</b> [plaque].  Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b> . Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a> .  McGill University 2001 <b>Township of Erin</b> . Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a> .  Town of Erin 2006 <b>Heritage Inventory Index</b> . Provided by the Town of Erin through Triton Engineering.

**ERIN - CULTURAL HERITAGE LANDSCAPE NO. 3**

<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	5525 8 <sup>th</sup> Line
<b>Name</b>	Erin Heights Golf Course
<b>Lot and Concession</b>	Lot 16, Concession 9 & Lot 17, Concession 9
<b>Recognition</b>	Listed on the Town of Erin Heritage Inventory
<b>Location</b>	Town of Erin (former Erin Village)
<b>Participating or Abutting</b>	Abutting (Erin Well Site 5)
<b>Type of Property</b>	Landscape
<b>Date(s)</b>	Circa 1880 (Town of Erin 2006:11) The golf course opened in 1952 (Ontario Golf n.d.)
<b>Description</b>	<ul style="list-style-type: none"> <li>• Erin Heights Golf Course opened in 1952 (Ontario Golf n.d.)</li> <li>• 18-holes over rolling hills; fairways dotted with maple and willow trees (EHGC n.d.)</li> <li>• Split rail fence surrounding a portion of the property</li> <li>• Two-storey red brick Edwardian former residential structure, currently in use as the clubhouse: <ul style="list-style-type: none"> <li>○ Square and rectangular window openings</li> <li>○ Brick chimney</li> <li>○ Hip roof (Town of Erin 2006:11)</li> </ul> </li> <li>• Six single-storey cedar log cabins grouped in pairs: <ul style="list-style-type: none"> <li>○ Rectangular plan</li> <li>○ Side gable roofs</li> <li>○ Mortar and stone cladding</li> <li>○ Wood quoins</li> <li>○ Rectangular and square window openings with plain stone lintels and sills (Town of Erin 2006:11)</li> </ul> </li> </ul>
<b>Photo(s)</b>	



**Date of Photo(s)** November 29, 2017

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a mid-twentieth century golf course designed in the picturesque style with rolling hills, fairways dotted with maple and willow trees.  Representative example of recreational structures associated with a mid-twentieth century golf course, including the set of six rustic stone cabins.  Representative example of a rural Edwardian residential structure.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture	✓	Has the potential to yield information that contributes to an understanding of community and recreation in Erin Township beginning in the 1950s.
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area		
	Is physically, functionally, visually or historically linked to its surroundings	✓	The topography of rolling hills provides a visual link to its surroundings. Functionally linked to its surroundings through the landscapes historic recreation function as a golf course.
	Is a landmark	✓	The golf course is known as the “Pearl in the Caledon Hills” (EHGC n.d.).

RESULTS OF HERITAGE ASSESSMENT	
<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: 18-hole golf course set on a fairway of rolling hills; maple and willow trees; split-rail fence; two-storey red brick Edwardian structure with a hip roof, brick chimney, square and rectangular window openings; six single-storey cedar log cabins with mortar and stone cladding, side gable roofs and wood quoins, rectangular and square window openings with plain lintels and sills.
REFERENCE MATERIALS	
<b>Source(s)</b>	Erin Heights Golf Course (EHGC) n.d. <b>Erin Heights Golf Club</b> Accessed online at: <a href="http://www.erinheightsgolfcourse.ca/">www.erinheightsgolfcourse.ca/</a> .  Leslie, G., & Wheelock, C. J. 1861 <b>Map of the County of Wellington, Canada West</b> . Accessed online at:

	<p><a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <b>Township of Erin</b>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Ontario Golf n.d. <b>Erin Heights Golf Club</b> Accessed online at: <a href="http://www.ontariogolf.com/courses/erin/erin-heights-gc/">www.ontariogolf.com/courses/erin/erin-heights-gc/</a>.</p> <p>Town of Erin 2006 <b>Heritage Inventory Index</b>. Provided by the Town of Erin through Triton Engineering.</p>
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## Appendix B: Key Team Member Curriculum Vitae

Paul J. Racher, MA, CAHP, RPA  
 Principal – Management and Senior Review (MSR) Team  
**ARCHAEOLOGICAL RESEARCH ASSOCIATES LTD.**  
 219-900 Guelph Street, Kitchener, ON, N2H 5Z6  
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 Web: [www.arch-research.com](http://www.arch-research.com)

### Education

- 1989-1992 M.A., Department of Anthropology, McMaster University, Hamilton, ON  
 Thesis titled: *The Archaeologist's 'Indian': Narrativity and Representation in Archaeological Discourse*
- 1985-1989 Honours B.A., Wilfrid Laurier University, Waterloo, ON  
 Major: Prehistoric Archaeology

### Professional Memberships and Accreditations

- Current Ministry of Tourism Culture and Sport Professional Licence (#P007)  
 Professional Member of the Canadian Association of Heritage Professionals (CAHP)  
 Professional Member of the Association of Professional Archaeologists (APA)  
 Professional Member of the Register of Professional Archaeologists (RPA)  
 President of the Ontario Archaeological Society (OAS)  
 RAQS registered with MTO

### Work Experience

- Current **Principal, Archaeological Research Associates Ltd.**  
 Responsible for winning contracts, client liaison, project excellence, and setting the policies and priorities for a multi-million dollar heritage consulting firm.
- 2000-2011 **Project Manager/Principal Investigator, Archaeological Research Associates Ltd.**  
 Managed projects for a heritage consulting firm. In 10 field seasons, managed hundreds of projects of varying size.
- 2008-2011 **Part-Time Faculty, Wilfrid Laurier University.**  
 Lecturer for Cultural Resource Management course (AR 336). In charge of all teaching, coursework, and student evaluations.
- 1995 **Field Archaeologist, University of Toronto.**  
 Served as a supervisor on a multinational archaeological project in northern Jordan.
- 1992-1995 **Teaching Assistant, University of Toronto.**  
 Responsible for teaching and organizing weekly tutorials for a number of courses.
- 1991-1994 **Part-Time Faculty, Wilfrid Laurier University.**  
 Lectured for several courses in anthropology. Held complete responsibility for all teaching, coursework, and student evaluations.

**Work Experience (continued)**

- 1992-1996 **Partner in Consulting Company, Cultural Management Associates Incorporated.**  
Supervised several archaeological contracts in Southern Ontario. Participated in a major (now published) archaeological potential modeling project for MTO.
- 1989-1991 **Partner in Consulting Company, Cultural Resource Consultants.**  
Managed the financial affairs of a consulting firm whilst supervising the completion of several contracts performed for heritage parks in central Ontario.
- 1988-1991 **Principal Investigator/Project Director, Archaeological Research Associates Ltd.**  
Oversaw the completion of large contracts, wrote reports, and was responsible for ensuring that contracts were completed within budget.
- 1988 **Assistant Director of Excavations, St. Marie among the Hurons, Midland, Ontario.**  
Duties included crew supervision, mapping, report writing and photography.

**Publications**

- 2017 “Brass Tacks.” *Arch Notes*, 22(1), pp. 3-4.
- 2017 “One Trick Pony.” *Arch Notes*, 22(3), pp. 3-4.
- 2017 “Cartoon Physics.” *Arch Notes*, 22(2), pp. 3-6.
- 2016 “Vision(s).” *Arch Notes*, 21(1), pp. 3-4.
- 2016 “Hubris and the Black Swan.” *Arch Notes*, 21(2), pp. 3-4.
- 2016 “Numbered, Weighed, Divided.” *Arch Notes*, 21(3), pp. 3-4.
- 2016 “After the Gold Rush.” *Arch Notes*, 21(5), pp. 3-4.
- 2016 “Discomfort and Joy.” *Arch Notes*, 21(6), pg. 3.
- 2015 “Colonialism, Socrates, and the Narcissism of Minor Differences.” *Arch Notes*, 20(6), pp. 9-10.
- 2012 “The Emperor’s New Archaeology” *Arch Notes*, 17(3), pp. 5-6.
- 2011 “A Distinctive, Probably Early Palaeoindian, Stone Artifact from the Credit River Drainage.” *KEWA*, 11-3.
- 2006 “Up from the Muck: Towards a Truly Professional Archaeology in Ontario.” *Arch Notes*, July/August Issue.
- 1995 *A Biophysical Model for Prehistoric Archaeological Sites in Southern Ontario*. Co-authored with Penny M. Young, Malcolm R. Horne, Colin D. Varley, and Andrew J. Clish. The Research and Development Branch, MTO.
- 1993 “The Tales We Tell – The Iroquois as ‘Savage’ in Ontario Archaeology.” *Vis a Vis: Explorations in Anthropology*. University of Toronto, Toronto.
- 1990 “Scary Tales – Narrativity and Representation in Archaeological Discourse.” *Nexus: The Canadian Student Journal of Anthropology*. McMaster University, Hamilton

**Conference Papers**

- 2017 “Cartoon Physics: On the Impossibility of “Business as Usual” in the Age of UNDRIP and the TRC.” Presented to the 2017 meeting of the Association Archaeologique de Quebec, Montreal, Quebec.

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**Conference Papers (continued)**

- 2016 “Leviathan.” Presented at the 2016 symposium of the Ontario Archaeological Society, Waterloo, Ontario.
- 2016 “133 Nations.” Presented with co-author Paul General at the Ontario Heritage Conference, Stratford, Ontario.
- 2016 “Home.” Presented at the 2016 Cultural Heritage, Archaeology and Planning (CHAP) Symposium.
- 2016 “Archaeology 101.” Presented at the 2016 Cultural Heritage, Archaeology and Planning (CHAP) Symposium.
- 2015 “History, Identity and the Limits of Archaeology.” A paper presented at the Fifth Annual Symposium on Mississauga History and Culture, New Credit, Ontario.
- 2015 “On Original Sin.” Presented at the 2015 Cultural Heritage, Archaeology and Planning (CHAP) Symposium.



Lindsay Benjamin, MAES, CAHP  
Heritage Team Member

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Web: [www.arch-research.com](http://www.arch-research.com)

**Education**

- 2013 MAES, University of Waterloo, Waterloo, ON – Focus: Planning  
2009 Post-Graduate Diploma, Centennial College, Toronto, ON  
Publishing & Professional Writing  
2007 Honours BES, University of Waterloo, Waterloo, ON  
Major: Urban Planning, Co-op, Distinction: Dean’s Honours List

**Professional Development**

- 2012-Present Canadian Association of Heritage Professionals (CAHP), Professional Membership  
2014-Present National Trust for Canada Conference  
2013-2017 Ontario Heritage Planners Network Workshops  
2016 Heritage Inventories Workshop, City of Hamilton & ERA Architects  
2011-2015 Ontario Heritage Conference

**Awards**

- 2014 Heritage River Award, Watershed Awards & Canadian Heritage River Celebration,  
Grand River Conservation Authority  
2009 A. K. (Alice King) Sculthorpe Award for Advocacy, Architectural Conservancy of  
Ontario

**Work Experience**

- 2017-Present **Heritage Team Member, Archaeological Research Associates Ltd.**  
Coordinate the completion of heritage projects, including the evaluation of the  
cultural heritage value or interest of a variety of cultural heritage resources.  
2013-2017 **Cultural Heritage Planner, Region of Waterloo**  
Planned and implemented Arts, Culture and Heritage initiatives that support  
creativity and quality of life in the Region of Waterloo. Researched, developed and  
implemented Regional cultural heritage policies and programs. Fulfilled Regional  
and Provincial cultural heritage and archaeological review responsibilities under the  
Planning Act and Ontario Heritage Act.  
2009-2013 **Heritage Planner, Heritage Resources Centre, University of Waterloo**  
Facilitate the completion of various cultural heritage contracts by undertaking

**Work Experience (continued)**

- archival research, site visits, report writing, liaising with municipal staff and stakeholders and coordinating project scheduling and budgetary responsibilities.
- 2006-2007 **Project Manager, Heritage Resources Centre, University of Waterloo**  
Established the process of nominating heritage properties to the National Register of Historic Places. Primary liaison between all stakeholder groups, responsible for motivating each group to participate and provide funding. Drafted over 130 Statements of Significance for properties to be nominated to the National Register. Managed a team of five employees.

**Publications**

- 2017 Historic Interpretive Plaque for the Village of German Mills
- 2016 Historic Interpretive Plaque for the Huron Road Bridge
- 2015 Region of Waterloo Public Building Inventory
- 2015 Cultivating Heritage Gardens & Landscapes Workshop
- 2014 Historic Interpretive Plaque for the West Montrose Covered Bridge
- 2014 Series of 17 Practical Conservation Guides for Heritage Properties
- 2014 Region of Waterloo Historic Countryside Tours
- 2013 *Arch, Truss & Beam: The Grand River Watershed Heritage Bridge Inventory*
- 2013 *80 for 80: Celebrating 80 years of the Architectural Conservancy of Ontario*
- 2013 “Grand River watershed heritage bridge conservation.” *Ontario Planning Journal*, Nov./Dec.
- 2012 “The Case of Northern New Towns.” *ACORN*, Fall 2012, p. 28-29.
- 2012 “In with the old: The debate on wood vs. vinyl windows.” *Alternatives*, March/April 2012, p. 14
- 2011 “Moving forward while looking back.” *Municipal World*, February 2011, p. 15-16
- 2009 “A Bridge to Here.” *On the Danforth*, April 2009, p. 19-20

**Presentations**

- 2017 “Historic Village of German Mills,” Jane’s Walk Waterloo Region
- 2017 “Economics of Heritage Designation,” KW Association of Realtors
- 2007- 2016 “Writing Statements of Significance,” Conestoga College & University of Waterloo
- 2015 “Region of Waterloo Public Building Inventory,” Grand River Heritage Day Workshop
- 2015 “Historic Bridge Conservation and Inventory,” Friends of the Waterloo Region Museum
- 2015 “Cultural Heritage Conservation in Waterloo Region,” Woolwich Township Municipal Heritage Committee
- 2014 “Historic Bridges of Waterloo Region,” Guided tour, Canadian Institute of Transportation Engineers Conference

**Presentations (continued)**

- 2013 “Emerging issues in heritage – A young professional’s perspective.” Ontario Heritage Conference
- 2012 “Building Stories,” Carleton University Heritage Symposium
- 2007-2012 “The Historic Places Initiative & Writing Statements of Significance,” Heritage Planning Workshop, University of Waterloo

**Volunteer Experience**

- 2017 Canadian Association of Heritage Professionals Membership Committee Member
- 2017 Lieutenant Governor’s Ontario Heritage Awards Jury Member

**Selected Contracts Managed**

- 2018 **Queen Victoria Park Cultural Heritage Landscape Heritage Impact Assessment**  
Client: Canadian Niagara Hotels
- 2017 **Weston Heritage Conservation District Phase II Study**  
Client: Westin Heritage Conservation District Board
- 2017 **Cultural Heritage Assessment of 176 Rennick Road, Burlington**  
Client: City of Burlington
- 2017 **Westdale Theatre Cultural Heritage Assessment**  
Client: City of Hamilton
- 2017 **Documentation & Salvage Report for 264 Governors Road, Hamilton**  
Client: Intero Development Group Inc.
- 2016-2017 **Regionally Significant Cultural Heritage Resource Conservation**  
Drafted policies, an implementation guideline and consulted with stakeholders to ensure the proactive conservation of cultural heritage resources of significance to the Region of Waterloo.
- 2015 **Region of Waterloo Public Building Inventory**  
Researched, compiled, drafted and promoted an inventory of purpose-built public buildings in the Region of Waterloo.
- 2014 **Practical Conservation Guides for Heritage Properties**  
Researched and wrote a series of 17 practical guides to aid heritage property owners in the conservation of their historic properties and landscapes.
- 2012-2013 **Arch, Truss & Beam: Grand River Watershed Heritage Bridge Inventory**  
Undertaking an inventory of bridges in the Grand River watershed with the intention of identifying heritage bridges. An inventory of this magnitude, including hundreds of bridges, has never been undertaken in the watershed. The work supported the Grand Rivers heritage river designation. Client: Grand River Conservation Authority
- 2011-2012 **Heritage Conservation District Study, Phase 2**  
Carried out a province wide evaluation of 32 Heritage Conservation Districts.  
Client: Architectural Conservancy of Ontario – Trillium Grant

**Selected Contracts Managed (continued)**

- 2011            **Village Character Assessment**  
Developed and administered a survey to the residents of Greenfield Village to determine what they value in their community and their receptiveness to the establishment of a Heritage Conservation District. Client: Township of North Dumfries
- 2011            **Heritage Designation Bylaws**  
Researched and drafted 15 heritage designation bylaws in response to the establishment of a local tax relief program. Client: Municipality of Chatham-Kent
- 2010            **Heritage Property Tax Relief**  
Developed a draft policy, set of operational guidelines and an implementation manual for the development of a tax rebate incentive program for designated property owners. Client: Municipality of Chatham-Kent
- 2009            **Pilot Bridge Inventory**  
Researched and inventoried 133 bridges and culverts in the Township of Centre Wellington. Client: Ministry of Tourism, Culture & Sport
- 2009            **Heritage Bridge Designations**  
Conducted background research to determine the significance and feasibility of bridge designation for select bridges in southwestern Ontario. Wrote designation files. Client: Ministry of Tourism, Culture & Sport
- 2007, 2009    **Historic Places Initiative**  
Developed a process for recruiting municipalities and drafting quality Statements of Significance. Wrote over 35 nominations to the National Register of Historic Places. Client: Ministry of Tourism, Culture & Sport

Sarah Clarke, B.A.  
Heritage Research Manager  
Team Lead – Research, Team Lead – Archaeology  
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Web: [www.arch-research.com](http://www.arch-research.com)

### Education

#### Current

1999–2010 Honours BA, Wilfrid Laurier University, Waterloo, Ontario  
Major: North American Archaeology, Historical/Industrial Option

### Professional Development

2016 Midwestern Historical Archaeology Conference “The Power and Danger of Neighbourhoods”, Detroit, MI (One day)  
2016 Grand River Watershed 19<sup>th</sup> Annual Heritage Day Workshop, Cambridge, ON  
2015 Introduction to Blacksmithing Workshop, Milton Historical Society (One day)  
2015 Applied Research License Workshop, MTCS (One day)  
2014 Applied Research License Workshop, MTCS (One day)  
2014 Heritage Preservation and Structural Recording in Historical and Industrial Archaeology. Four-month course taken at Wilfrid Laurier University, Waterloo, ON. Professor: Meagan Brooks  
2014 Mississaugas of the New Credit First Nation Historical Gathering and Education Conference (Three days)  
2014 Grand River Watershed 17<sup>th</sup> Annual Heritage Day Workshop and Celebration (One day)  
2014 Board Governance 101 Workshop with Catherine Raso  
2013 Canadian Archaeological Association Annual Meeting, London, ON (One day)  
2012 Ontario Archaeological Society Symposium, Windsor, ON (Two days)  
2012 Six Nations Archaeological Roundtable, Brantford, ON (One day)  
2010 Council for Northeast Historical Archaeology Conference, Lancaster, PA (Three days)  
2009 Society for Industrial Archaeology Fall Process Tour, Newburgh, NY (Three days)

### Professional Memberships and Accreditations

Current Member of the Ontario Archaeological Society, Hamilton Chapter  
Current Member of the Society for Industrial Archaeology  
Current Member of the Brant Historical Society  
Current Member of the Canadian Archaeological Association

## Work Experience

- Current **Team Lead – Research; Team Lead – Archaeology, Archaeological Research Associates Ltd., Kitchener, Ontario.**  
Manage and plan the research needs for archaeological and heritage projects. Research at offsite locations including land registry offices, local libraries and local and provincial archives. Historic analysis for archaeological and heritage projects. Field director conducting Stages 1-4 assessments for urban projects.
- 2013-2015 **Heritage Research Manager; Archaeological Monitoring Coordinator, Archaeological Research Associates Ltd., Kitchener, Ontario.**  
Stage 1 archaeological field assessments, research at local and distant archives at both the municipal and provincial levels, coordination of construction monitors for archaeological project locations.
- 2010-2013 **Historic Researcher/Archaeologist, Timmins Martelle Heritage Consultants Inc., London, Ontario.**  
Report preparation, local and offsite research (libraries, archives); correspondence with the Ministry of Tourism, Culture, and Sport; report submission to the Ministry and clients; and administrative duties (PIF and Borden form completion and submission, data requests).
- 2008-2009 **Field Technician, Archaeological Assessments Ltd., Oakville, Ontario.**  
Participated in field excavation and artifact processing.
- 2008-2009 **Teaching Assistant, Wilfrid Laurier University.**  
Responsible for teaching and evaluating first year student lab work.
- 2007-2008 **Field and Lab Technician, Historic Horizons, Hamilton, Ontario.**  
Participated in excavations at Dundurn Castle and Auchmar in Hamilton, Ontario. Catalogued artifacts from excavations at Auchmar.
- 2006-2010 **Archaeological Field Technician/Supervisor, Wilfrid Laurier University.**  
Field school student in 2006, then and returned as a field school teaching assistant in 2008 and 2010.

## Volunteer Experience

- Current **Council-appointed citizen volunteer for the Brantford Municipal Heritage Committee, City of Brantford.**
- 2007-2008 **Archaeological Field Technician, Wilfrid Laurier University, Bermuda**  
Participated in two 10-day research excavations at the Port Royal Golf Course, Bermuda.

## Selected Cultural Heritage Projects

- 2018 **Queen Victoria Park Cultural Heritage Landscape Heritage Impact Assessment**  
Client: Canadian Niagara Hotels
- 2017 **Weston Heritage Conservation District Phase II Study**  
Client: Westin Heritage Conservation District Board
- 2017 **Cultural Heritage Assessment of 176 Rennick Road, Burlington**  
Client: City of Burlington
- 2017 **Westdale Theatre Cultural Heritage Assessment**  
Client: City of Hamilton

**Selected Cultural Heritage Projects (continued)**

- 2017 **Documentation & Salvage Report for 264 Governors Road, Hamilton**  
Client: Intero Development Group Inc.
- 2016 **Cultural Heritage Documentation Report.** Client: City of Waterloo  
Performed site visit, completed measured drawings of subject building and conducted required background research relying on primary sources located at the Region of Waterloo Archives, Joseph Schneider Haus and local history rooms in Kitchener and Waterloo public libraries.
- 2016 **Cultural Heritage Inventory for Region of Waterloo LRT.** Client: WSP Parsons  
Conducted site visits and research as part of a team that inventoried over 45 km of the proposed LRT routes and participated in field work. Over 175 buildings and landscapes were identified to be considered in selecting a preferred route.
- 2015 **Old Mill Sanitary Pumping Station (Client: MTE Consultants Inc.)**  
Built Heritage and Cultural Heritage Assessments required management of survey data provided by the proponent as well as data acquisition through Land Information Ontario (LIO) Data Warehouse. Report map layouts were generated to facilitate Built Heritage and Cultural Heritage Landscape understanding. Map layouts were created from historic surveys between 1861 and 1881, historic aerial imagery, as well as current aerial imagery
- 2015 **150 Cultural Heritage Property Evaluations.** Client: City of Kingston  
Managed the research process and required resources such as tax assessment rolls, abstract indexes, historic maps, local histories, libraries and archives research. Performed analysis necessary for the creation of Statements of Significance for all 150 properties.
- 2015 **Six Heritage Designation Reports,** Burlington. Client: City of Burlington  
Conducted research in advance of the preparation of Statements of Cultural Heritage Value or Interest (SCHVI) for six properties which included land registry and archives research. Five properties are now designated under Part IV of the *Ontario Heritage Act*.
- 2014 **Stories Project.** Client: City of Burlington  
Crafted researched histories on preselected themes presented by the City of Burlington including community histories, natural heritage, prominent residents, industry and property histories.

Jacqueline McDermid, B.A., Heritage Team  
Technical Writer and Researcher  
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Web: [www.arch-research.com](http://www.arch-research.com)

### Education

2000-2007 Honours B.A., Wilfrid Laurier University, Waterloo, Ontario  
Major: Near Eastern Archaeology

### Work Experience

Current **Technical Writer and Researcher– Heritage, Archaeological Research Associates Ltd., Kitchener, Ontario.**  
Research and draft designation by-laws, heritage inventories, Heritage Impact Assessments, Built Heritage and Cultural Heritage Landscape Assessments, and Cultural Heritage Resource Evaluations using Ontario Regulation 9/06, 10/06 and the Ontario Heritage Bridge Guidelines.

2013-2015 **Technical Writer – Archaeology, Archaeological Research Associates Ltd., Kitchener, Ontario.**  
Report preparation; correspondence with the Ministry of Tourism, Culture, and Sport; report submission to the Ministry and clients; and administrative duties (PIF and Borden form completion).

2012-2013 **Lab Assistant, Archaeological Research Associates Ltd., Kitchener, Ontario.**  
Receive, process and register artifacts.

2011-2012 **Field Technician, Archaeological Research Associates Ltd., Kitchener, Ontario.**  
Participated in field excavation and artifact processing.

2005-2009 **Teaching Assistant, Wilfrid Laurier University.**  
Responsible for teaching and evaluating first, second, third and fourth year student lab work, papers and exams.

2005-2007 **Lab Assistant, Wilfrid Laurier University – Near Eastern Lab.**  
Clean, Process, Draw and Research artifacts from various sites in Jordan.

### Volunteer Experience

2004, 2006 **Volunteer Field Technician (2004), Square Supervisor (2006 and 2007)**  
2007 **Wilfrid Laurier University, Jordan.**  
Participated in three seasons of research excavation at the Iron Age site Khirbet al-Mudayna, Jordan.

### Relevant Heritage Projects

2018 **Queen Victoria Park Cultural Heritage Landscape Heritage Impact Assessment**  
Client: Canadian Niagara Hotels

2017 **Westin Heritage Conservation District Phase II Study**  
Client: Westin Heritage Conservation District Board



**Relevant Heritage Projects (continued)**

- 2017 **Cultural Heritage Assessment of 176 Rennick Road, Burlington**  
Client: City of Burlington
- 2017 **Westdale Theatre Cultural Heritage Assessment**  
Client: City of Hamilton
- 2017 **Documentation & Salvage Report for 264 Governors Road, Hamilton**  
Client: Intero Development Group Inc.
- 2016 **East Side Sanitary Pumping Station Built Heritage and Cultural Heritage Landscape Assessment, Port Colborne, ON.** Client: Niagara Region
- 2016 **Town of Newmarket Designation Reports, Newmarket.** Client: Town of Newmarket
- 2016 **Jigs Hollow Pit Culture Heritage Impact Study, Township of Woolwich.** Client: Preston Sand & Gravel Company Limited
- 2016 **Cultural Heritage Inventory for Region of Waterloo LRT, Cambridge and Kitchener.** Client: WSP Parsons
- 2015 **British Methodist Episcopal Church, Salem Chapel HIA, St. Catharines.**  
Client: Regional Municipality of Niagara.
- 2015 **150 Cultural Heritage Property Evaluations, Kingston.** Client: The City of Kingston
- 2015 **William Wilson Pioneer Cemetery Restoration and Promotion Plan, Midland.**  
Client: The Town of Midland
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Client: BluEarth Renewables Inc.
- 2015 **Burlington Preliminary Evaluations and Revised Information Sheets, Burlington.** Client: The City of Burlington
- 2015 **Six Heritage Designation Reports, Burlington.** Client: The City of Burlington
- 2014 **Municipal Heritage Register Property Evaluation for 160 Properties, Burlington.** Client: City of Burlington
- 2014 **Historic Themes and Property Stories for Heritage Burlington Website, Burlington.** Client: City of Burlington

## **Appendix C.3**

**Cultural Heritage Evaluation Report Addendum,  
Town of Erin, Wellington County  
(ARA Ltd., November 11, 2019)**

**ADDENDUM**  
**Cultural Heritage Evaluation Report**  
**Urban Centre Water Servicing Class Environmental Assessment**  
**Town of Erin**  
**Lot 20, Concession 10**  
**Geographic Township of Erin**  
**Wellington County, Ontario**

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HR-170-2019  
Original Project: HR-115-2017  
*Project # 2019-0388*

**11/11/2019**

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## **GLOSSARY OF ABBREVIATIONS**

ARA – Archaeological Research Associates Ltd.  
BHR – Built Heritage Resource  
CHER – Cultural Heritage Evaluation Report  
CHVI – Cultural Heritage Value or Interest  
CHL – Cultural Heritage Landscape  
MHSTCI – Ministry of Heritage, Sport, Tourism and Culture Industries  
MTCS – Ministry of Tourism, Culture and Sport  
OHA – Ontario Heritage Act  
OHT – Ontario Heritage Trust  
O. Reg. – Ontario Regulation  
PPS – Provincial Policy Statement

## **PERSONNEL**

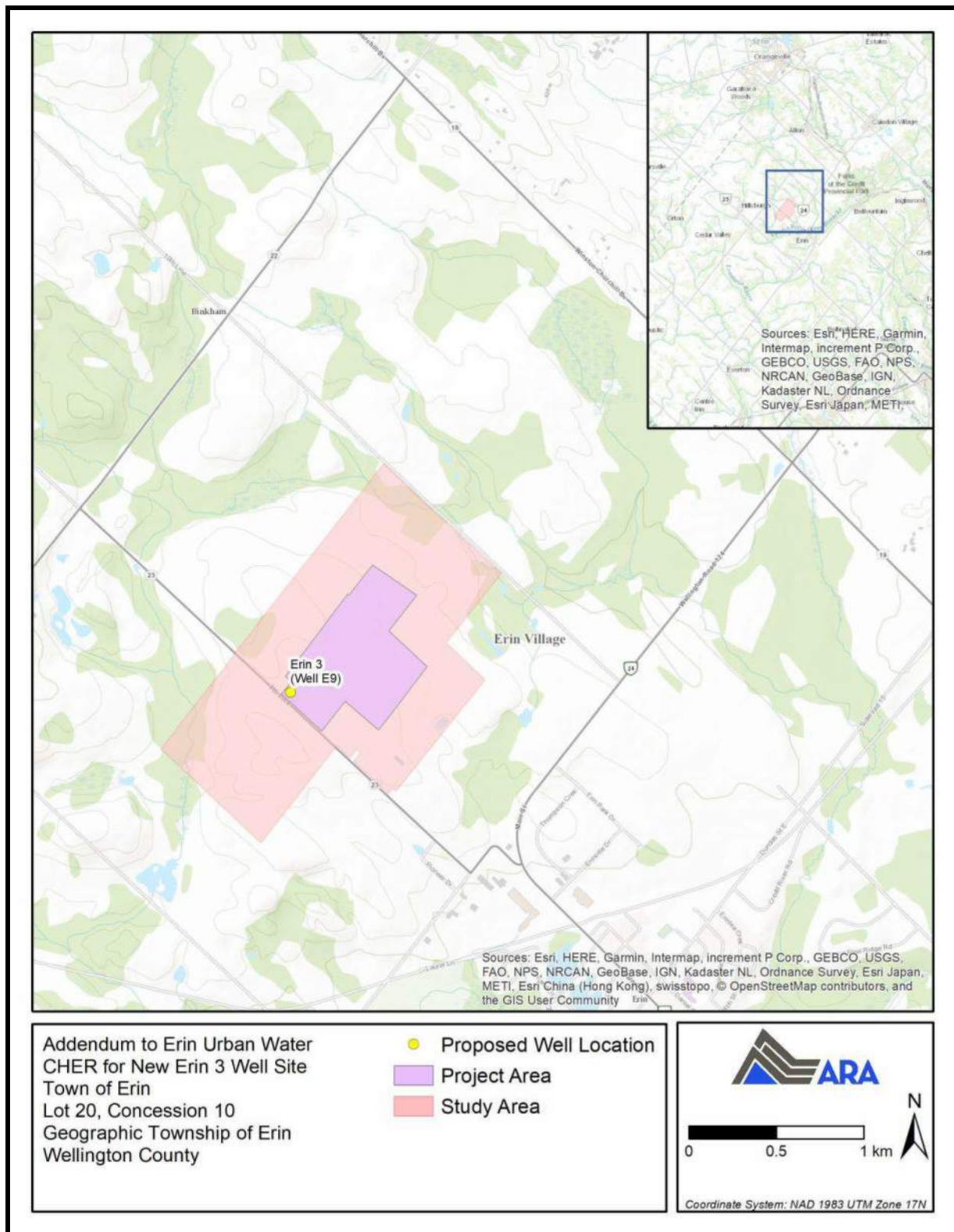
**Project Director:** P.J. Racher, MA, CAHP  
**Heritage Operations Manager:** K.J. Galvin, MA, MCIP, RPP, CAHP  
**Project Manager:** L. Benjamin, MAES, MCIP, RPP, CAHP  
**Site Visit:** L. Benjamin  
**Photography:** L. Benjamin  
**Cartography:** K. Brightwell (GIS), L. Bailey (GIS)  
**Technical Writers:** L. Benjamin, K.J. Galvin, P. Young, MA, CAHP, J. McDermid, BA

## 1.0 SUMMARY OF ADDENDUM

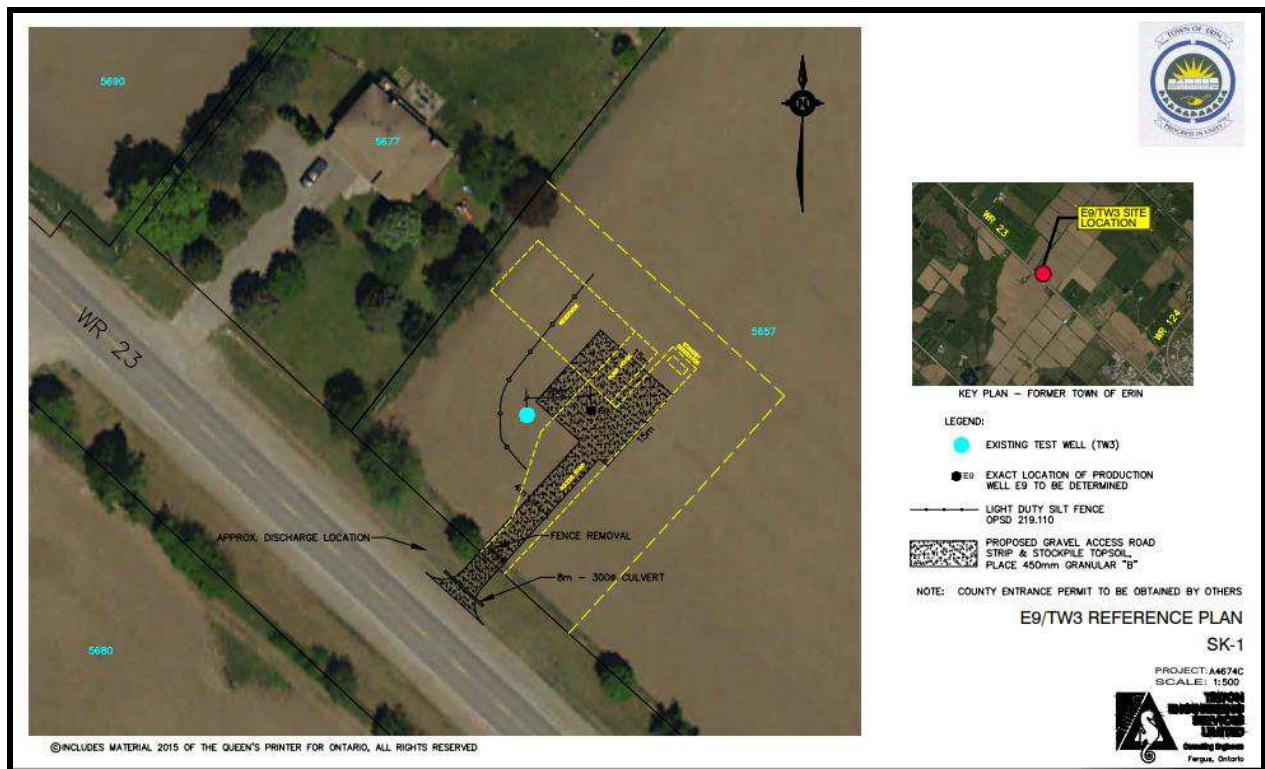
Under a contract initiated in November 2017, Archaeological Research Associates Ltd. (ARA) was retained by Triton Engineering Services Limited (Triton) to complete a Cultural Heritage Evaluation Report (CHER) for structures and landscapes with the potential to be impacted by the construction of the proposed Hillsburgh and Erin Well Sites located in the Town of Erin, Ontario as a requirement of the Municipal Class Environmental Assessment (EA). The CHER report was submitted to Triton in April 2018.

Since the ARA report was completed, the project has been modified and a new Erin 3 Well Site (Production Well E9) is being considered at 5657 Wellington Road 23 (see Map 1). The new site falls on Lot 20, Concession 10 in the Geographic Township of Erin. This site is located further north along Wellington Road 23 approximately 1 km from the previously evaluated Erin 3 Well Site (property address 9614 Side Road 17). The modification involves additional land for project infrastructure as illustrated in Figure 1. ARA examined properties adjacent to the project area for cultural heritage resources to ensure that all potential impacts resulting from the project are adequately addressed. ARA reviewed the new project area at 5657 Wellington Road 23 against the original study area and determined that it, and most abutting properties, fall almost entirely outside of the previously assessed area. The “project area,” which includes the entire property of the proposed well site, and the “study area” that includes adjacent properties, are indicated on Map 1.

This addendum provides details of the proposed modifications to the property and indicates whether there are any impacts to cultural heritage resources in accordance with the aims of the *Environmental Assessment Act*, R.S. O. 1990, the Official Plans of Wellington County and the Town of Erin, the *Provincial Policy Statement (PPS)* (2014) and the *Ontario Heritage Act*, R.S.O. 1990, c. O.18.



**Map 1: Project Area and Study Area in the Town of Erin**  
(Produced by ARA under licence using ArcGIS® software by Esri, © Esri)



**Figure 1: Proposed Erin 3 Well Site Reference Plan**  
(Triton n.d.)

## 2.0 HERITAGE CONTEXT

To determine whether any previously-identified properties with cultural heritage value or interest (CHVI) are located within, adjacent to or in proximity to the limits of the project area, ARA consulted a number of heritage groups and online heritage resources.

### 2.1 Consultation

The Ministry of Heritage, Sport, Tourism and Culture Industries current list of Heritage Conservation Districts was consulted. No designated districts were identified in the study area (MHSTCI 2019). The list of properties designated by the MHSTCI under Section 34.5 of the *Ontario Heritage Act* (OHA) was consulted. No properties in the study area are listed. The Ontario Heritage Trust (OHT) *Plaque Database* and the Parks Canada *Directory of Federal Heritage Designations* were searched. Neither the project area nor adjacent properties located within the study area are commemorated with an OHT plaque, nor are any recognized as National Historic Sites (OHT 2019; Parks Canada 2019).

ARA staff contacted the Director of Legislative Services and Clerk for the Town of Erin and the Manager of Development Planning for the County of Wellington on October 24, 2019 via email. A response was received the same day from the County indicating that there are two cemeteries located south on Wellington Road 23, however these are outside of the current study area. Both cemeteries were previously assessed in ARA's 2018 CHER and were recorded as E-CHL 1 (5621 Wellington Road 23/McAllister Family Cemetery) and E-CHL 2 (5590 Wellington Road



23/Erin Pioneer Cemetery). On October 24, 2019, the County’s Manager of Development Planning also forwarded ARA’s request for information to the Town of Erin’s Building and Planning Technician who they believed would be better positioned to share information related to any listed or designated properties in the study area as well as any properties protected by a municipal heritage easement. A follow-up email was sent to the Town on October 30, 2019. A response was received from the Town’s Building and Planning Technician on November 5, 2019 indicating that two properties within the study area are included on the Town of Erin’s *Heritage Inventory Index*: 5662 Tenth Line and 5650 Tenth Line which have been included as BHRs below.

### **3.0 HERITAGE ASSESSMENT**

A site visit was conducted on October 29, 2019 to photograph and document the well site and surroundings, and to record any local features that could enhance ARA’s understanding of their setting in the landscape and contribute to the cultural heritage evaluation process. Properties with potential cultural heritage resources were examined during the field survey and those that were determined at that time not to possess heritage interest were eliminated. This type of preliminary investigation (a windshield survey) was appropriate given the scale of the study area and project details. The heritage staff conducting the assessment reached conclusions regarding CHVI based on visual evidence and on their significant experience evaluating Built Heritage Resources (BHR) and Cultural Heritage Landscapes (CHL) using the criteria outlined in Ontario Regulation (O. Reg.) 9/06 of the OHA. A standardized checklist based on O. Reg. 9/06 was created for all properties with potential cultural heritage resources. This checklist aided in the evaluation process and was used to judge whether a given resource (BHR or CHL) possessed design or physical value, historical or associative value, or contextual value.

Below, Section 3.1 provides a heritage assessment of the project area (participating property) and abutting cultural heritage resources identified in the study area.

#### **3.1 Erin 3 Proposed Well Site – 5657 Wellington Road 23**

The proposed Erin 3 Well Site project area at 5657 Wellington Road 23 contains no structures and is an actively cultivated agricultural field divided into two rectangular sections by a dirt road running northeast-southwest (see Image 1-Image 2). The well location is proposed near the northwest corner of the property line parallel to the north side of Wellington Road 23 (Lot 20, Concession 10). The property is surrounded by rural contemporary residential properties to the east, south and west, and agricultural complexes to the north (E-BHRs 1a-3a) (see Section 3.2 and APPENDIX A for more information on individual BHRs). The adjacent property at 5627 Wellington 23 was previously assessed in ARA’s 2018 CHER as it is also adjacent to the previous Erin 3 Well Site at 9614 Side Road 17 (see Map 2 HR-115-2017 study area). Research did not find any historical associations linked to this property. In correspondence with the County and Town, the property was not identified as having community value. As such, the property of the proposed Erin 3 Well Site does not appear to possess CHVI.



**Image 1: View of Erin 3 Well Site, 5657 Wellington Road 23  
(October 29, 2019; View Facing East)**



**Image 2: View of Erin 3 Well Site Property, 5657 Wellington Road 23  
(October 29, 2019; View Facing Northeast)**

### 3.2 Heritage Assessment Summary

As a result of consultation and field survey, the following heritage resources (all abutting the project area) were identified as having potential CHVI: E-BHR 1a, 2a and 3a. No CHLs were identified in the study area. As noted above, ARA examined properties adjacent to the project area within the study area for potential resources to ensure that all potential impacts resulting from the project are adequately addressed.

A summary of the results of the evaluation of the BHRs against the criteria set out in O. Reg. 9/06 can be found in Table 1 and Table 2, and information sheets detailing the evaluation of each heritage resource can be found in APPENDIX A.

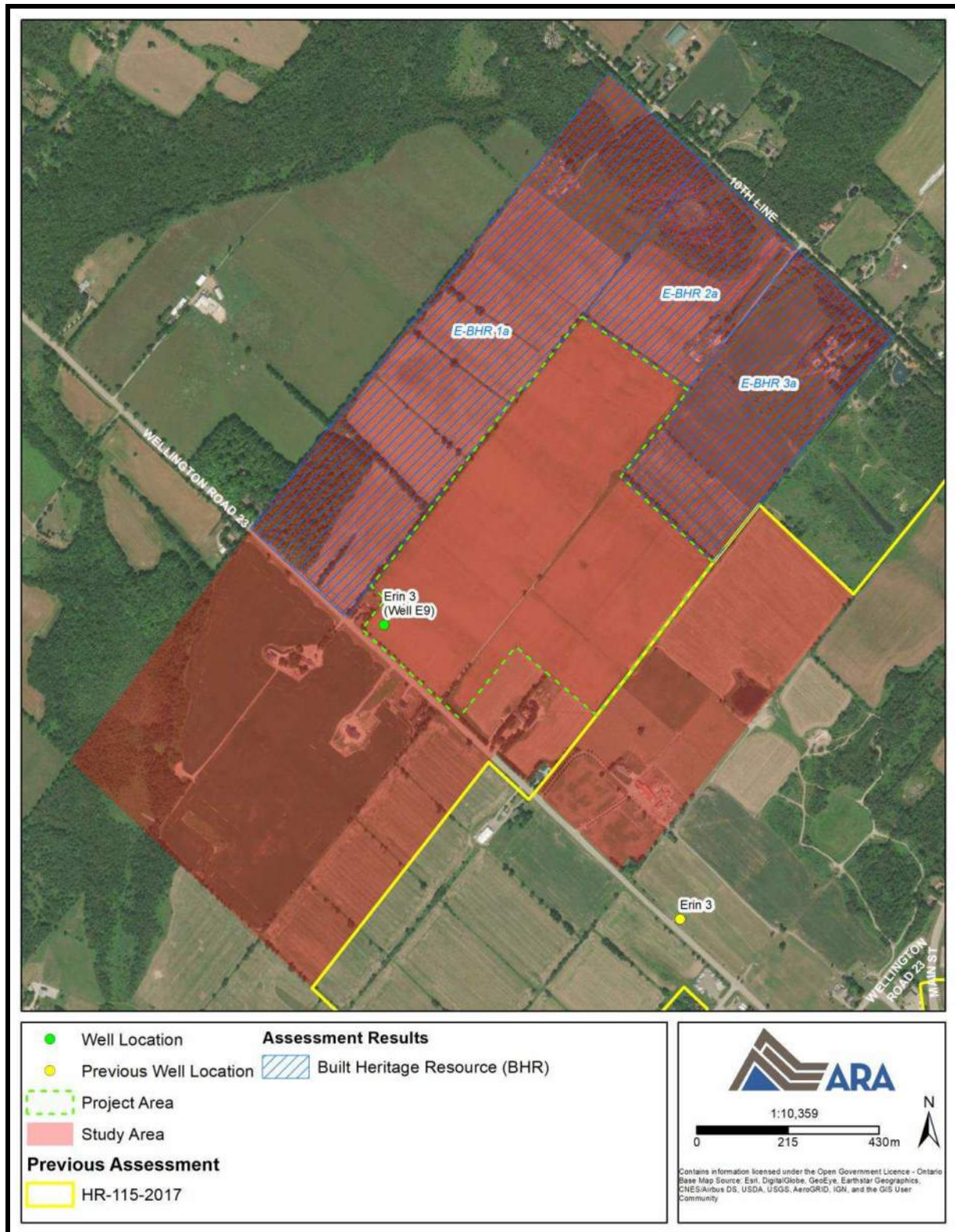
The assessment determined that all BHRs met one or more of the O. Reg. 9/06 criteria. Accordingly, these can now be classified as properties with *identified* BHRs (E-BHR 1a-3a). An overview of the locations of all identified BHRs in the study area appear on Map 2.

**Table 1: BHRs with CHVI**

Type and Number	Address/Name	Participating/ Abutting	CHVI (Y/N)	Criteria Met
E-BHR 1a	5690 Tenth Line	Abutting	Yes	Contextual Value
E-BHR 2a	5662 Tenth Line	Abutting	Yes	Design or Physical Value, Contextual Value
E-BHL 3a	5650 Tenth Line	Abutting	Yes	Design or Physical Value, Contextual Value

**Table 2: Identified BHR Value Statements and Heritage Attributes**

Type and Number	Address/Name	Value Statement(s)	Heritage Attributes*
E-BHR 1a	5690 Tenth Line	Supports the rural agricultural character of the area.	Agricultural farmstead; long gravel driveway flanked by vegetation; split rail fencing.
E-BHR 2a	5662 Tenth Line	Representative example of a one-and-a-half storey vernacular farmhouse. Supports the rural agricultural character of the area.	One-and-half storey vernacular farmhouse; agricultural farmstead; bank barn; long gravel driveway flanked by vegetation; split rail fencing.
E-BHL 3a	5650 Tenth Line	Representative example of a stone Ontario Cottage residence. Supports the rural agricultural character of the area.	One-and-half storey stone Ontario Cottage; rectangular plan; side gable roof; square window and door openings; long driveway flanked by mature trees; split rail fence.



**Map 2: Study Area with BHRs Indicated**  
 (Produced by ARA under licence using ArcGIS® software by Esri, © Esri)

## **4.0 IMPACTS**

All potential impacts to the project area and the properties abutting it were evaluated for potential project impacts. The heritage attributes of the identified BHRs will not be directly or indirectly negatively impacted by the proposed construction of the well site. The heritage attributes of the BHRs are largely defined by intrinsic values (e.g., those rooted in the architecture of the buildings or contextual values). These values will continue to exist with or without the installation of the proposed well site infrastructure. In addition, the heritage attributes of BHRs are located a significant distance from the well site, therefore no direct impacts (i.e., destruction of heritage attributes) or the creation of shadows on heritage attributes will take place. The view from each BHR to the low profile Erin 3 Well Site infrastructure will be significantly obscured by vegetation. As such, no visual impacts are anticipated.

## **5.0 CONCLUSION**

As a result of the above analysis of the additional lands required for the proposed Erin 3 Well Site (Production Well E9), it is determined that the conclusions and recommendations presented in ARA's 2018 CHER report remain unchanged and that the heritage attributes of the newly identified BHRs will not be directly or indirectly negatively impacted by the proposed construction of well infrastructure.

## 6.0 BIBLIOGRAPHY AND SOURCES

### Archaeological Research Associates Ltd. (ARA)

2018 *Cultural Heritage Evaluation Report Urban Centre Water Servicing Class Environmental Assessment Town of Erin Lots 21-27, Concession 7, Lots 14-17, 23-27, Concession 8, Lots 12-13, 15-19, Concession 9, Lots 11-14, 16-19, Concession 10, Lots 11-19, Concession 11, Geographic Township of Erin, Wellington County, Ontario.*

### Government of Ontario

2006 *Ontario Regulation 9/06 made under the Ontario Heritage Act.* Accessed online at: [www.ontario.ca/laws/regulation/060009](http://www.ontario.ca/laws/regulation/060009).

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### McGill University

2001 *The Canadian County Atlas Digital Project.* Accessed online at: <http://digital.library.mcgill.ca/countyatlas/default.htm>.

### Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI)

2010 *List of Heritage Conservation Districts.* Accessed online at: [www.mtc.gov.on.ca/en/heritage/heritage\\_conserving\\_list.shtml](http://www.mtc.gov.on.ca/en/heritage/heritage_conserving_list.shtml).

### Ministry of Municipal Affairs and Housing (MMAH)

2014 *Provincial Policy Statement, 2014.* Toronto: Ministry of Municipal Affairs and Housing.

### Ontario Heritage Trust (OHT)

2019 *Ontario Heritage Plaque Guide.* Accessed online: [www.heritagetrust.on.ca/en/online-plaque-guide](http://www.heritagetrust.on.ca/en/online-plaque-guide).


### Parks Canada

2019 *Directory of Federal Heritage Designations.* Accessed online at: [www.pc.gc.ca/en/culture/dfhd](http://www.pc.gc.ca/en/culture/dfhd).

### Triton Engineering Services Limited (Triton)

n.d. *E9/TW3 Reference Plan, SK-1.* Provided by Triton Engineering Services Limited.

**APPENDIX A: IDENTIFIED BUILT HERITAGE RESOURCES****ERIN - BUILT HERITAGE RESOURCE NO. 1A**

<b>DESCRIPTION OF PROPERTY</b>	
<b>Street Address</b>	5690 Tenth Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 20, Concession 10
<b>Recognition</b>	None
<b>Location</b>	Town of Erin
<b>Participating or Abutting</b>	Abutting
<b>Type of Property</b>	Agricultural
<b>Date(s)</b>	Unknown
<b>Description</b>	<ul style="list-style-type: none"> <li>• Although no structures are visible from the road, a review of aerial imagery indicated that a residence constructed to a square plan and a number of outbuildings are located on the property.</li> <li>• Long gravel driveway flanked by vegetation.</li> <li>• Split rail fencing.</li> </ul>
<b>Photograph</b>	
<b>Date of Photo</b>	October 29, 2019

<b>EVALUATION OF PROPERTY</b>			
<b>Criteria</b>	<b>Description</b>	<b>✓</b>	<b>Value Statement(s)</b>
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method		
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		
<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is		

	significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

#### RESULTS OF HERITAGE ASSESSMENT


<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: agricultural farmstead; long gravel driveway flanked by vegetation; split rail fencing.

#### REFERENCE MATERIALS

<b>Sources</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <i>Map of the County of Wellington, Canada West</i>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <i>Township of Erin</i>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p>
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**ERIN - BUILT HERITAGE RESOURCE NO. 2A**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5662 Tenth Line
<b>Name</b>	n/a
<b>Lot and Concession</b>	Lot 20, Concession 10
<b>Recognition</b>	Listed on the Town of Erin's <i>2006 Heritage Inventory Index</i> (updated in 2010)
<b>Location</b>	Town of Erin
<b>Participating or Abutting</b>	Abutting
<b>Type of Property</b>	Agricultural
<b>Date</b>	Circa 1850s (Town of Erin 2006:14)
<b>Description</b>	<ul style="list-style-type: none"> <li>• The residential building was difficult to view from Tenth Line, however it appears to be a one-and-half storey vernacular farmhouse constructed to a square plan and clad in vinyl siding with a side gable roof. There appear to be square window and door openings on the façade (north elevation).</li> <li>• A review of aerial imagery indicated that a number of outbuildings are also located on the property, to the rear of the residence.</li> <li>• The Town of Erin's <i>2006 Heritage Inventory Index</i> indicates that a bank barn is located on the property.</li> <li>• Long gravel driveway flanked by vegetation on the east side.</li> <li>• Split rail fencing.</li> </ul>
<b>Photograph</b>	
<b>Date of Photo</b>	October 29, 2019

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a one-and-a-half storey vernacular farmhouse.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		

<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		


#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-half storey vernacular farmhouse; agricultural farmstead; bank barn; long gravel driveway flanked by vegetation; split rail fencing.

#### REFERENCE MATERIALS

<b>Sources</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <i>Map of the County of Wellington, Canada West</i>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <i>Township of Erin</i>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <i>Heritage Inventory Index</i>.</p>
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**ERIN - BUILT HERITAGE RESOURCE NO. 3A**

DESCRIPTION OF PROPERTY	
<b>Street Address</b>	5650 Tenth Line
<b>Name</b>	Little Brook
<b>Lot and Concession</b>	Lot 19, Concession 10
<b>Recognition</b>	Listed on the Town of Erin's <i>2006 Heritage Inventory Index</i> (updated in 2010)
<b>Location</b>	Town of Erin
<b>Participating or Abutting</b>	Abutting
<b>Type of Property</b>	Residential
<b>Date</b>	1852 (Town of Erin 2006:14)
<b>Description</b>	<ul style="list-style-type: none"> <li>• The residential building was difficult to view from Tenth Line, however it appears to be a one-and-half storey stone Ontario Cottage constructed to a rectangular plan with a side gable roof. There appear to be square window and door openings on the façade (north elevation). The windows are flanked by shutters. A long, rectangular addition projects from the rear of the house (south elevation).</li> <li>• A review of aerial imagery indicated that the grounds of the property have been landscaped and a tennis court is located to the south of the residence.</li> <li>• Long gravel driveway flanked by mature trees.</li> <li>• Stone and wood entrance gates.</li> <li>• Split rail fencing.</li> </ul>
<b>Photograph</b>	
<b>Date of Photo</b>	October 29, 2019

EVALUATION OF PROPERTY			
Criteria	Description	✓	Value Statement(s)
<b>Design or Physical Value</b>	Is a rare, unique, representative or early example of a style, type, expression, material or construction method	✓	Representative example of a stone Ontario Cottage residence.
	Displays a high degree of craftsmanship or artistic value		
	Displays a high degree of technical or scientific achievement		

## **Appendix D**

**Natural Heritage – Existing Conditions Report  
(R1), Potable Water Class EA, Town of Erin &  
Village of Hillsburgh  
(Aboud & Associates, November 1, 2019)**

# Potable Water Class EA

Town of Erin & Village of Hillsburgh

Natural Heritage – Existing Conditions (R1)

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Prepared for:

Town of Erin

Triton Engineering Services Limited

Project Numbers:

AA17-197A

Date:

November 1, 2019



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### Glossary of Abbreviations and Terms

**Adjacent Lands:** Specified distance from a feature for considering potential negative impacts

**CC:** Coefficient of Conservatism

**COSSARO:** Committee on the Status of Species at Risk Ontario

**COSEWIC:** Committee on the Status of Endangered Wildlife in Canada

**EA:** Environmental Assessment

**ELC:** Ecological Land Classification

**END:** Endangered Species

**ESA:** Endangered Species Act

**G-Rank:** Conservation Status of Species at the global Level

**MVCA:** Maitland Valley Conservation Authority

**LIO:** Land Information Ontario

**MMP:** Marsh Monitoring Protocol

**MNRF:** Ministry of Natural Resources and Forestry

**NHIC:** Natural Heritage Information Center

**OBBA:** Ontario Breeding Bird Atlas

**OMA:** Ontario Mammal Atlas

**ORAA:** Ontario Reptile and Amphibian Atlas

**OP:** Official Plan

**PPS:** Provincial Policy Statement

**PIF:** Partners in Flight

**SAR:** Species at Risk

**SARA:** Species at Risk Act

**SC:** Special Concern Species

**Species with Conservation Designation:** All species listed under SARA, COSEWIC, ESA and/or an S1-S3 provincial designation.

**S-Rank:** Conservation Status of Species at the Provincial Level

**SWH:** Significant Wildlife Habitat

**THR:** Threatened Species

**VASCAN:** Database of Vascular Plants of Canada

## 1.0 Introduction

Aboud & Associates Incorporated (AA) was retained by Triton Engineering Services Limited (Triton) on behalf of the Town of Erin to complete a Natural Heritage- Existing Conditions report. The Existing Conditions report is being prepared for the Municipal Class Environmental Assessment (EA) for additional water supply for the communities of Erin and Hillsburgh. Nine locations for new water supply wells have been investigated and required a natural heritage inventory to complete the EA. This report focuses on characterizing the existing natural heritage features within the 120m study area of each location, determining and mapping significant natural features, identifying constraints and providing recommendations.

### 1.1 Study Areas

The study area includes a 30m x 40m plot as well as adjacent lands, up to 120m at each of the nine locations. Within some study areas, some of the lands could not be accessed due to restrictions. Where this was the case, the lands were assessed to the best extent possible from the boundary of the accessible lands. The study areas are entirely within the jurisdiction of the Credit Valley Conservation Authority (CVC) and include one site within CVC Regulation Limits. Figure 1 depicts the location of all potential drilling sites and their corresponding study areas.

### 1.2 Existing Land Use

The majority of land within the study areas consists of Agriculture and Open Pasture with some residential communities and natural undeveloped lands including meadow and forested communities.

The potential well sites are primarily designated as Urban Centre within the Wellington County Official Plan, with one designated as Prime Agriculture and another as Secondary Agriculture. Within the Town of Erin Zoning By-law 07-67, the majority of the potential drilling sites are zoned as Future Development, with two zoned as Agriculture and another as Rural Residential. Table 1 below indicates the Official Plan and Zoning designations for all potential drilling sites, and whether the study area is within CVC Regulated Lands.

Table 1. Designations and Zoning of Drilling Sites

Site	Wellington County OP	Town of Erin Zoning By-law 07-67	Within CVC Regulation Limit
<b>Erin Site 1</b> Mountainview	Urban Centre	Rural Residential	N
<b>Erin Site 2</b> Wellington Road 124 (Solmar/Former Mattamy)	Urban Centre	Future Development	N
<b>Erin Site 3A</b> Wellington road 23 (Tavares Lands, first location)	Prime Agricultural (adjacent Greenlands)	Agricultural	N (adjacent)

<b>Erin Site 3B</b> Wellington road 23 (Tavares Lands, current location)	Prime Agricultural	Agricultural	N
<b>Erin Site 4</b> County Rd 52	Secondary Agricultural	Agricultural	N
<b>Erin Site 5</b> Dundas St. & 8 <sup>th</sup> Line	Urban Centre (adjacent Greenlands)	Future Development	Y
<b>Hillsburgh Site 1</b> Nestle Property	Urban Centre (adjacent Greenlands)	Future Development	N (adjacent)
<b>Hillsburgh Site 2</b> Currie Drive (Tavares Lands)	Urban Centre	Future Development	N (adjacent)
<b>Hillsburgh Site 3</b> Wellington Road 22 (Thomasfield Homes)	Urban Centre (adjacent Greenlands)	Future Development	N
<b>Hillsburgh Site 4</b> North of Upper Canada Drive	Urban Centre	Future Development	N

### 1.3 Existing Regulations

#### 1.3.1 Provincial Policy Statement

The *Provincial Policy Statement* ([PPS] (OMMHA 2014)) provides policy direction on matters of provincial interest related to land use planning and development.

The PPS states that:

*“Natural features and areas shall be protected for the long term.”*

And that:

*“The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and groundwater features.”*

Under the PPS, development and site alteration are not permitted in:

- a) Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- b) Significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- c) Significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- d) Significant wildlife habitat;
- e) Significant areas of natural and scientific interest; and
- f) Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b),

*Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*

The PPS (2014) also states that:

1. *Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.*
2. *Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*
3. *Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.*

### **1.3.2 Endangered Species Act, 2007**

The provincial Endangered Species Act, 2007 (ESA) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (MNRF 2018). The habitat of some species at risk is also protected under the ESA. Protected habitat is habitat identified as essential for life processes including: breeding, rearing, feeding, hibernation and migration.

The ESA (Subsection 9(1)) states that:

*“No person shall,*

- (a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;*
- (b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,*
  - (i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,*
  - (ii) any part of a living or dead member of a species referred to in subclause (i),*
  - (iii) anything derived from a living or dead member of a species referred to in subclause (i); or*
- (c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).*

Clause 10(1) (a) of the ESA also states that:

*“No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species.”*

Clause 10(1)(a) of the ESA also states that:

Clause 16(5) of the ESA states that:

*“An agreement entered into under this section may require the authorized party under the agreement to pay a species conservation charge to the Agency in accordance with Section 20.3 if an impacted species under the agreement is also a conservation fund species.”*

Clause 17(1) of the ESA states:

*“The Minister may issue a permit to a person that, with respect to a species specified in the permit that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species, authorizes the person to engage in an activity specified in the permit that would otherwise be prohibited by Section 9 or 10. 2007, c. 6, s. 17(1)”.*

An authorization or permit between the proponent and the Minister of Natural Resources and Forestry is required to authorize activities that would otherwise be prohibited by Subsection 9(1) and 10(1) of the ESA.

### **1.3.3 Credit Valley Conservation Authority**

The study areas are in the jurisdiction of CVC with one study area within the regulation limit.

Section 7.2.6 of the CVC's Watershed Planning and Regulation Policies states CVC recognizes that certain types of interference or development related to infrastructure, by their nature, must locate within hazardous land, watercourses, wetlands and natural features and areas contributing to the conservation of land and associated setbacks.

### **1.3.4 The Corporation of the Town of Erin Zoning By-law No. 07-67**

The Town of Erin Zoning By-law No. 07-67 Schedules 'A' and 'B' indicate that the majority of sites are zoned as Future Residential, with some zoned as Agricultural and Rural Residential.

Section 4.45 states that nothing in this By-law shall apply to prevent or otherwise restrict any municipal, county, provincial or federal agency, corporation, board or commission for any of the following:

- The use of any land for the installation or maintenance of any well, water main, sanitary sewer main, storm sewer main, pumping station, gas main, pipeline, storm water management facility, lighting fixture, overhead or underground electrical service, cable television, telegraph or telephone line or associated tower or transformer, together with any installations or structure appurtenant thereto.

### **1.3.5 Wellington County Official Plan**

The County of Wellington Official Plan indicates that areas designated as Prime Agriculture are those where there are Class 1, 2 and 3 agricultural soils, associated Class 4 to 7 soils and additional areas where there is a local concentration of farms which exhibit the characteristics of ongoing agriculture and specialty crop land. These areas will be protected for agriculture.

Section 6.4.9 states that in order to ensure that Prime Agricultural land is only used for community service facilities where need and alternative locations have been considered, the establishment of new community service facilities may only be allowed through a zoning by-law amendment that addresses the requirements of Section 4.3.3 with the exception of:

- Public work;
- Temporary emergency facilities; and
- Trails

Section 6.5.3 states that permitted uses and activities in Secondary Agricultural areas may include:

- All uses allowed in the Prime Agricultural Areas;
- Small scale commercial, industrial and institutional uses;
- Public service facilities

The County of Wellington Official Plan indicates that areas designated as Core Greenlands are those with greater sensitivity or significance and include:

- Provincially Significant Wetlands;
- All other wetlands;
- Habitat of endangered or threatened species and fish habitat and;
- Hazardous lands

Within the Core Greenlands designation, development and site alteration shall not be permitted within Provincially Significant Wetlands, or in significant habitat of threatened or endangered species, except in accordance with provincial and federal requirements.

Where development is proposed in the Greenland system or on adjacent lands, the County or local municipality shall require the developer to:

- a) Identify the nature of the features potentially impacted by the development;
- b) Prepare, where required, an environmental impact assessment to ensure that the requirements of this Plan will be met, and consider enhancement of the natural area where appropriate and reasonable.
- c) Address any other relevant requirements set out in Section 4.6.3 Environmental Impact Assessment

## **1.4 Agency Correspondence**

Based on the above Acts, Policies and Regulations, correspondence between Aboud & Associates and both the Ministry of Natural Resources and Forestry (MNRF) and Credit Valley Conservation (CVC) occurred.

Aboud & Associates contacted Liam Marray, CVC, via phone and follow up e-mail on behalf of Triton to inquire whether three sites (Erin Site 2, Erin Site 3A (Erin) & Tavares Lands (Hillsburgh)) within active agricultural operation, would be able to be prepared for pump testing in early 2018. Liam indicated that Aboud & Associates was to determine whether these sites provide ecological benefit to the surrounding communities. If these sites did provide benefits, it

would be deemed too late in the year to conduct the necessary field investigations. If no ecological benefits were provided, these sites were able to be prepared for pump testing. Based on a site visit by AA on November 22, 2018, it was determined that Triton could proceed with preparing them for pump testing in early 2018. The follow-up e-mail is provided in *Appendix 1*.

Alaina Vandervoort, Acting Management Biologist, MNRF- Guelph District cautioned that several drilling sites are within Bobolink and Eastern Meadowlark habitat, therefore any works that are to occur during the breeding period, May 1 to July 31 will require Grassland Bird Surveys as per OBBA and MNRF- Guelph District protocol. If works are to be done before May 1 or after July 31, no surveys are required. Since this correspondence occurred during the timing window to conduct Grassland Bird surveys, the surveys were not able to be completed in 2018 and all work was therefore completed outside of the breeding bird windows. The correspondence in its entirety is provided in *Appendix 1*.



## 2.0 Methods

### 2.1 Background Review

A background information review was conducted of both biological and physical features within and adjacent to the study area. The following resources were consulted as part of this review:

1. Ministry of Natural Resources and Forestry (MNR), Guelph District
2. Natural Heritage Information Centre (NHIC) database (accessed: 2017)
3. Ontario Reptile and Amphibian Atlas (Ontario Nature 2018a)
4. Ontario Reptile and Amphibian Atlas Interactive map (Ontario Nature 2018b)
5. Ontario Mammal Atlas (1994)
6. Atlas of the Breeding Birds of Ontario, 2001-2005 (2007)
7. Distribution and Status of the Vascular Plants of Southwestern Ontario (1993)
8. Credit Valley Conservation Authority Regulation Mapping (accessed: 2017)
9. Town of Erin Zoning By-law No. 07-67 (September 2014 Consolidation)
10. County of Wellington Official Plan, 1999 (November 2017 Consolidation)

### 2.2 Vegetation

#### 2.2.1 Ecological Land Classification

A one-season Ecological Land Classification (ELC) evaluation was completed by qualified Ecologist, Shannon Davison, OMNRF Certified in Ecological Land Classification, on June 22, 2018, additional communities were assessed for one site (Erin Site 3B) by Cheryl-Anne Ross, OMNRF certified in Ecological Land Classification on September 30, 2019, using photographs of the site. Vegetation communities within the study area were characterized and delineated following the ELC system for Southern Ontario 1<sup>st</sup> approximation; community codes used generally follow the 2<sup>nd</sup> approximation (Lee et al., 1998, 2008). Boundaries of ELC communities were mapped using aerial images and field observations (*Figures 2-10*). As part of this process, soils were characterized and the study area was systematically searched in order to provide an inventory of vascular plants to provide a one-season botanical inventory of the study area. Detailed survey dates and weather information are provided in *Appendix 2*.

Identified ELC communities were cross referenced with the NHIC Ontario Plant Community List (NHIC 2015) to determine the presence of rare plant communities (S1-Critically Imperiled, S2-Imperiled, or S3-Vulnerable). The Subnational, or Provincial Ranks (S Rank) are assigned by the Ontario Ministry of Natural Resources and Forestry (MNR) Natural Heritage Information Centre (NHIC) in order to help assign protection priorities. Completed ELC field assessment forms are provided in *Appendix 3*.

## **2.2.2 Botanical Inventory**

A one-season botanical inventory was completed concurrently with the Ecological Land Classification. Identified vascular plant species were compared to provincial and federal SAR lists (COSARO, SARA), provincial ranks (NHIC 2017), global ranks, and Distribution and Status of the Vascular Plants of Southwestern Ontario (Oldham 1993) in order to assess federal, provincial, regional and local conservation status of each species. English colloquial names and scientific binomials of plant species generally follow the Database of Vascular Plants of Canada (VASCAN 2016).

Identification of environmentally sensitive plant species was completed based on assignment of a coefficient of conservatism value (CC) for each native species (Oldham, et al., 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to specific natural habitat parameters. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters. These species may be more sensitive to environmental changes (Mortarello et. al., 2010).

A list of all identified plant species is provided in *Appendix 4*. The list provides botanical names, common names, provincial rarity rank (S-rank), global rarity rank (G-rank), provincial Species at Risk status (SARO), federal Species at Risk status (SARA), coefficient of conservatism (CC) and coefficient of wetness (CW). Plant species that could only be identified to genus were not assigned the above information.

## **2.3 Wildlife**

### **2.3.1 Incidental Wildlife Observations**

Incidental observations of insects, mammals, birds and reptiles were recorded during all field visits and incidental observations of amphibians made outside of the formal field surveys for this group of fauna were recorded. Detailed survey dates and weather information are provided in *Appendix 2*. A complete list of all incidental wildlife is provided in *Appendix 5*.

### **2.3.2 Significant Wildlife Habitat**

With guidance from the *Significant Wildlife Habitat Technical Guide* (MNRF, 2000) and the SWH EcoRegion Criterion Schedule 6E (MNRF, 2015), the study area and adjacent lands were considered for the presence of Significant Wildlife Habitat (e.g. specialized habitats for wildlife, habitat for species of conservation concern). Detailed survey dates and weather information are provided in *Appendix 2*. An assessment of the study area for all SWH is provided in *Appendix 7a-i*.

### **2.3.3 Species at Risk Habitat Assessment**

A thorough review of all background documents was conducted to compile a master list of all Species at Risk, and species with conservation designation (Locally rare, S1-S3 species, significant in Wellington County) that may occur in the study area. A review of the site, along with habitat requirements for each species was conducted; the site was then evaluated for potential habitat using Ecological Land Classification, guidance from MNRF documents, and on-site knowledge acquired through field surveys. Detailed survey dates and weather information

are provided in *Appendix 2*. An assessment of the study area of candidate habitat for SAR is provided in *Appendix 7a-i*.

## **2.4 Landscape Evaluation**

A landscape level evaluation was completed for the study area and surrounding lands to identify ecologically significant features that extend beyond the boundaries of the study area, and that may be impacted by changes within the study area. The following background resources were reviewed in completing the Landscape Evaluation:

- Natural Heritage Information Center (NHIC);
- The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions (MNRF 2009);
- County of Wellington Official Plan (November 2017 Consolidation);
- Town of Erin Zoning By-law 07-67 (September 2014 Consolidation);
- Forest Regions of Canada (Rowe 1977);
- Aerial photo interpretation.

### 3.0 Existing Conditions

Information that characterizes the existing conditions of the study area came from several sources, including but not limited to, background review of existing documents, public information sources, past field studies by others, and extensive field reconnaissance.

#### 3.1 Background Review

##### 3.1.1 Natural Heritage Information Centre - Species at Risk

Preliminary investigation through the Natural Heritage Information Centre (NHIC) identified four provincial Species at Risk (SAR) under the ESA, recorded within approximately 2km of the drilling site study areas. These species and their habitat requirements are summarized in *Table 2*. In addition to the species listed below, one Restricted Species was listed within 2km of each of Hillsburgh Site 2 and Hillsburgh Site 1 drilling site study areas. Further information on these records was not provided.

Table 2. NHIC Species at Risk Records

Scientific Name	Common Name	COSEWIC Status <sup>1</sup>	SARO Status <sup>2</sup>	S-Rank <sup>3</sup>	Last Observed (NHIC)	Site(s)	Habitat Requirements
<i>Dolichonyx oryzivorus</i>	Bobolink	Threatened	Threatened	S4B	June 30, 2002	- Erin Site 4	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et al, 2015)
					June 21, 2001	- Hillsburgh Site 4	
<i>Sturnella magna</i>	Eastern Meadowlark	Threatened	Threatened	S4B	June 30, 2002	- Erin site 4	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).
					June 30, 2001	- Hillsburgh Site 3	
					June 2, 2001	- Erin Site 2 - Erin Site 3A & 3B	
<i>Contopus virens</i>	Eastern Wood-pewee	Special Concern	Special Concern	S4B	Date unk.	- Erin Site 5	Mostly found in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. Associated with forest stands of intermediate age and in mature stands with little understorey vegetation (COSEWIC 2012)
<i>Bombus bohemicus</i>	Gypsy Cuckoo Bumblebee	Endangered	Endangered	S4	August 22, 1979	- Erin Site 1	Occurs in several habitats including open meadows, mixed farmlands, urban areas, boreal forest and montane meadows. Nests occur in abandon underground rodent burrow and rotten logs (COSEWIC 2014).

<sup>1</sup> COSEWIC – Committee on the status of endangered wildlife in Canada

<sup>2</sup> SARO – Species at Risk Act Ontario

<sup>3</sup> S-Rank – Denotes the conservation status of a species at the provincial level

S4: Apparently Secure—Uncommon but not rare

S#B- Breeding status rank

### **3.1.2 Ontario Breeding Bird Atlas**

Lists of birds determined to be breeding (Possible, Probable or Confirmed) in the 10km x 10km square containing the Erin (17NJ74) and Hillsburgh (17NJ64) study areas during the 2001-2005 Ontario Breeding Bird Atlas (Cadman 2007) was compiled.

The list for the six study areas within Erin includes 118 species; 10 of which are considered Species at Risk under the ESA and SARA, respectively (Short-eared Owl (SC, SC), Chimney Swift (THR, THR), Eastern Wood-pewee (SC, SC), Bank Swallow (THR, THR), Barn Swallow (THR, THR), Wood Thrush (SC, THR), Canada Warbler (THR, THR), Grasshopper Sparrow (SC, SC), Bobolink (THR, THR) and Eastern Meadowlark (THR, THR). Twenty-three species identified in the square are considered Ontario PIF (Partners in Flight) priority species in Bird Conservation Region 13 (Environment Canada, 2008). Twenty-four species identified in the square are considered Significant in Wellington County (Dougan & Associates, 2009). The findings of this review are presented in *Appendix 8a*.

The list for the four study areas within Hillsburgh includes 108 species; eight of which are considered Species at Risk under the ESA and SARA, respectively (Eastern Wood-pewee (SC, SC), Bank Swallow (THR, THR), Barn Swallow (THR, THR), Wood Thrush (SC, THR), Canada Warbler (THR, THR), Grasshopper Sparrow (SC, SC), Bobolink (THR, THR) and Eastern Meadowlark (THR, THR). Twenty of the species identified in the square are considered Ontario PIF (Partners in Flight) priority species in Bird Conservation Region 13 (Environment Canada, 2008). Sixteen of the species identified in the square are considered Significant in Wellington County (Dougan & Associates, 2009). The findings of this review are presented in *Appendix 8b*.

### **3.1.3 Ontario Reptile and Amphibian Atlas**

Lists of reptiles and amphibians in the 10km x 10km squares containing Hillsburgh (17NJ64) and Erin (17NJ74) study areas were compiled by reviewing the Ontario Reptile and Amphibian Atlas (Ontario Nature, 2017).

The list for the study areas within Erin includes 17 species; one of which is considered a Species at Risk under the ESA and SARA, respectively (Snapping Turtle (SC, SC), with two other species listed only under SARA (Milksnake (SC) & Western Chorus Frog (THR)). Eight species identified in the square are considered Significant in Wellington County (Dougan & Associates, 2009). The findings of this review are presented in *Appendix 8a*.

The list for the study areas within Hillsburgh includes seven species; one of which is considered a Species at Risk under the ESA and SARA, respectively (Snapping Turtle (SC, SC). Snapping Turtle is also considered Significant in Wellington County (Dougan & Associates, 2009). The findings of this review are presented in *Appendix 8b*.

### 3.1.4 Atlas of the Mammals of Ontario

Lists of mammals within approximately 10km of the study areas in Erin and Hillsburgh were compiled by reviewing the Atlas of the Mammals of Ontario (Dobbyn, 1994).

The list for the study areas within Erin and Hillsburgh includes 19 & 16 species, respectively. Both squares include one Species of Conservation Concern, Little Brown Myotis (*Myotis lucifugus*) listed as Endangered under the ESA and SARA. Potential maternity habitat for bat species at risk was not observed within the forested communities in the study areas. The findings of this review are presented in *Appendices 8a & 8b*.

### 3.1.5 Ministry of Natural Resources and Forestry

A request for information was sent to the MNR on April 17, 2018 to inquire whether any further Species at Risk may occur in the Erin and Hillsburgh study areas. A response was provided on May 4, 2018 and was separated into three letters based on Concessions and Lots of each study area. MNR staff indicated that records for several species listed under the ESA occur in the area, including Butternut (*Juglans cinerea*), American Ginseng (*Panax quinquefolius*) Redside Dace (*Clinostomus elongatus*), Little Brown Myotis (*Myotis lucifugus*), Eastern Meadowlark (*Sturnella magna*), Bobolink (*Dolichonyx oryzivorus*), Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Unisexual Ambystoma, Jefferson Dominated (*Ambystoma laterale*-(2) *jeffersonianum*) and Grasshopper Sparrow (*Ammodramus savannarum*). The response is provided in its entirety in *Appendix 9*.

## 3.2 Vegetation

### 3.2.1 Ecological Land Classification

A one-season ELC evaluation was completed for the study areas in Erin and Hillsburgh. Twenty-two polygons comprised of eleven different ELC communities were identified and mapped. The community polygons identified in each study area during the one-season ELC survey are summarized in *Table 3* below. Field forms and a comprehensive vascular plant list for the entire study area are presented in *Appendix 3* and *4*, respectively. Comparison with the NHIC Rare Plant Communities did not identify any provincially rare plant communities (S1-S3) within the study area.

Site	ELC Code	Vegetation Type	Community Description
Erin Site 1	CVR_3	Single Family Residential	This site is located immediately adjacent the intersection of 9 Line and Kenneth Avenue and consists of a contiguous residential area. The drilling site is manicured, with trees along the edges including Siberian Elm ( <i>Ulmus pumila</i> ) and Sugar Maple ( <i>Acer saccharum</i> ) and a mown ground layer consisting of Kentucky Bluegrass ( <i>Poa pratensis</i> ssp. <i>pratensis</i> ), Common Dandelion ( <i>Taraxacum officinale</i> ), Wild Strawberry ( <i>Fragaria virginiana</i> ) and Common Plantain ( <i>Plantago major</i> ).

	OAGM1	Annual Row Crop	The north-east corner of the study area contains a small agricultural community. Due to property access restrictions, it was not able to be accessed.
Erin Site 2	OAGM1	Annual Row Crops	<p>This site is located immediately south of County Road 124 north of downtown Erin. The site is located within an actively farmed field planted with Soy (<i>Glycine max</i>) in 2017 and Corn (<i>Zea mays</i>) in 2018. A very narrow treed hedgerow consisting of White Ash (<i>Fraxinus americana</i>) and Common Buckthorn (<i>Rhamnus cathartica</i>) with a ground layer comprised of Smooth Brome (<i>Bromus inermis</i>), Tufted Vetch (<i>Vicia cracca</i>), Black Medic (<i>Medicago lupulina</i>) and Red Clover (<i>Trifolium pretense</i>).</p> <p>The agricultural field north of County Road 124 was dominated by Common Wheat (<i>Triticum aestivum</i>) with the same ground layer observed south of the County Road 124.</p>
Erin Site 3A	OAGM4	Open Pasture	This community is located east of Wellington Road 23 and consists of a graminoid pasture with a thin hedgerow along the fence line. The pasture consists of taller grasses including Orchard Grass ( <i>Dactylis glomerata</i> ) and Smooth Brome in the understorey with Red Clover, White Clover ( <i>Trifolium repens</i> ), Black Medic and Tufted Vetch in the ground layer. The treed hedgerow was comprised of Sugar Maple and Black Locust ( <i>Robinia pseudoacacia</i> ).
	OAGM1	Annual Row Crops	The portion of the study area west of Wellington Road 23 is an actively farmed agricultural field planted with Corn. Vegetation surrounding this field includes sparsely planted Scotch Pine ( <i>Pinus sylvestris</i> ) with graminoid and forb species including Smooth Brome, Canada Bluegrass ( <i>Poa compressa</i> ), Wild Carrot ( <i>Daucus carota</i> ) and Annual Fleabane ( <i>Erigeron annuus</i> ).
Erin Site 3B	OAGM1	Annual Row Crops	Actively farmed Agricultural field planted with Soy.
	CVR_4	Rural Property	A rural residential property occurs within the northern portion of the study area. Areas of planted coniferous hedges are present within the property.
	TAGM5	Fencerow	A fencerow occurs to the north west of the residential property within the study area, dominated by deciduous species.
Erin Site 4	OAGM1	Annual Row Crops	<p>Both vegetation communities identified north and south of Wellington Road 52 are classified as actively farmed agricultural fields. North of County Road 52, the community is dominated by planted Soy. Grasses including Meadow Brome and an unknown Poa species with sparse Sugar Maple, Freeman's Maple (<i>Acer X freemani</i>) and Common Buckthorn separated the road from the agricultural field.</p> <p>South of Wellington Road 52, the agricultural field was presumed to be comprised of a hay crop but had been recently ploughed and was unable to be identified. Meadow Brome, Red Clover and Tufted Vetch were present along the edges of the field.</p>
	CVR_3	Single Family Residential	The western portion of the study area contains single family residential lots off of Aspen Court and Wellington Road 52.
Erin Site 5	OAGM4	Open Pasture	This active pasture community is situated immediately west of 8 <sup>th</sup> Line. It contains a mixture of grasses and forbs including Orchard Grass, Kentucky Bluegrass and Tufted Vetch with some Canada Goldenrod ( <i>Solidago canadensis var. canadensis</i> ) and Common Milkweed ( <i>Asclepias syriaca</i> ). Planted Sugar Maples were also present along the road edge.

	FODM5	Dry- Fresh Sugar Maple Deciduous Forest	This forested community occurs south of the identified pasture, adjacent to the bend at Dundas St. & 8 <sup>th</sup> Line. Due to signage present, access within the community was not permitted. Therefore, evaluation could only be completed from the roadside. The canopy and sub-canopy consist largely of Sugar Maple with some White Ash throughout. The understorey includes Virginia Creeper ( <i>Parthenocissus quinquefolia</i> ), Common Buckthorn and Riverbank Grape ( <i>Vitis riparia</i> ) while the ground layer is comprised of Sugar Maple, European Wood-sorrel ( <i>Oxalis stricta</i> ) and Tall Buttercup ( <i>Ranunculus acris</i> ) and Common Dandelion.
	TAGM1	Coniferous Plantation	A small portion of a coniferous plantation is located west of the identified pasture. The plantation is dominated by Eastern White Pine, with sparse Sugar Maples growing along the edges. Due to pasture being active, the plantation could not be accessed and was assessed from the road.
Hillsburgh Site 1	MEMM3	Dry- Fresh Mixed Meadow	Located immediately south of Station Street this community is dominated primarily by graminoid and herbaceous species with some planted tree species as well as a thin hedgerow near the back of the polygon. The meadow consists of species including Creeping Wildrye ( <i>Elymus repens</i> ), Canada Goldenrod, Canada Bluegrass and Wild Strawberry, with European Larch ( <i>Larix decidua</i> ) and Eastern White Pine ( <i>Pinus strobus</i> ) planted throughout the southern portion. The hedgerow along the southern boundary of the community contains White Ash and Black Walnut ( <i>Juglans nigra</i> ).
	MEGM3	Dry- Fresh Graminoid Meadow	The southern portion of the study area contains an area with evidence of previous agricultural operation that now has primarily graminoid species with some herbs throughout. The majority of the community is comprised of Orchard Grass and Canada Bluegrass, but also consists of Red Clover, Oxeye Daisy ( <i>Leucanthemum vulgare</i> ) and White Clover.
	FODM5-9	Dry- Fresh Sugar Maple-Hardwood Deciduous Forest	Due to property access restrictions, this polygon was investigated from the adjacent Mixed Meadow community. The canopy and sub-canopy consist primarily of Sugar Maple with White Ash and Black Walnut associates. Beneath the sub-canopy the understorey includes Common Buckthorn and Virginia Creeper with Wild Strawberry and Annual Fleabane in the ground layer.
	CVR_4	Rural Property	A rural residential property occurs within the eastern portion of the study area. A long driveway which runs beyond the existing dwelling bisects the study area.
Hillsburgh Site 2	OAGM1	Annual Row Crops	Due to this community being farmed prior to site investigations, the dominant species could not be determined, however based on remains it is presumed to be a cereal crop. Aerial photography from previous years shows that this community has also been used for Corn.
	TAGM1	Coniferous Plantation	A plantation dominated by Eastern White Pine is located south of the Row Crop community. A sparse understorey containing Common Buckthorn along with a ground layer of Common Plantain and Common Dandelion exist primarily along the edge of the community.
	CVR_3	Single Family Residential	This community backs onto the above Annual Row Crop polygon. Species of planted trees within this residential area include Norway Maple ( <i>Acer platanoides</i> ), Norway Spruce ( <i>Picea abies</i> ), Eastern White Pine, and Paper Birch ( <i>Betula papyrifera</i> ).
Hillsburgh Site 3	OAGM1	Annual Row Crops	Two polygons classified as Annual Row Crops were identified in the study area. One occupies the eastern portion of the study area and is dominated by Corn. Other species identified were primarily in the road right-of-way and include Sugar Maple, Manitoba Maple ( <i>Acer</i>



			<i>negundo</i> ), Reed Canary Grass ( <i>Phalaris arundinacea</i> ), Canada Goldenrod, Annual Fleabane and Wild Strawberry. The second polygon is located in the north-western portion of the polygon and contains Common Wheat ( <i>Triticum aestivale</i> ).
	MEMM3	Dry- Fresh Mixed Meadow	West of the existing dwelling is a Mixed Meadow community comprised primarily of roadside species. Markings in the soil indicate that it may have previously been worked, however there was no evidence of crops. Species identified in the community include Black Mustard ( <i>Brassica nigra</i> ), Bladder Campion ( <i>Silene vulgaris</i> ) and White Sweet-clover ( <i>Melilotus albus</i> ). The hedgerow dividing the meadow with the annual row crop community to the east was comprised of Black Walnut, Black Locust, Manitoba Maple and Common Buckthorn.
	CVR_4	Rural Property	A small rural residential property is present immediately north of Wellington Road. Planted species on the property include Norway Spruce and Sugar Maple.
Hillsburgh Site 4	OAGM1	Annual Row Crops	This row crop community occurs within the centre of the study area and is surrounded by a graminoid meadow. This community is dominated by Common Wheat with a few species including Tufted Vetch, Annual Fleabane and an unknown grass species along the edges.
	MEGM3	Dry- Fresh Graminoid Meadow	This community is dominated by grasses including Smooth Brome and Orchard Grass with associate herbaceous species consisting of Tufted Vetch, Garden Bird's-foot Trefoil ( <i>Lotus corniculatus</i> ) and Bladder Campion. Trees including Eastern White Pine, Scotch Pine and Eastern White Cedar ( <i>Thuja occidentalis</i> ) were planted throughout.
	CVR_3	Single Family Residential	The eastern portion of the study area, opposite Main street, consists of a single-family residential community.

### 3.2.2 Botanical Inventory

A detailed field inventory of accessible properties within the study area was completed during the ELC evaluation. Fifty-six species of vascular plants, from 25 families, were identified. Of those identified, 22 species or 39% were native and 34 or 61% were non-native. All identified plant species are provided in *Appendix 4*.

#### 3.2.2.1 Species at Risk, Regional and Local Significance

Most of the native species identified are ranked S5 (secure in Ontario) or SNA (S-Rank not applicable) with one species, White Ash (*Fraxinus americana*) ranking S4 (apparently secure in Ontario), and two species, Black Walnut (*Juglans nigra*) and Virginia Creeper (*Parthenocissus quinquefolia*) ranked S4? indicating uncertainty in its ranking. No S1-S3 species were observed in the study area. No species observed had Conservation Co-efficient of 9 or 10.

No nationally or provincially rare, threatened or endangered species were observed.

### 3.3 Wildlife

#### 3.3.1 Incidental Wildlife Observations

All incidental wildlife observations made outside of the above formal field surveys are presented in *Table 5*. All observations were of single individuals unless otherwise stated. None of these species are designated as Species at Risk.

Table 4. Incidental Wildlife Observations

Common Name	Scientific Name	Taxa	Date -Observation
Field Sparrow	<i>Spizella pusilla</i>	Bird	June 22 (Hillsburgh Site 4)- Singing
Blue Jay	<i>Cyanocitta cristata</i>	Bird	June 22 (Hillsburgh Site 3)- Calling from a tree
American Goldfinch	<i>Carduelis tristis</i>	Bird	June 22 (Hillsburgh Site 1)- Flying between trees and shrubs
American Robin	<i>Turdus migratorius</i>	Bird	June 22 (Erin site 1)- Singing in nearby tree
Turkey Vulture	<i>Cathartes aura</i>	Bird	June 22 (Hillsburgh site 3)- Flying overhead
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Bird	June 22 (Hillsburgh Site 4)- Observed
American Crow	<i>Corvus brachyrhynchos</i>	Bird	June 22 (Hillsburgh Site 1)- Flying overhead
Northern Flicker	<i>Colaptes auratus</i>	Bird	June 22 (Hillsburgh Site 1)- Flying on adjacent property
Gray Squirrel	<i>Sciurus carolinensis</i>	Mammal	June 22 (Hillsburgh Site 3)- Observed scaling a tree

### 3.4 Significant Wildlife Habitat

With guidance from the *Significant Wildlife Habitat Technical Guide* (2000) and the SWH EcoRegion Criterion Schedule 6E (2015), we have determined that Significant Wildlife Habitat (SWH) may be present within the study area. The majority of agricultural and meadow communities identified during site investigations qualify as Candidate Waterfowl Stopover and Staging Areas, as a result of their total area, however no evidence of flooding was observed when examining past aerial imagery. Based on these observations, the Waterfowl Stopover and Staging Areas cannot be confirmed, therefore, if drilling is to occur within these communities it should be completed outside of the spring staging window (mid-March to May) to avoid any negative impacts to the wildlife and habitat (MNRF, 2015b). See *Appendices 7a-i* for a detailed assessment of Significant Wildlife Habitat for each of the study areas.

### 3.5 SAR Habitat Assessment

An assessment of all Species at Risk, and species with conservation designation, that have the potential to occur in the study area (per MNRF and NHIC) was completed. Species assessed include all species with Provincial SARO status, Federal SARA status, or an S-Rank of S1-S3. Open graminoid communities within the study areas may provide habitat for bird species such as Bobolink and Eastern Meadowlark. Based on communications with MNRF- Guelph District, grassland bird surveys must be completed as per OBBA and MNRF- Guelph District protocol if drilling is to occur between May 1 and July 31, in order to avoid harming the species and/or habitat. A description of habitat requirements, field studies conducted, and results are provided in *Appendix 7*.

### **3.6 Landscape Evaluation**

#### **3.6.1 Ecoregion**

The study area is located within Ecoregion 6E. This is the second most densely populated ecoregion in Ontario (MNRF 2009), containing a number of large urban centres. The climate of the ecoregion is mild and moist with mean annual precipitation between 759 to 1,087 mm. The underlying geology of the ecoregion is dolomite and limestone, with deep glacially deposited surface soils covering the bedrock in most areas.

Forest cover of the ecoregion is approximately 30.1% and composed of a diverse mixture of hardwood forests, lowlands and flood plain forest. Common tree species within the Ecoregion include; Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*), Eastern Hemlock (*Tsuga canadensis*), Green Ash (*Fraxinus pennsylvanica*), Silver Maple (*Acer saccharinum*), Red Maple (*Acer rubrum*), Eastern White Cedar (*Thuja occidentalis*), Yellow Birch (*Betula alleghaniensis*), Balsam Fir (*Abies balsamea*), and Black Ash (*Fraxinus nigra*) (MNRF 2009).

#### **3.6.2 Geology and Soils**

The soils within the Town of Erin study areas are comprised primarily of Caledon fine sandy loam with pockets of Guelph loam, Donnybrook sandy loam and Hillsburgh fine sandy loam (Hoffman et al, 1952). Caledon soils are well drained and have developed on gravelly materials. Typically occurring on gently undulating landscapes, Caledon soils profile is usually stone-free with the exception of the occasional field stone on the surface.

The soils within the Village of Hillsburgh study areas are comprised primarily of Hillsburgh fine sandy loam with a narrow strip of Caledon fine sandy loam running east-west through the village center (Hoffman et al, 1952). Hillsburgh soils are characterized by sandy soil materials and rough topography. Hillsburgh soils are known to be well suited to growing potatoes as well as cereal grains and fodder corn.

#### **3.6.3 Connectivity and Existing Natural Features**

Most of the study areas are within or adjacent to actively farmed agricultural fields, these areas do not provide any direct linkages to any natural features within the broader landscape. *Figure 1* details the study area and the surrounding natural heritage features.

## 4.0 Impact Analysis, and Mitigation

Ten locations for new water supply wells were investigated for impacts to the natural heritage system. Each location has been assessed for impacts to the Natural Heritage System. 4 locations were investigated for the Village of Hillsburgh, and six locations were investigated for the Town of Erin for the purposes of the EA. During testing for the water supply it was identified that only two locations met the requirements to provide additional water supply, as a result, these locations were selected as the only options available for installation of pumps for additional water supply.

A detailed description of all potential impacts at each site is described below and mitigation guidelines are provided in *Table 5*.

Erin Site 3B is situated in an active agricultural field that was planted in 2019 with Soy. It is adjacent to a rural residential property and is located just off Wellington Road 23. No Natural heritage features were identified within the site, except for candidate significant wildlife habitat for migratory waterfowl. No evidence of spring flooding was noted through a review of aerial photography of the site, and no known sites are identified by the MNRF. No impacts are expected to the natural environment at this site if all works are completed outside of the timing windows identified in section 5.0 and Table 5.

Hillsburgh Site 2 is situated in an agricultural field planted with an unknown cereal crop at the time of investigation in 2017. A Coniferous plantation is present within the study area to the south, and trees at the rear of residential properties are also present to the north. No significant natural heritage features were present within the potential drilling site, except for candidate significant wildlife habitat for migratory waterfowl. No evidence of spring flooding was noted through a review of aerial photography of the site, and no known sites are identified by the MNRF. No impacts are expected to the natural environment at this site if all works are completed outside of the timing windows identified in section 5.0 and Table 5 and all tree removals occur outside of the breeding bird window.

#### 4.1 Generalized Impact Assessment and Mitigation

The installation of the wells may result in impacts to the existing natural features. An assessment of the impacts (potential and actual) and mitigation measures are provided in *Table 5*. See *Appendix 10* for descriptions of criteria, impact ratings and analysis.

Table 5. Impact Assessment and Mitigation

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING <sup>1</sup>	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL <sup>2</sup> IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing	Vegetation Removal – clearing & grubbing upland areas	• Loss of vegetation and wildlife habitat	LT	P	SA	O	PD	L	N	Minor	• Revegetate areas with native species after site preparation	Minor-None	
		• Disturbance of wildlife species	ST	R	SA	O	PD	L	N	Minor	• Time activities to avoid wildlife disturbance during important life stages	Minor-None	

Table 5. Impact Assessment and Mitigation

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING <sup>1</sup>	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL <sup>2</sup> IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Site Preparation and servicing	Vegetation Removal – clearing & grubbing <i>upland areas</i>	<ul style="list-style-type: none"> <li>Impacts to Nesting Birds Protected under the Migratory Bird Convention Act</li> </ul>	ST	R	SA	O	PD	M	N	Minor-moderate	<ul style="list-style-type: none"> <li>Conduct a bird nest survey to determine locations of active nests prior to construction works including installation of Erosion Sediment Control (ESC) fence and any site clearing.</li> <li>Create nest protection zones where active bird nests are found and monitor (as needed, e.g. weekly) until inactive.</li> </ul>	Minor-None	
Construction	Grading	<ul style="list-style-type: none"> <li>Increased erosion, sedimentation and turbidity</li> </ul>	ST	P	SA	O	PD	L	Y	Minor	<ul style="list-style-type: none"> <li>Maintain or restore vegetative buffers</li> </ul>	None	<ul style="list-style-type: none"> <li>Monitor ESC fencing weekly, and after a major storm event for any breaks, and repair</li> </ul>
		<ul style="list-style-type: none"> <li>Increase nutrient inputs and contaminants to waterbodies and wetlands</li> </ul>	ST	P	LA	O	PD	L	Y	Minor	<ul style="list-style-type: none"> <li>Develop &amp; implement ESC plan</li> <li>Designate areas for equipment storage</li> </ul>	none	<ul style="list-style-type: none"> <li>Monitor ESC fencing weekly, and after a major storm event for any breaks, and repair</li> </ul>

Table 5. Impact Assessment and Mitigation

PHASE	ACTIVITY	POTENTIAL IMPACTS	DURATION OF IMPACT	REVERSIBILITY	GEOGRAPHIC LEVEL OF INFLUENCE	FREQUENCY	ECOLOGICAL SITE CONTEXT	LIKELIHOOD OF OCCURRING	CUMULATIVE EFFECTS?	POTENTIAL IMPACT RATING <sup>1</sup>	MITIGATION RECOMMENDATIONS / COMMENTS	FINAL <sup>2</sup> IMPACT RATING	MONITORING / FOLLOW-UP RECOMMENDATION
Construction	Grading	• Increased soil compaction	ST	R	SA	O	PD	H	Y	Moderate	• Control access and movement of equipment and people	Minor	
		• Changes to surface runoff	ST	R	SA	O	PD	M	Y	Minor	• Schedule grading to avoid high runoff volumes • Minimize changes to land contours and natural drainage	None	
	Installation of components	• Disturbance to wildlife • Alteration or destruction of wildlife Habitat	ST	P	SA	O	PD	L	N	Minor	• Time activities to avoid sensitive periods (breeding birds) • Conduct work outside timing windows of sensitive species	Minor-None	
		• Wildlife Entering Construction Areas	ST	R	SA	O	PD	L	N	Minor	• Develop & implement ESC plan to exclude wildlife	Minor-None	• Monitor ESC fencing weekly, and after a major storm event for any breaks, and repair
		• Increased erosion, sedimentation and turbidity	ST	P	SA	O	PD	M	Y	Minor	• Develop and implement ESC plan	Minor-None	• Monitor ESC fencing weekly, and after a major storm event for any breaks, and repair

## **5.0 Summary and Conclusion**

The following is a summary of the existing natural heritage conditions assessed and identified within the study areas in the Town of Erin and Village of Hillsburgh.

### **5.1 Summary of Existing Conditions**

#### **5.1.1 Vegetation**

A one-season ELC evaluation and botanical inventory was completed for the study areas. No off-site adjacent lands were investigated due to access restrictions.

1. Four natural or naturalized vegetation communities, as well as seven cultural communities, were identified, characterised and mapped. None of the ELC communities are considered provincially rare.
2. Fifty-six species or distinct sub-species of plants were identified within the study area through field inventory and background sources. 39% of identified species are native to Ontario, with the remaining 61% of identified species exotic to Ontario.
3. No provincial or federal Species at Risk were identified within the study area.

#### **5.1.2 Wildlife**

1. A total of eight species of birds and one species of mammal were identified during the site investigations for all study areas. None of the species observed are considered species of Conservation Concern or are listed as provincial or federal Species at Risk.

#### **5.1.3 Significant Wildlife Habitat (SWH)**

1. A review of the study area using a combination of methods presented in the Ecoregion 6E criteria guide, air photo interpretation and field investigations assessed the study area for Significant Wildlife Habitat that may occur in ecoregion 6E. It was determined that candidate SWH in the form of Waterfowl Stopover and Staging Areas is present, but not confirmed.
2. If drilling and installation is to occur within candidate SWH as depicted in Figures 3-11, it should take place outside of the spring staging window (mid-March to May).

#### **5.1.4 Species at Risk Habitat Assessment**

1. A review of the study area was completed, using habitat requirements from reference documents, air photo interpretation and field investigations, to assess for habitat that may be suitable for Species at Risk. This list included all species identified through background review as occurring in Wellington County (Pers. Comm., Alaina Vandervoort, 2017), identified in Wildlife Atlases or identified through NHIC (2018) that may occur in the study area.



2. Potential habitat for two species, Bobolink and Eastern Meadowlark, was identified in the study area. Completion of Ecological Land Classification, vegetation surveys and incidental observations identified habitat that may be suitable for these species.
3. During all surveys completed in the study areas by AA, none of the Species at Risk identified were observed, however it should be noted that if works are to occur between May 1 and July 31 within Agricultural (Hay, Wheat), meadow, or pasture communities, Grassland Bird surveys completed as per the OBBA and MNR- Guelph District Survey Protocol will be necessary to ensure no harm to the species or habitat, if they are identified all work must be halted until they finish breeding and are off site.

## 5.2 Summary of Significant Features

A summary of existing conditions of natural heritage features are provided in Section 5.1. Some natural heritage features are considered significant, including Species and Risk listed under Ontario’s Endangered Species Act and Significant Wildlife Habitat under the Provincial Policy Statement. In addition to the natural heritage features present within the study areas, features identified as significant are provided varying levels of protection and management. A summary of significant features and the Legislation, Policy and Management considerations provided are listed in *Table 6*.

Significance/ Type	Site Assessment and Observations	Legislation, Policy and Management Considerations	Figure(s) & Sites
<b>Species at Risk</b>	<ul style="list-style-type: none"> <li>▪ Agricultural and meadow communities identified during ELC surveys, may provide suitable habitat to grassland birds such as Bobolink (THR) and Eastern Meadowlark (THR), four sites are identified within potential habitat</li> </ul>	<p><i>Endangered Species Act, 2007</i></p> <ul style="list-style-type: none"> <li>• Threatened (THR) and Endangered (END) species are afforded general habitat protection under the <i>ESA</i>.</li> </ul>	<p>Figure 3-12</p> <p>Erin 3A                      Erin 5                      Hillsburgh 1                      Hillsburgh 4</p>
<b>Significant Wildlife Habitat (SWH)</b>	<ul style="list-style-type: none"> <li>▪ Waterfowl Stopover and Staging Areas (Terrestrial)</li> </ul>	<p><i>Provincial Policy Statement, 2014</i></p> <ul style="list-style-type: none"> <li>• Under the PPS, “<i>Development and site alteration shall not be permitted in: ...Significant Wildlife Habitat... Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.</i>”</li> </ul>	<p>Figure 3-12</p> <p>Erin 2                      Erin 3A                      Erin 3B                      Erin 4                      Erin 5                      Hillsburgh 2                      Hillsburgh 3                      Hillsburgh 4</p>

Table 6. Summary of Significant Features

Significance/ Type	Site Assessment and Observations	Legislation, Policy and Management Considerations	Figure(s) & Sites
<p><b>Landscape Features</b></p>	<ul style="list-style-type: none"> <li>▪ Due to its size, the woodland within the Dundas St. &amp; 8<sup>th</sup> Line study area meets the criteria for significance (OMNR, 2010)</li> </ul>	<p><i>Provincial Policy Statement, 2014</i></p> <ul style="list-style-type: none"> <li>• Under the PPS, “Development and site alteration shall not be permitted in: ...Significant Woodlands... unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.”</li> </ul> <p><i>Credit Valley Conservation Watershed Planning Regulation Policies, 2010</i></p> <ul style="list-style-type: none"> <li>• “CVC recognizes that certain types of development or interference by their nature must located within hazardous land, watercourses, wetlands, natural features contributing to the conservation of land and associated setbacks. Considering this, CVC may permit such works where they have been addressed through an environmental assessment, comprehensive environmental study or technical report and it has been demonstrated that the interference is acceptable and, in the opinion of CVC, the control of clouding, erosion, dynamic beaches, pollution or the conservation of land will not be affected. This may include, but is not limited to... infrastructure, including stormwater management facilities...”</li> </ul>	<p>Figure 8</p> <p>Erin 5</p>

### 5.3 Conclusion

The Natural Heritage – Existing Conditions report was completed as part of a municipal class Environmental Assessment for additional water supply within the Town of Erin and Village of Hillsburgh. Following testing of each of the 10 drill sites, only two were found adequate for installation of new water supply for the Town of Erin and the Village of Hillsburgh.

The Natural Heritage- Existing Conditions report has identified the potential for significant species and Significant Wildlife Habitat in the form of Waterfowl Stopover and Staging areas within the study areas. Mitigation recommendations are provided in section 4 and section 5 to

ensure all possible impacts are mitigated during construction and drilling of the sites. Additionally, the recommendations in table 5 and timing windows identified in Sections 5.1.3 and 5.1.4 should be followed for the selected Drilling sites.

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**Personal Communications:**





Murray, Liam. Environmental Planner. Credit Valley Conservation Authority. Phone and E-mail correspondence.

Vandervoort, Alaina. Acting Management Biologist. Ministry of Natural Resources and Forestry, Guelph District. Email Correspondence.

## FIGURES



**LEGEND**

-  POTENTIAL WELL SITE
-  STUDY AREA (120M)
-  WOODLANDS (MNRF)
-  WETLANDS (MNRF)

- Information Sources:
1. Orthophotography provided by First Base Solutions Accessed October, 2018.
  2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario
  3. Drilling locations provided by Triton Engineering Ltd., October 2019
  4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**SITE LOCATION & SURROUNDING  
 NATURAL FEATURES  
 ERIN SITES 1-5**

Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019

Project: AA17-197A

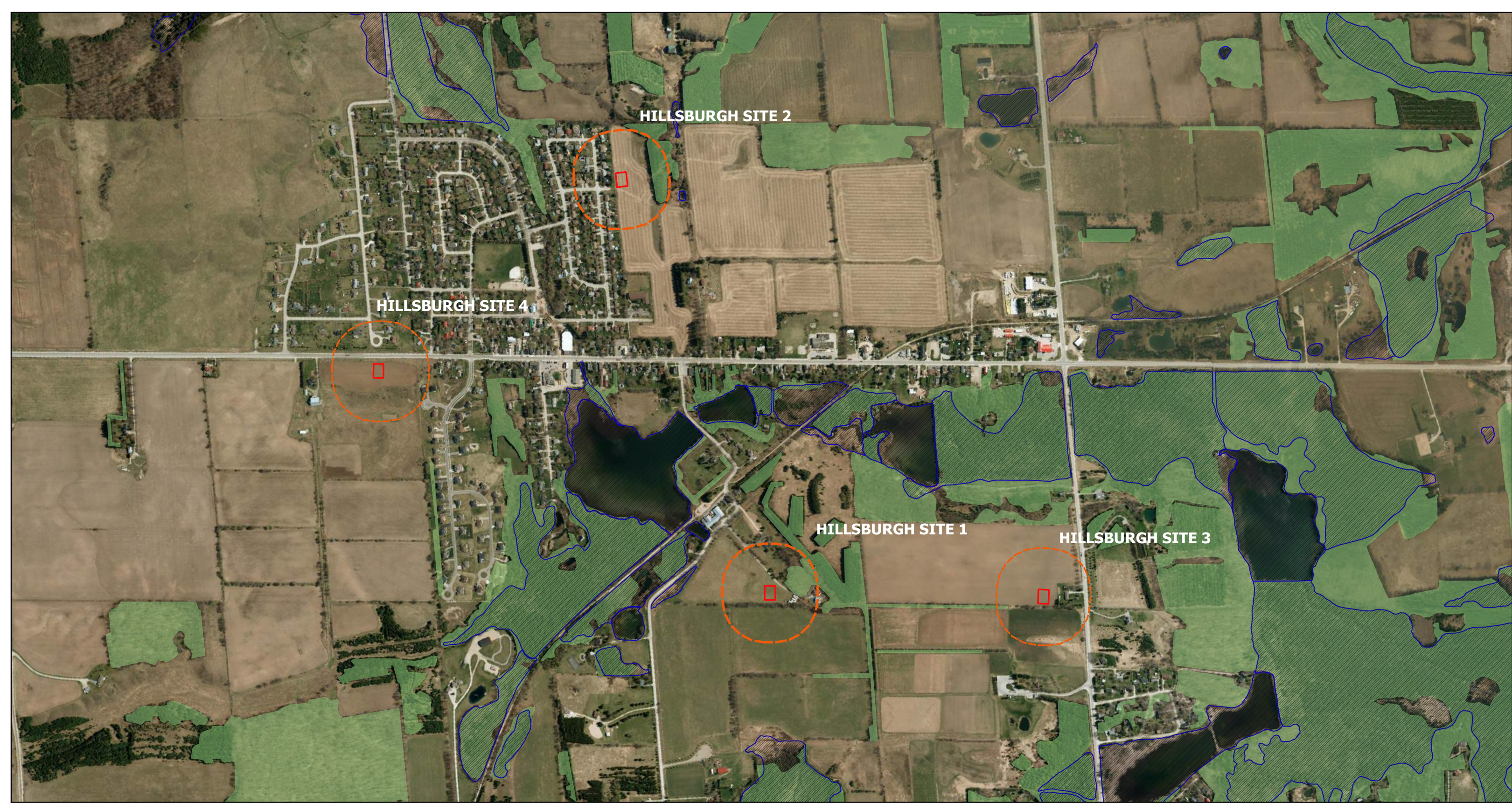
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Figure No:  
**1**





**LEGEND**

-  STUDY AREA (120M)
-  POTENTIAL WELL SITE
-  WOODLANDS (MNR)
-  WETLANDS (MNR)

- Information Sources:
1. Orthophotography provided by First Base Solutions Accessed October, 2018.
  2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario
  3. Drilling locations provided by Triton Engineering Ltd., October 2019
  4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**SITE LOCATION & SURROUNDING  
 NATURAL FEATURES  
 HILLSBURGH SITES 1-4**

Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 10000










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Figure No:  
**2**



**LEGEND**

-  WETLANDS (MNRF)
-  CANDIDATE SWH
-  POTENTIAL WELL SITE
-  STUDY AREA (120m)
-  ECOLOGICAL LAND CLASSIFICATION
-  WOODLANDS (MNRF)
-  CANDIDATE GRASSLAND SAR HABITAT

- Information Sources:
1. Orthophotography provided by First Base Solutions Accessed October, 2018.
  2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario
  3. Drilling locations provided by Triton Engineering Ltd., October 2019
  4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**ERIN SITE 1  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**

Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750



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Figure No:

**3**

ELC CODE	COMMUNITY
OAGM1	Annual Row Crop



**LEGEND**

- WETLANDS (MNRF)
- CANDIDATE SWH
- STUDY AREA
- POTENTIAL WELL SITE
- ECOLOGICAL LAND CLASSIFICATION
- WOODLANDS (MNRF)
- CANDIDATE GRASSLAND SAR HABITAT

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**ERIN SITE 2  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**

Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**

Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750








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Figure No: **4**

ELC CODE	COMMUNITY
OAGM4	Open Pasture
OAGM1	Annual Row Crop



**LEGEND**

-  WETLANDS (MNRF)
-  ECOLOGICAL LAND CLASSIFICATION
-  CANDIDATE SWH
-  WOODLANDS (MNRF)
-  STUDY AREA
-  CANDIDATE GRASSLAND SAR HABITAT
-  POTENTIAL WELL SITE

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**ERIN SITE 3A  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**

Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750










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Figure No:  
**5**



ELC CODE	COMMUNITY
OAGM4	Open Pasture
OAGM1	Annual Row Crop
OAGM1	Annual Row Crops
TAGM5	Fencerow
CVR_4	Rural Property

**LEGEND**

-  WETLANDS (MNRF)
-  ECOLOGICAL LAND CLASSIFICATION
-  CANDIDATE SWH
-  WOODLANDS (MNRF)
-  STUDY AREA
-  CANDIDATE GRASSLAND SAR HABITAT
-  POTENTIAL WELL SITE

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**ERIN SITE 3B  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750



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Figure No:

**6**

ELC Code	Community
OAGM1	Annual Row Crop
CVR_3	Single Family Residential



**LEGEND**

- WETLANDS (MNRF)
- CANDIDATE SWH
- STUDY AREA
- POTENTIAL WELL SITE
- ECOLOGICAL LAND CLASSIFICATION
- WOODLANDS (MNRF)
- CANDIDATE GRASSLAND SAR HABITAT

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**ERIN SITE 4  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**

Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750

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Figure No: **7**

ELC CODE	COMMUNITY
OAGM4	Open Pasture
TAGM1	Coniferous Plantation
FODM5	Dry- Fresh Sugar Maple @Deciduous Forest
CVR_3	Single Family Residential



**LEGEND**

- WETLANDS (MNRF)
- CANDIDATE SWH
- STUDY AREA
- POTENTIAL WELL SITE
- ECOLOGICAL LAND CLASSIFICATION
- WOODLANDS (MNRF)
- CANDIDATE GRASSLAND SAR HABITAT

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

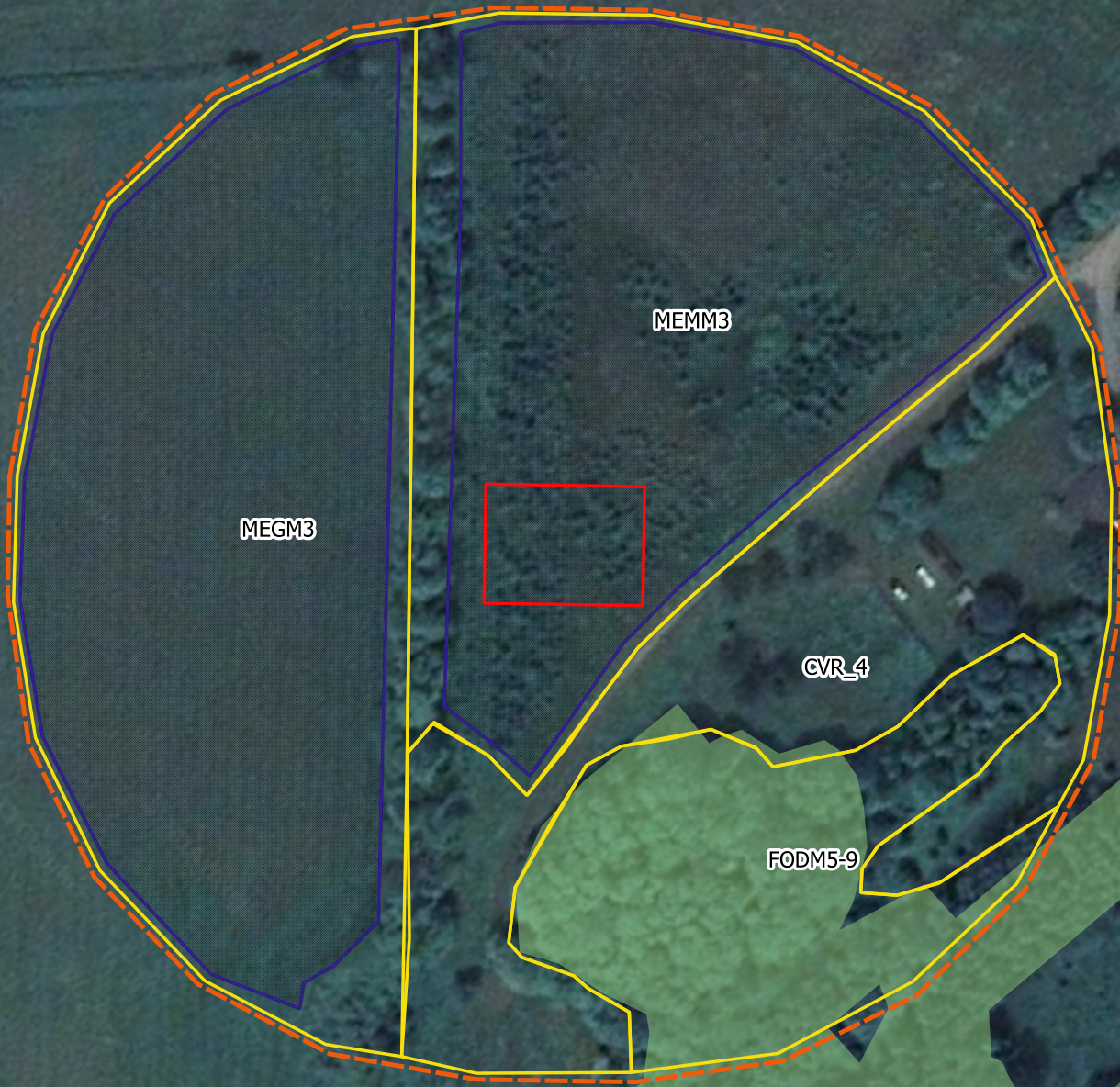
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**ERIN SITE 5  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
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Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750








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Figure No: **8**

ELC Code	Community
MEMM3	Dry- Fresh Mixed Meadow
MEGM3	Dry- Fresh Graminoid Meadow
FODM5-9	Dry- Fresh Sugar Maple- Hardwood @Deciduous Forest
CVR_4	Rural Property




**LEGEND**

-  WETLANDS (MNRF)
-  ECOLOGICAL LAND CLASSIFICATION
-  CANDIDATE SWH
-  WOODLANDS (MNRF)
-  STUDY AREA
-  CANDIDATE GRASSLAND SAR HABITAT
-  POTENTIAL WELL SITE

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**HILLSBURGH SITE 1  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**

  
 Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750








  
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 Figure No: **9**



ELC CODE	COMMUNITY
OAGM1	Annual Row Crop
TAGM1	Coniferous Plantation
CVR_3	Single Family Residential



**LEGEND**

-  WETLANDS (MNRF)
-  ECOLOGICAL LAND CLASSIFICATION
-  CANDIDATE SWH
-  WOODLANDS (MNRF)
-  STUDY AREA
-  CANDIDATE GRASSLAND SAR HABITAT
-  POTENTIAL WELL SITE

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**HILLSBURGH SITE 2  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750



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Figure No: **10**

ELC CODE	COMMUNITY
OAGM1	Annual Row Crop
MEMM3	Dry- Fresh Mixed Meadow
CVR_4	Rural Property



**LEGEND**

- WETLANDS (MNRF)
- CANDIDATE SWH
- STUDY AREA
- POTENTIAL WELL SITE
- ECOLOGICAL LAND CLASSIFICATION
- WOODLANDS (MNRF)
- CANDIDATE GRASSLAND SAR HABITAT

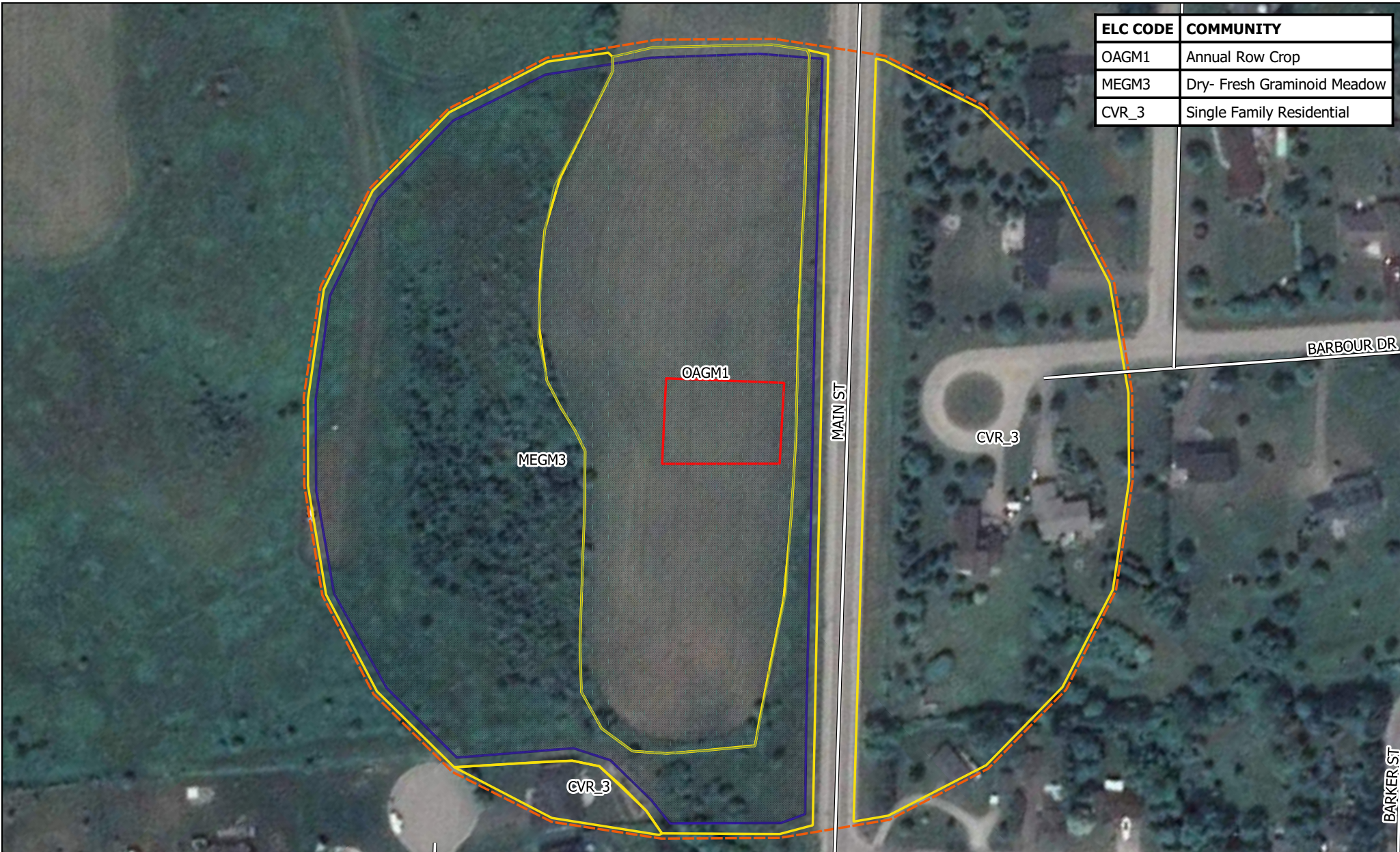
Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**HILLSBURGH SITE 3  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**








  
 Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750

  
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 Figure No: **11**

ELC CODE	COMMUNITY
OAGM1	Annual Row Crop
MEGM3	Dry- Fresh Graminoid Meadow
CVR_3	Single Family Residential



**LEGEND**

-  WETLANDS (MNRF)
-  ECOLOGICAL LAND CLASSIFICATION
-  CANDIDATE SWH
-  WOODLANDS (MNRF)
-  STUDY AREA
-  CANDIDATE GRASSLAND SAR HABITAT
-  POTENTIAL WELL SITE

Information Sources:  
 1. Orthophotography provided by First Base Solutions Accessed October, 2018.  
 2. Wetlands, Woodlands, Watercourses & ANSIs provided by Land Information Ontario  
 3. Drilling locations provided by Triton Engineering Ltd., October 2019  
 4. Ecological Land Classification & SWH provided by Aboud & Associates, 2017

Title:  
**HILLSBURGH SITE 4  
 EXISTING CONDITIONS & LIMITS  
 OF NATURAL FEATURES**  
 Project:  
**POTABLE WATER EA  
 ERIN/HILLSBURGH**



Date: OCTOBER 2019  
 Project: AA17-197A  
 Scale: 1 : 1750



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Figure No:

**12**

APPENDIX 1  
Agency Correspondence

## Shannon Davison

---

**From:** Shannon Ferguson  
**Sent:** November-22-17 9:09 AM  
**To:** Imarray@creditvalleyca.ca  
**Cc:** Christine Furlong  
**Subject:** Town of Erin- Potable Water Class EA, Archological and Cultural Heritage Assessment

Good Morning Liam,

I am following up on our phone conversation this morning regarding the 3 sites (2 in Erin and 1 in Hillsburgh) that Triton would like to prepare for pump testing in 2018. As discussed, I will be using my own discretion in determining whether the sites in question provide any ecological benefit to the surroundings or potential habitat for SAR. If the sites do provide either of these, it will be deemed that it is too late in the year to conduct the necessary field investigations, therefore the preparation has to be delayed until next year. If these sites do not provide ecological benefit or potential SAR habitat, the preparation of the sites can be completed and I will be noting within the overall Natural Heritage Report for the project that these sites were not appropriate from an ecological standpoint to provide habitat and therefore studies had not been conducted.

Christine, I plan to pass by these sites this afternoon to take a look and capture some photos. I will touch base with you tomorrow morning on the status of these sites in terms of their potential ecological functions. If you have any questions, please let me know.

Regards,

**Shannon Ferguson B.Env. Eco. Rest. Cert.**

Ecologist

MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification

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T:519.822.6839 . C : 289.686.9499 (Oct. 20-226.581.0707) . F:519.822.4052 [www.aboudtng.com](http://www.aboudtng.com) . [sferguson@aboudtng.com](mailto:sferguson@aboudtng.com)

**\*\*Please note that my cell phone number will be changing effective October 20 to 226-581-0707\*\***

## Shannon Davison

---

**From:** Vandervoort, Alaina (MNRF) <Alaina.Vandervoort@ontario.ca>  
**Sent:** May-16-18 11:29 AM  
**To:** Shannon Davison  
**Subject:** RE: Town of Erin- Potable Water EA

Hi Shannon,

Several of the drilling areas are within prime Bobolink/Meadowlark habitat. The timing window for Bobolink and Meadowlark is **May 1<sup>st</sup> to July 31<sup>st</sup>**, so any work you want to do this year after July 31<sup>st</sup> will not need surveying done.

As for wanting to start drilling in the next week or so, I believe there are a few sites to drill that are along the roadways if I'm reading the maps properly, which would be fine to start without surveying as they are easily accessed and not within bird habitat. No surveying for these roadside sites would be needed and drilling could start immediately.

The sites that are in fields/habitat will require grassland surveys if drilling is intended to occur between May 1<sup>st</sup> and July 31<sup>st</sup>, however again, if the activity doesn't commence until August 1<sup>st</sup>, then no surveying is required. The field sites that are actively farmed may still be habitat if they are hayfields or something similar, however if they are row crops that are not suitable habitat, surveying will not be required.

Hope that helps. Let me know if you more have questions!

Alaina Vandervoort

A/ Management Biologist  
Ministry of Natural Resources and Forestry  
1 Stone Road West, 1<sup>st</sup> Floor SW  
Guelph, ON N1G 4Y2

519-826-4419

[alaina.vandervoort@ontario.ca](mailto:alaina.vandervoort@ontario.ca)

---

**From:** Shannon Davison [mailto:sdavison@aboutdng.com]  
**Sent:** May-08-18 7:58 AM  
**To:** Ungar, Darren (MNRF); McKenna, Tara (MNRF)  
**Subject:** Town of Erin- Potable Water EA

Good Morning Darren and Tara,

About & Associates Inc has been retained by Triton Engineering to complete the natural heritage component of a Municipal Class EA for additional water supply for the communities of Erin and Hillsburgh. A total of 9 locations are being investigated, with 3 sites (2 in Erin and 1 in Hillsburgh), being cleared from an archeological perspective (attached). Triton would like to start drilling in the 3 sites within the next couple weeks. I am hoping you are able to let me know whether any bird surveys (grassland or breeding) will be necessary for these sites? It is my understanding that Site 2 in Erin and 2 in Hillsburgh are actively farmed, with Site 3 in Erin contains disturbed pasture.

It would be greatly appreciated if you could advise on these sites as soon as possible.

If you need any further information, please let me know.

Regards,

**Shannon Davison B.Env. Eco. Rest. Cert.**

Ecologist

MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification

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T : 519.822.6839 x5 C : 226.581.0707 [www.aboudtng.com](http://www.aboudtng.com) [sdavison@aboudtng.com](mailto:sdavison@aboudtng.com)

APPENDIX 2  
Site Investigation Details



## APPENDIX 2. SITE INVESTIGATION DETAILS

PROJECT #: AA17-197A

<b>Survey</b>	<b>Time</b>	<b>Date</b>	<b>Staff</b>	<b>Temp. (°C)</b>	<b>Wind (Beaufort)</b>	<b>Cloud Cover %</b>	<b>Precipitation</b>	<b>Past Precipitation</b>
Site Investigations	12:00 - 14:30	Nov 22 17	SD	2	1	50	None	None
Ecological Land Classification & SAR/SWH Assessment	9:00 - 14:00	June 22 17	SD	18	1	70	None	None

APPENDIX 3  
Ecological Land Classification Data Forms

# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- N. of Upper Canada Drive Project #: 17-197 Observer(s): SD  
 Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
16	1	60	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 568410.28 N: 4849214.89	<b>Community Series</b> MEG- Graminoid Meadow	<b>Ecosite</b> MEGM3- Dry- Fresh Graminoid Meadow	<b>Vegetation Type</b> MEGM3-5- Smooth Brome Graminoid Meadow
<b>System</b> Terrestrial <input type="checkbox"/> Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid Forb Lichen Bryophyte Deciduous <input type="checkbox"/> Coniferous Mixed	
<b>Cover</b> Open <input type="checkbox"/> Shrub Treed	<b>History</b> Natural Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b>		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy			
2 Subcanopy	3	2	PINSTRO = PINSYLV > THUOCCI > ELAUMBE
3 Understorey	4	4	BROINER > DACGLOM > ELAUMBE > SOLCANA
4 Ground Layer	6	3	VICCRAC > LOTCORN > SILVULG > TRIREPE

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>	O	O		
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
 Trees on slope may have been planted. All around same size.

**Wildlife / Habitat Observations / Comments:**  
 Field Sparrow, Eastern Kingbird

				Community Name	Code	% Coverage
Inclusion		Complex				
Inclusion		Complex				
Inclusion		Complex				



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION



Project Erin/Hillsburgh Potable Water EA – N. of Upper Canada Drive Project #: 17-197A Observer(s): SD  
 Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
16	1	60	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 568459.25 N: 4849272.71	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crops	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> <input type="checkbox"/> Open Shrub Treed	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy			
2 Subcanopy			
3 Understorey			
4 Ground Layer	5	4	TRIAEST >> VICCRAC > ERIANNU > GRASS SP.

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

Size Class Analysis <sup>3</sup>	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant				

**Evidence of Disturbance:**  
Worked wheat field, other herbaceous/grass species only along edges.

**Wildlife / Habitat Observations / Comments:**

Inclusion	Complex	Community Name	Code	% Coverage
Inclusion	Complex			
Inclusion	Complex			
Inclusion	Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Thomasfield Homes Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
18	1	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> C	<b>Polygon UTM</b> E: 569308.17 N: 4847519.37	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crop	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input type="checkbox"/> Treed	<b>History</b> Natural <input type="checkbox"/> Cultural <input type="checkbox"/>	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural <input type="checkbox"/> Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy			
2 Subcanopy			
3 Understorey			
4 Ground Layer	5	4	TRIAEST

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

Size Class Analysis <sup>3</sup>	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant				

**Evidence of Disturbance:**

**Wildlife / Habitat Observations / Comments:**  
 Could only auger approximately 70cm.

Inclusion	Complex	Community Name	Code	% Coverage
Inclusion	Complex			
Inclusion	Complex			
Inclusion	Complex			





# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA – Thomasfield Homes Project #: 17-197 Observer(s): \_\_\_\_\_ SD

Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
18	1	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 569409.88 N: 4847421.13	<b>Community Series</b> MEM- Mixed Meadow	<b>Ecosite</b> MEMM3- Dry- Fresh Mixed Meadow	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope <input type="checkbox"/> Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff			<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed
<b>Cover</b> <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input type="checkbox"/> Treed	<b>History</b> <input type="checkbox"/> Natural Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren <input type="checkbox"/> Meadow Tallgrass Prairie Savannah Woodland Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	JUGNIGR
2 Subcanopy	3	2	ROBPSEU > ACENEGU > RHACATH
3 Understorey	5	4	BRANIGR > SOLCANA > RHACATH > PHAARUN
4 Ground Layer	6	3	GRASS SP. > SILVULG > MELOFFI > TRIPRAT

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>		O	R	
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
 Markings in soil indicates it may have been worked, but no evident crops. Mainly composed of roadside and waste species.

**Wildlife / Habitat Observations / Comments:**  
 BLJA, GRSQ, TUVU

Community Name				Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Thomasfield Homes Project #: 17-197 Observer(s): SD

Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
18	1	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E:569485.59 N: 4847524	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crop	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> <input type="checkbox"/> Open Shrub Tree	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	ACESACC > ACENEGU
2 Subcanopy			
3 Understorey	4	4	ZEAMAYS >> PHAARUN > SOLCANA > ASCSYRI
4 Ground Layer	6	2	POA SP.> ERIANNU > FRAVIRG > LEUVULG

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>		R	R	
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b> Active row crop
<b>Wildlife / Habitat Observations / Comments:</b> Could only auger approximately 70cm. Majority of identified species occur on edges of active agriculture field.

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- Tavares Lands Hillsburgh Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **November 22, 2017**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
2	1	60	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 569450.83 N: 4849174.56	<b>Community Series</b> TAG- Treed Agriculture	<b>Ecosite</b> TAGM1- Coniferous Plantation	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid Forb Lichen Bryophyte Deciduous <input type="checkbox"/> Coniferous Mixed	
<b>Cover</b> Open Shrub <input type="checkbox"/> Treed	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young <input type="checkbox"/> Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare <input type="checkbox"/> Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	1	4	PINSTRO
2 Subcanopy	3	1	RHACATH
3 Understorey			
4 Ground Layer	6	1	PLAMAJO > TAROFFI

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>	R	O	D	R
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
Eastern white pine plantation

**Wildlife / Habitat Observations / Comments:**  
Evaluation completed at polygon edge due to property access restriction.

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- Tavares Lands Hillsburgh Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **November 22, 2017**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
2	1	60	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 569328.96 N: 4849187.4	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crop	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> Open Shrub Treed	<b>History</b> Natural Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> at surface less than 1m more than 1m metres	<b>Depth to Bedrock</b> at surface less than 1m more than 1m metres	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy			
2 Subcanopy			
3 Understorey			
4 Ground Layer			UNK. SP.

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

Size Class Analysis <sup>3</sup>	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant				

**Evidence of Disturbance:**

Very recently ploughed. Known to be corn in the past.

**Wildlife / Habitat Observations / Comments:**

Due to area being farmed, the dominant species could not be identified. Based on remains, presumed to be a cereal crop. Adjacent residential community contains planted species including Norway Maple, Norway Spruce, White Pine and Paper Birch.

Inclusion	Complex	Community Name	Code	% Coverage
Inclusion	Complex			
Inclusion	Complex			
Inclusion	Complex			





**Representative Photographs of Vegetation Community:**



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- Nestles Project #: 17-197 Observer(s): SD

Weather conditions:				Date:
Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
17	2	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> C	<b>Polygon UTM</b> E: 568917.24 N: 4848012.83	<b>Community Series</b> FOD- Deciduous Forest	<b>Ecosite</b> FODM5- Dry- Fresh Sugar Maple Deciduous Forest	<b>Vegetation Type</b> FODM5-9- Dry- Fresh Sugar Maple- Hardwood Deciduous Forest
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged <input type="checkbox"/> Floating-lvd. Graminoid Forb Lichen Bryophyte <input type="checkbox"/> Deciduous Coniferous Mixed	
<b>Cover</b> Open Shrub <input type="checkbox"/> Treed	<b>History</b> <input type="checkbox"/> Natural Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren <input type="checkbox"/> Meadow Tallgrass Prairie Savannah Woodland Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young <input type="checkbox"/> Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b>		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none <input type="checkbox"/> gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> at surface less than 1m more than 1m	metres	<b>Depth to Bedrock</b> at surface less than 1m more than 1m

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	4	ACESACC > FRAAMER > JUGNIGR
2 Subcanopy	3	3	ACESACC > FRAAMER
3 Understorey	4	3	RHACATH > PARQUIN
4 Ground Layer	6	3	FRAVIRG > ERIANNU

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7=< 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0% - 10%, 2 = 10% - 25%, 3 = 25% - 60%, 4 = >60%

<b>Size Class Analysis <sup>3</sup></b>				
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**

**Wildlife / Habitat Observations / Comments:**  
 Access to property restricted. Could not gather soil analysis or inventory vegetation accurately.

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Nestles Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
17	2	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 568831.23 N: 4847987.06	<b>Community Series</b> MEG- Graminoid Meadow	<b>Ecosite</b> MEGM3- Dry- Fresh Graminoid Meadow	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> <input type="checkbox"/> Open <input type="checkbox"/> Shrub Tree	<b>History</b> Natural <input type="checkbox"/> Cultural <input type="checkbox"/>	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren <input type="checkbox"/> Meadow Tallgrass Prairie Savannah Woodland Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy			
2 Subcanopy			
3 Understorey	5	3	DACGLOM > TRIPRAT > LEUVULG > TRAPRAT
4 Ground Layer	6	3	POACOMP > FRAVIRG > TRIPRAT

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

Size Class Analysis <sup>3</sup>	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant				

**Evidence of Disturbance:**

Previously worked, but now contains common field graminoid and herbaceous species.

**Wildlife / Habitat Observations / Comments:**

Community Name				Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Nestles Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
17	2	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 568846.73 N: 4848068.42	<b>Community Series</b> MEM- Mixed Meadow	<b>Ecosite</b> MEMM3- Dry- Fresh Mixed Meadow	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid Forb Lichen Bryophyte Deciduous Coniferous <input type="checkbox"/> Mixed	
<b>Cover</b> <input type="checkbox"/> Open Shrub Tree	<b>History</b> <input type="checkbox"/> Natural Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren <input type="checkbox"/> Meadow Tallgrass Prairie Savannah Woodland Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	FRAAMER > JUGNIGR
2 Subcanopy	3	2	LARDECI > PINSTRO
3 Understorey	5	4	ELYREPE > SOLCANA > SILVULG > TRAPRAT
4 Ground Layer	6	3	POACOMP > FRAVIRG > MEDLUPU > TAROFFI

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>	R	R		
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
 PINSTRO planted near back of polygon near hedgerow. FRAAMER & JUGNIGR only occur in hedgerow.

**Wildlife / Habitat Observations / Comments:**

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA – Dundas St. & 8th Line Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
22	1	80%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> C	<b>Polygon UTM</b> E:573929.92 N: 4846155.14	<b>Community Series</b> FOD- Deciduous Forest	<b>Ecosite</b> FODM5- Dry- Fresh Sugar Maple Deciduous Forest	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged <input type="checkbox"/> Floating-lvd. Graminoid Forb Lichen Bryophyte <input type="checkbox"/> Deciduous Coniferous Mixed	
<b>Cover</b> Open Shrub <input type="checkbox"/> Treed	<b>History</b> <input type="checkbox"/> Natural Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland <input type="checkbox"/> Forest Thicket Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged <input type="checkbox"/> Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare <input type="checkbox"/> Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry Fresh Moist Wet		
<b>Deadfall Logs</b> Rare <input type="checkbox"/> Occasional Abundant Dominant		<b>Effective Soil Texture</b>		
<b>Health</b> Low <input type="checkbox"/> Medium High	<b>Sensitivity</b> Low <input type="checkbox"/> Medium High	<b>Botanical Quality</b> Low <input type="checkbox"/> Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none <input type="checkbox"/> gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m more than 1m	<b>Depth to Bedrock</b> metres at surface less than 1m more than 1m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	1	4	ACESACC > FRAAMER
2 Subcanopy	2	3	ACESACC
3 Understorey	3	3	PARQUIN > RHACATH > VITAEST
4 Ground Layer	5	2	ACESACC > OXASTRI > RANACRI > TAROFFI

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0% - 10%, 2 = 10% - 25%, 3 = 25% - 60%, 4 = >60%

Size Class Analysis <sup>3</sup>	O	A	A	O
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b> Private biking trails/soil compaction
<b>Wildlife / Habitat Observations / Comments:</b> Access not permitted (private bike trail signage at entrance to polygon from road)

Inclusion	Complex	Community Name	Code	% Coverage
Inclusion	Complex			
Inclusion	Complex			
Inclusion	Complex			





# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Dundas St. & 8th Line Project #: 17-197 Observer(s): SD  
 Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
22	1	80	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 573788.3 N: 4846165.57	<b>Community Series</b> TAG- Treed Agriculture	<b>Ecosite</b> TAGM1- Coniferous Plantation	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid Forb Lichen Bryophyte Deciduous <input type="checkbox"/> Coniferous Mixed	
<b>Cover</b> Open Shrub <input type="checkbox"/> Treed	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young <input type="checkbox"/> Mid-Aged <input type="checkbox"/> Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> <input type="checkbox"/> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry Fresh Moist Wet		
<b>Deadfall Logs</b> <input type="checkbox"/> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b>		
<b>Health</b> Low <input type="checkbox"/> Medium High	<b>Sensitivity</b> Low <input type="checkbox"/> Medium High	<b>Botanical Quality</b> <input type="checkbox"/> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none <input type="checkbox"/> gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m more than 1m	<b>Depth to Bedrock</b> metres at surface less than 1m more than 1m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	4	1	PINSTRO >> ACESACC
2 Subcanopy			
3 Understorey			
4 Ground Layer			

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>		O	D	
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b> Plantation
<b>Wildlife / Habitat Observations / Comments:</b> Could not complete soil analysis due to access restrictions (active pasture, private bike trails)

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Dundas St. 8<sup>th</sup> Line Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
21	1	80	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 573839.38 N: 4846232.89	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM4- Open Pasture	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input type="checkbox"/> Treed	<b>History</b> <input type="checkbox"/> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b>		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	ACESACC
2 Subcanopy			
3 Understorey	5	1	SOLCANA > ASCSYRI
4 Ground Layer	6	4	GRASS SP. > DACGLOM > POAPRAT > VICCRAC

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b>			R	
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b>
<b>Wildlife / Habitat Observations / Comments:</b> Pasture active, could not enter to conduct soil analysis. Canopy only present along edge adjacent to 8 <sup>th</sup> line.

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION



Project: Erin/Hillsburgh Potable Water EA- County Road 52 Project #: 17-197 Observer(s): SD  
 Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
18	1	80%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 576622.76 N: 4846568.21	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crop	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff			<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed
<b>Cover</b> <input type="checkbox"/> Open Shrub Tree	<b>History</b> Natural <input type="checkbox"/> Cultural <input type="checkbox"/>	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Silty sand		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy			
2 Subcanopy			
3 Understorey	5	1	BROEREC
4 Ground Layer	6	4	UNK SP. >> TRIPEPE > VICCRAC

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b>				
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
Recently ploughed hay field, dominant species unable to be identified. Roadside species identified.

**Wildlife / Habitat Observations / Comments:**

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION



Project: Erin/Hillsburgh Potable Water EA- County Road 52 Project #: 17-197 Observer(s): SD  
 Weather conditions: \_\_\_\_\_ Date: June 22, 2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
18	1	80%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 576581.17 N: 4846636.05	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crops	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff			<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed
<b>Cover</b> <input type="checkbox"/> Open Shrub Tree	<b>History</b> Natural <input type="checkbox"/> Cultural <input type="checkbox"/>	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Silty sand		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	ACESACC > ACEFREE
2 Subcanopy			
3 Understorey	5	1	BROEREC > POACOMP >> RHACATH
4 Ground Layer	6	4	GLYMAX

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>		R	R	
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b> Active soybean field
<b>Wildlife / Habitat Observations / Comments:</b> Vegetation besides Glycine Max found around edges of polygon.

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			





# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- Tavares Lands Erin Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **November 22, 2017 & June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
22	1	80	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> B	<b>Polygon UTM</b> E: 573424.18 N: 4848312.78	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crop	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff			<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed
<b>Cover</b> <input type="checkbox"/> Open Shrub Tree	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus <input type="checkbox"/> Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b>		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> at surface less than 1m <input type="checkbox"/> more than 1m metres	<b>Depth to Bedrock</b> at surface less than 1m <input type="checkbox"/> more than 1m metres	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	3	1	PINSYLV
2 Subcanopy			
3 Understorey	4	4	ZEAMAYS >> PINSYLV
4 Ground Layer	6	3	BROINER > POACOMP > DAUCARO > ERIANNU

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b>			R	
<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
 Active agriculture. Unable to obtain soil sample due to access restrictions. Soils presumed to be same as Polygon A

**Wildlife / Habitat Observations / Comments:**

Community Name				Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- Tavares Lands Erin Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **November 22, 2017 & June 22, 2018**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
22	1	80	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E:573452.08 N: 4848381.52	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM4- Open Pasture	<b>Vegetation Type</b>	
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff			<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed	
<b>Cover</b> <input type="checkbox"/> Open <input type="checkbox"/> Shrub <input type="checkbox"/> Treed	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural Swamp Fen Bog Marsh Open Water Shallow Water			
<b>Stand Description:</b>			<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor		
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet			
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam			
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High		<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m <input type="checkbox"/> more than 1m		<b>Depth to Bedrock</b> metres at surface less than 1m <input type="checkbox"/> more than 1m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	ACESACC > ROBPSEU
2 Subcanopy			
3 Understorey	5	4	DACGLOM >> BROINER > MELALBU
4 Ground Layer	6	3	TRIPRAT > TRIREPE > MEDLUPU > VICCRAC

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>	O	R		
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b> Previously mown.
<b>Wildlife / Habitat Observations / Comments:</b> Trees only occur along edges in hedgerow

Community Name				Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



**Representative Photographs of Vegetation Community:**



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION



Project Erin/Hillsburgh Potable Water EA- Solmar/Former Mattamy Project #: 17-197 Observer(s): SD  
 Weather conditions: **Date:** November 22, 2017

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
4	1	60%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

Polygon:		Polygon UTM		Community Series	Ecosite	Vegetation Type										
B		E: 574561.85 N: 4849025.10		OAG- Open Agriculture	OAGM1- Annual Row Crops											
System	Topographic Feature				Dominant Plant Form											
Terrestrial Wetland Aquatic	Lacustrine	Riverine	Bottomland	Terrace	Valley slope	Tableland	Rolling upland	Plankton	Submerged	Floating-lvd.	Graminoid	Forb				
	Cliff	Talus	Crevice	Cave	Alvar	Rockland	Beach	Bar	Sand dune	Bluff	Lichen	Bryophyte	Deciduous	Coniferous	Mixed	
Cover	History	Community Class														
Open Shrub Treed	Natural Cultural	Beach-Bar	Sand Dune	Bluff	Cliff	Talus	Alvar	Rock Barren	Crevice-Cave	Sand Barren	Meadow	Tallgrass				
		Prairie	Savannah	Woodland	Forest	Thicket	Cultural	Swamp	Fen	Bog	Marsh	Open Water	Shallow Water			
Stand Description:							Soil Analysis:									
Community Age				Basal Area (m <sup>2</sup> /ha)		Soil Drainage										
Pioneer	Young	Mid-Aged	Mature	Old Growth			Very Rapid	Rapid	Well	Moderately Well	Imperfect	Poor	Very Poor			
Standing Snags							Soil Moisture Regime									
Rare	Occasional	Abundant	Dominant				Dry	Fresh	Moist	Wet						
Deadfall Logs							Effective Soil Texture									
Rare	Occasional	Abundant	Dominant				Sandy Loam									
Health		Sensitivity		Botanical Quality		Depth to Mottles / Gley										
Low	Medium	High	Low	Medium	High	Low	Medium	High	Sample: M - -- cm / G - -- cm							
Slope							Depth to Groundwater		metres		Depth to Bedrock			metres		
none	gentle	moderate	steep (simple or complex)				at surface	less than 1m	more than 1 m	at surface	less than 1m	more than 1 m				

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	FRAAMER
2 Subcanopy	3	1	RHACATH
3 Understorey	5	1	BROINER
4 Ground Layer	6	4	TRIAEST >> VICCRAC > MEDLUPU > TRIPRAT

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m    <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

Size Class Analysis <sup>3</sup>				
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH
		R	R	

<sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant

<b>Evidence of Disturbance:</b> Actively farmed field
<b>Wildlife / Habitat Observations / Comments:</b> Soils presumed to be same classification as Poly A

Inclusion	Complex	Community Name	Code	% Coverage
Inclusion	Complex			
Inclusion	Complex			
Inclusion	Complex			





# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project Erin/Hillsburgh Potable Water EA- Solmar/Former Mattamy Project #: 17-197 Observer(s): SD

Weather conditions:

Date: **November 22, 2017**

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
4	1	60%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 574624.68 N: 4848975.93	<b>Community Series</b> OAG- Open Agriculture	<b>Ecosite</b> OAGM1- Annual Row Crops	<b>Vegetation Type</b>
<b>System</b> Terrestrial <input type="checkbox"/> Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope <input type="checkbox"/> Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff		<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous Coniferous Mixed	
<b>Cover</b> <input type="checkbox"/> Open <input type="checkbox"/> Shrub Tree	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus <input type="checkbox"/> Alvar <input type="checkbox"/> Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural <input type="checkbox"/> Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Sandy Loam		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> at surface less than 1m <input type="checkbox"/> more than 1m metres	<b>Depth to Bedrock</b> at surface less than 1m <input type="checkbox"/> more than 1m metres	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	1	FRAAMER
2 Subcanopy	3	1	RHACATH
3 Understorey	5	1	BROINER
4 Ground Layer	6	4	GLYMAX >> VICCRAC > MEDLUPU > TRIPRAT

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>		R	R	
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

**Evidence of Disturbance:**  
Actively farmed field. Summer 2018 = Zea Mays

**Wildlife / Habitat Observations / Comments:**

Community Name				Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



**Representative Photographs of Vegetation Community:**



# ELC COMMUNITY DESCRIPTION & CLASSIFICATION

Project: Erin/Hillsburgh Potable Water EA- Mountainview Project #: 17-197 Observer(s): SD

Weather conditions: \_\_\_\_\_ Date: 22/06/2018

Temp (°C)	Wind*	Cloud Cover	Precipitation	Precipitation(24hrs)
18	1	70%	None	None

\*Beaufort Scale: 0- (0 km/hr), 1- (1-5km/hr), 2- (6-11km/hr), 3- (12-19km/hr), 4- (20-28km/hr), 5- (29-38km/hr), 6- (39-49km/hr)

<b>Polygon:</b> A	<b>Polygon UTM</b> E: 576087.86 N: 4845996.69	<b>Community Series</b> CVR- Residential	<b>Ecosite</b> CVR_3- Single Family Residential	<b>Vegetation Type</b>
<b>System</b> Terrestrial Wetland Aquatic	<b>Topographic Feature</b> Lacustrine Riverine Bottomland Terrace Valley slope <input type="checkbox"/> Tableland <input type="checkbox"/> Rolling upland Cliff Talus Crevice Cave Alvar Rockland Beach Bar Sand dune Bluff			<b>Dominant Plant Form</b> Plankton Submerged Floating-lvd. <input type="checkbox"/> Graminoid <input type="checkbox"/> Forb Lichen Bryophyte Deciduous <input type="checkbox"/> Coniferous <input type="checkbox"/> Mixed
<b>Cover</b> Open Shrub Treed	<b>History</b> Natural <input type="checkbox"/> Cultural	<b>Community Class</b> Beach-Bar Sand Dune Bluff Cliff Talus Alvar Rock Barren Crevice-Cave Sand Barren Meadow Tallgrass Prairie Savannah Woodland Forest Thicket <input type="checkbox"/> Cultural <input type="checkbox"/> Swamp Fen Bog Marsh Open Water Shallow Water		
<b>Stand Description:</b>		<b>Soil Analysis:</b>		
<b>Community Age</b> Pioneer Young Mid-Aged Mature Old Growth		<b>Basal Area (m<sup>2</sup>/ha)</b>	<b>Soil Drainage</b> Very Rapid Rapid <input type="checkbox"/> Well <input type="checkbox"/> Moderately Well Imperfect Poor Very Poor	
<b>Standing Snags</b> Rare Occasional Abundant Dominant		<b>Soil Moisture Regime</b> Dry <input type="checkbox"/> Fresh <input type="checkbox"/> Moist Wet		
<b>Deadfall Logs</b> Rare Occasional Abundant Dominant		<b>Effective Soil Texture</b> Silty Sand		
<b>Health</b> Low Medium High	<b>Sensitivity</b> Low Medium High	<b>Botanical Quality</b> Low Medium High	<b>Depth to Mottles / Gley</b> Sample: M - -- cm / G - -- cm	
<b>Slope</b> none gentle moderate steep (simple or complex)		<b>Depth to Groundwater</b> metres at surface less than 1m more than 1 m	<b>Depth to Bedrock</b> metres at surface less than 1m more than 1 m	

Vegetation Layer	Height <sup>1</sup>	Cover <sup>2</sup>	Dominant Species per Vegetation Layer
1 Canopy	2	2	ULMPUMI > ACESACC
2 Subcanopy			
3 Understorey			
4 Ground Layer	7	4	POAPRAT > TAROFFI > FRAVIRG > PLAMAJO

<sup>1</sup> Height Code: 1=>20m, 2=10m-20m, 3=2m-10m, 4=1m-2m, 5=0.5m-1m, 6=0.2m-0.5m, 7= < 0.2m <sup>2</sup> Cover Codes: 0 = none, 1 = 0%- 10%, 2 = 10%- 25%, 3 = 25%-60%, 4= >60%

<b>Size Class Analysis <sup>3</sup></b> <small><sup>3</sup> Abundance Code: RS=Rare, O=Occasional, A=Abundant, D=Dominant</small>		R	R	
	< 10 cm DBH	10 to 24 cm DBH	25 to 50 cm DBH	> 50 cm DBH

<b>Evidence of Disturbance:</b> Mown, couldn't auger past 40cm due to coarse gravel/rocks
<b>Wildlife / Habitat Observations / Comments:</b> Residential lot, no dwelling on lot. Trees planted, evenly spaced along road edges. AMRO.

			Community Name	Code	% Coverage
Inclusion		Complex			
Inclusion		Complex			
Inclusion		Complex			



APPENDIX 4  
Vascular Plant List

Plant Type	Scientific Name	Common Name	CC <sup>2</sup>	CW <sup>3</sup>	SARO <sup>4</sup> Status	SARA <sup>5</sup> Status	Global Rank <sup>6</sup>	Prov. Rank <sup>7</sup>	Town of Erin					Town of Hillsburgh				
									Mountainview	Solmar/Former Mattamy	Tavares Lands	County Rd 52	Dundas St. & 8th Line	Neslites	Tavares Lands	Thomasfield Homes	North of Upper Canada Drive	
TR	<i>Acer x freemani</i>	Freeman's Maple		0	NL	NL	GNA	SNA				✓						
TR	<i>Acer negundo</i>	Manitoba Maple	0	-2	NL	NL	G5	S5								✓	✓	
TR	<i>Acer platanoides</i>	Norway Maple	*	5	NL	NL	GNR	SNA							✓			
TR	<i>Acer saccharum</i>	Sugar Maple	4	3	NL	NL	G5	S5	✓		✓	✓	✓	✓	✓	✓	✓	
FO	<i>Achillea millefolium</i>	Common Yarrow	0	3	NL	NL	G5	SNA						✓				
FO	<i>Asclepias syriaca</i>	Common Milkweed	0	5	NL	NL	G5	S5					✓	✓		✓	✓	
TR	<i>Betula papyrifera</i>	Paper Birch	0	2	NL	NL	G5	S5							✓			
FO	<i>Brassica nigra</i>	Black Mustard	*	5	NL	NL	GNR	SNA								✓		
GR	<i>Bromus erectus</i>	Meadow Brome	*	5	NL	NL	GNR	SNA				✓						
GR	<i>Bromus inermis</i>	Awnless Brome	*	5	NL	NL	G5TNR	SNA			✓						✓	
FO	<i>Cirsium arvense</i>	Canada Thistle	*	3	NL	NL	GNR	SNA			✓		✓					
SH	<i>Cornus sericea</i>	Red-osier Dogwood	2	-3	NL	NL	G5	S5									✓	
GR	<i>Dactylis glomerata</i>	Orchard Grass	*	3	NL	NL	GNR	SNA			✓		✓	✓			✓	
FO	<i>Daucus carota</i>	Wild Carrot	*	5	NL	NL	GNR	SNA						✓			✓	
SH	<i>Elaeagnus umbellata</i>	Autumn Olive	*	3	NL	NL	GNR	SNA									✓	
GR	<i>Elymus repens</i>	Creeping Wildrye	*	3	NL	NL	GNR	SNA						✓				
FO	<i>Erigeron annuus</i>	Annual Fleabane	0	1	NL	NL	G5	S5			✓		✓	✓		✓	✓	
FO	<i>Fragaria virginiana</i>	Wild Strawberry	2	1	NL	NL	G5T5	SU	✓					✓		✓		
TR	<i>Fraxinus americana</i>	White Ash	4	3	NL	NL	G5	S4						✓				
FO	<i>Glycine max</i>	Soy Bean	*	5	NL	NL	GNR	SNA				✓						
TR	<i>Juglans nigra</i>	Black Walnut	5	3	NL	NL	G5	S4?						✓		✓		
TR	<i>Larix decidua</i>	European Larch	*	5	NL	NL	G5	SNA						✓				
FO	<i>Leucanthemum vulgare</i>	Oxeye Daisy		5	NL	NL	GNR	SNA					✓	✓		✓	✓	
FO	<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	*	1	NL	NL	GNR	SNA									✓	
FO	<i>Medicago lupulina</i>	Black Medic	*	1	NL	NL	GNR	SNA			✓			✓				
FO	<i>Melilotus albus</i>	White Sweet-clover	*	3	NL	NL	G5	SNA			✓						✓	
FO	<i>Melilotus officinalis</i>	Yellow Sweet-clover	*	3	NL	NL	GNR	SNA								✓		
FO	<i>Oxalis stricta</i>	European Wood-sorrel	0	3	NL	NL	G5	S5										
VW	<i>Parthenocissus quinquefolia</i>	Virginia Creeper	6	1	NL	NL	G5	S4?						✓				
GR	<i>Phalaris arundinacea</i>	Reed Canary Grass	0	-4	NL	NL	G5	S5								✓		
GR	<i>Phleum pratense</i>	Common Timothy	*	3	NL	NL	GNR	SNA			✓						✓	
SH	<i>Physocarpus opulifolius</i>	Eastern Ninebark	5	-2	NL	NL	G5T3T5	SU						✓				
TR	<i>Picea abies</i>	Norway Spruce	*	5	NL	NL	SNA	G5							✓			
TR	<i>Pinus strobus</i>	Eastern White Pine	4	3	NL	NL	G5	S5					✓	✓	✓		✓	
TR	<i>Pinus sylvestris</i>	Scotch Pine	*	5	NL	NL	GNR	SNA			✓						✓	
FO	<i>Plantago major</i>	Common Plantain	*	-1	NL	NL	G5	S5	✓				✓					
GR	<i>Poa compressa</i>	Canada Bluegrass	0	2	NL	NL	GNR	SNA			✓			✓			✓	
GR	<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky Bluegrass	0	1	NL	NL	G5T5	SNA	✓				✓					
GR	<i>Poa</i> sp.	Grass species														✓		
FO	<i>Ranunculus acris</i>	Tall Buttercup	*	-2	NL	NL	G5	SNA					✓	✓			✓	
SH	<i>Rhamnus cathartica</i>	European Buckthorn	*	3	NL	NL	GNR	SNA				✓						
SH	<i>Rhus typhina</i>	Staghorn Sumac	1	5	NL	NL	G5	S5									✓	
FO	<i>Rumex crispus</i>	Curly Dock	*	-1	NL	NL	GNR	SNA					✓					
TR	<i>Robinia pseudoacacia</i>	Black Locust	*	4	NL	NL	G5	SNA			✓					✓		
FO	<i>Silene vulgaris</i>	Bladder Champion	*	5	NL	NL	GNR	SNA			✓			✓		✓	✓	
FO	<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada Goldenrod	1	3	NL	NL	G5T5	S5					✓	✓		✓	✓	

FO	Taraxacum officinale	Common Dandelion	*	3	NL	NL	G5	SNA	✓				✓	✓			
TR	Thuja occidentalis	Eastern White Cedar	4	-3	NL	NL	G5	S5									✓
FO	Tragopogon pratensis	Meadow Goat's-beard	*	5	NL	NL	GNR	SNA						✓			
FO	Trifolium pratense	Red Clover	*	2	NL	NL	GNR	SNA			✓			✓		✓	
FO	Trifolium repens	White Clover	*	2	NL	NL	GNR	SNA			✓	✓				✓	✓
GR	Triticum aestivum	Common Wheat	*	5	NL	NL	GNR	SNA								✓	✓
TR	Ulmus pumila	Siberian Elm	*	5	NL	NL	GNR	SNA	✓								
FO	Vicia cracca	Tufted Vetch	*	5	NL	NL	GNR	SNA			✓	✓					✓
SH	Viburnum lentago	Nannyberry	4	-1	NL	NL	GNR	SNA									✓
VW	Vitis riparia	Riverbank Grape	0	-2	NL	NL	G5	S5						✓			
GR	Zea mays	Corn	*	5	NL	NL	GNR	SNA		✓	✓				✓	✓	

1. Plant Types: AL = Algae; FE = Fern; FO = Forb; GR = Grass; LC = Lichen; LV = Liverwort; MO = Moss; RU = Rush; SE = Sedge; SH = Shrub; TR = Tree; VI = Herbaceous vine; VW = Woody Vine
2. CC: Coefficient of Conservatism reflects a species' fidelity to a specific habitat. Range from 0 to 10; 10 = very conservative, not likely in disturbed habitats, 1 = least conservative, likely found in a broad range of habitat. \* = value not assigned because they are non-native
3. CW: Coefficient of Wetness reflects a species' affinity for wet soil conditions. Range from -5 to 5; -5 = obligate wetland species, 5 = obligate upland species.
4. SARO: Status under the Provincial Endangered Species Act, listed on the Species at Risk in Ontario (SARO) list. In order of severity, statuses include: EXP = Extirpated; END =
5. SARA: Status under the National Species at Risk Act (SARA), assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In order of severity, statuses
6. Global rarity rank. Range from G1 to G5; G1 = Extremely rare, G5 = Very Common. NR = Unranked; U = Unrankable.
7. Provincial rarity rank. Range from S1 to S5; S1 = Extremely rare, S5 = Very Common. NR = Unranked; U = Unrankable.



APPENDIX 5  
Incidental Wildlife List

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES (BCR 13)	DATES OBSERVED (2018)
<b>BIRDS</b>										
Field Sparrow	Spizella pusilla				S4B	G5			✓	June 22 (Upper Canada Drive)- Singing
Eastern Kingbird	Tyrannus tyrannus				S4B	G5			✓	June 22 (Upper Canada Drive)- Observed
Turkey Vulture	Cathartes aura				S5B	G5				June 22 (Thomasfield Homes)- Flying overhead
American Crow	Corvus brachyrhynchos				S5B	G5				June 22 (Nesites)- Flying overhead
American Robin	Turdus migratorius				S5B	G5				June 22 (Mountainview)- Singing in nearby tree
Blue Jay	Cyanocitta cristata				S5	G5				June 22 (Thomasfield Homes)- Calling from tree
American Goldfinch	Carduelis tristis				S5B	G5				June 22 (Nesites)- Flying between trees/shrubs
Northern Flicker	Colaptes auratus				S4B	G5			✓	June 22 (Nesites)- Flying on adjacent property
<b>MAMMALS</b>										
Eastern Gray Squirrel	Sciurus carolinensis				S5	G5				June 22 (Thomasfield Homes)- Observed scaling tree

APPENDIX 6  
Significant Wildlife Habitat Assessment

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	- Fields with Sheet water in spring (incl. agricultural) - At least 100m wide	- Mixed species aggregations of 100 or more individuals confirms SWH	flooded field ecosite and 100-300m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
2	Waterfowl Stopover and Staging (Aquatic)	- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs - SWTP & SWMP are not SWH	- Aggregations of 100 or more listed species for 7 days (ie. >700 waterfowl use days) confirms SWH	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat	- 3 or more listed species and >1000 shorebird use days, or >100 whimbrel, confirms SWH	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	- Combination of upland field and woodland habitat >20ha total (includes, >15ha upland field) - least disturbed sites, idle, fallow or lightly grazed field/meadow best	- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
5	Bat Hibernacula	- Caves, mine shafts, underground foundations, karsts - buildings are not SWH	- All sites with confirmed hibernating bats, confirms SWH	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with >10/ha trees (>25cm DBH) in early stages of decay (class 1-3) - buildings are not SWH	- >10 Big Brown Bats, >20 Little Brown Myotis, >5 adult female Silver-haired Bats confirms SWH	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested ecosites exist within Study Area	No	None required.	No
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6a. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

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ERIN SITE 1

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

ERIN SITE 1

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6a. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No treed or wetland communities present within Study Area	no	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No habitat matching criteria identified in Study Area	No	No stick nests observed during SWH	No

APPENDIX 6a. CANDIDATE SIGNFICANT WILDLIFE HABITAT ASSESSMENT

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No forested or wetland communities present in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No



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29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No woodland or wetland communities present in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No forest stands or woodlots present within the Study Area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

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31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 1

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34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 6 Special concern species within 10km of the Study Area <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> <li>- Short-eared Owl (OBBA)</li> </ul>	No communities within the Study Area contain suitable habitat for the listed species.	One season Botanical Survey Incidental wildlife	No
ANIMAL MOVEMENT CORRIDORS								

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ERIN SITE 1

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1) within the Study Area may be flooded in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No flooding noted on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested ecosites identified within Study Area	No	None required.	No

APPENDIX 6b. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 2

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

ERIN SITE 2

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6b. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 2

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No habitat matching criteria identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No habitat matching criteria identified in Study Area	No	None required.	No



APPENDIX 6b. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 2

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26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No habitat matching criteria identified in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

APPENDIX 6b. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

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29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No habitat matching criteria identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No interior habitat (>200m) identified in study area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

APPENDIX 6b. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

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ERIN SITE 2

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	Yes
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 2

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34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 6 Special concern species within 10km of the Study Area <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> <li>- Short-eared Owl (OBBA)</li> </ul>	No suitable habitat was identified within the Study Area for the species listed.	One-season ELC Incidental Wildlife	No
ANIMAL MOVEMENT CORRIDORS								

ERIN SITE 2

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36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

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<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1) in the study area may be flooded in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No Habitat matching Criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested Ecosites identified in the Study Area	No	None required.	No

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No



ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No wetland communities identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No forested habitat identified in Study Area	No	No stick nests observed during SWH	No

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No forested communities identified in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No wetland or woodland habitat identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No treed communities identified in Study Area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Only Annual Row Crops and Open Pasture identified in Study Area.	No	Based on correspondence with MNRF, grassland bird surveys should be conducted if works are to occur during breeding season	Unknown
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 6 Special concern species within 10km of the Study Area <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Red-headed Woodpecker (OBBA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	Yes- Open pasture identified in Study Area may provide habitat for Grasshopper Sparrow.	One season Botanical Survey Incidental wildlife	Unknown
ANIMAL MOVEMENT CORRIDORS								

ERIN SITE 3A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1north and south of County Road 52) may flood in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No Habitat matching Criteria identified in Study Area, >5km from any Lake Ontario	No	Fall migration survey completed.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested Ecosites identified in Study Area.	No	None required.	No

APPENDIX 6d. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	Fall migration survey completed.	No



ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6d. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No habitat matching criteria identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No habitat matching criteria identified in Study Area	No	No stick nests observed during SWH	No

APPENDIX 6d. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No forested communities within Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

APPENDIX 6d. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No habitat matching criteria identified in Study Area	No	None required	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No forest stands or woodlots identified in study area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

APPENDIX 6d. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

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ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Only row crops identified within Study Area.	No	None required.	No
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	ELC Complete	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 6 Special concern species within 10km of the Study Area <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Short-eared Owl (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	None of the species listed are known to utilize annual row crops.	One season Botanical Survey Incidental wildlife	No
ANIMAL MOVEMENT CORRIDORS								

ERIN SITE 4

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Open Pasture (OAGM4) within the study area may flood in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	Open Pasture (OAGM4) within Study Area may provide suitable habitat, as it is surrounded by woodland communities however it is limited due to size (~3ha).	Yes-marginal	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	Forested ecosites present in Study area with trees >25cm DBH.	Yes	Studies recommended pre-construction in areas where tree removal/ damage to occur in candidate habitat.	unknown



APPENDIX 6e. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6e. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No habitat matching criteria identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No interior habitat (>200m) identified in study area	No	No stick nests observed during SWH	No

APPENDIX 6e. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	Seeps and springs possible within forested and wetland communities	Yes	ELC complete	Unknown due to restricted access
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No habitat matching criteria identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No interior habitat (>200m) identified in study area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Open areas within study area consist of active Open Pasture.	No	None required.	No
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	Candidate habitat identified in study area.	Yes	Incidental observation during ELC conducted	Unknown due to access restrictions
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 6 Special concern species within 10km of the Study Area <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Red-headed Woodpecker (OBBA)</li> <li>- Eastern Wood-pewee (NHIC, OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> <li>- Short-eared Owl (OBBA)</li> </ul>	Yes- Woodlands within the study area may provide habitat for Eastern-Wood-pewee, Wood Thrush and Canada Warbler. Open pasture may provide habitat for Grasshopper Sparrow.	One season Botanical Survey Incidental wildlife	No

ANIMAL MOVEMENT CORRIDORS

ERIN SITE 5

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No



#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Meadow communities within the study area may be flooded in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested ecosites identified in Study Area	No	None required.	No
7	Turtle Wintering Area	<ul style="list-style-type: none"> <li>- Areas with permanent water deep enough not to freeze, with mud/soft substrates</li> </ul>	<ul style="list-style-type: none"> <li>- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH</li> </ul>	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No

APPENDIX 6f. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 1

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

APPENDIX 6f. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 1

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6f. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

HILLSBURGH SITE 1

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No habitat matching criteria identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No forested communities of suitable size identified in Study Area.	No	No stick nests observed during SWH	No

APPENDIX 6f. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 1

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No habitat matching criteria identified in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

APPENDIX 6f. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 1

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No habitat matching criteria identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Meadow community within the Study Area may provide suitable habitat, however limited in size (~4ha)	Yes	Breeding bird surveys to be completed if works are to occur within breeding season.	Unknown
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	<p>No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area</p> <p>Background Atlas review identified 6 Special concern species within 10km of the Study Area</p> <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Woodpeewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	Yes-Meadow within Study Area may provide suitable habitat for Grasshopper Sparrow.	One season Botanical Survey Incidental wildlife	No
ANIMAL MOVEMENT CORRIDORS								



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36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1) within the study area may flood in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No Habitat matching Criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	Forested ecosites present in Study area with trees >25cm DBH.	Yes	None required. No tree removal to occur.	unknown
7	Turtle Wintering Area	<ul style="list-style-type: none"> <li>- Areas with permanent water deep enough not to freeze, with mud/soft substrates</li> </ul>	<ul style="list-style-type: none"> <li>- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH</li> </ul>	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No

APPENDIX 6g. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 2

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

APPENDIX 6g. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 2

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6g. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

Project #: AA17-197A

HILLSBURGH SITE 2

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No habitat matching criteria identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	Plantation within eastern portion of the study area may provide suitable habitat.	Yes	No stick nests observed during SWH assessment.	No

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26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	Seeps and springs possible within forested community.	Yes	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

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Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No habitat matching criteria identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

APPENDIX 6g. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 2

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No



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34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	<p>No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area</p> <p>Background Atlas review identified 6 Special concern species within 10km of the Study Area</p> <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	Yes- Woodlands within 120m of the drilling site may provide habitat for Eastern-Wood-pewee, Wood Thrush and Canada Warbler.	ELC, one-season botanical Survey Incidental wildlife	No
ANIMAL MOVEMENT CORRIDORS								

APPENDIX 6g. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1) within the study area may be flooded in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested Ecosites identified within Study Area	No	None required.	No

APPENDIX 6h. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 3

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7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

HILLSBURGH SITE 3

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6h. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT

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21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No treed or wetland communities identified within the Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No forested communities identified in the Study Area	No	No stick nests observed during SWH	No

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26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No forested or wetland communities identified in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

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29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No wetland or woodland communities identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No forested communities identified in Study Area.	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								



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31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Suitable habitat may be present in OAGM2.	No	None required. If works occur outside of breeding season.	No
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 6h. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 3

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	<p>No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area</p> <p>Background Atlas review identified 6 Special concern species within 10km of the Study Area</p> <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	No- none of the communities identified provide suitable habitat for the species listed.	One season Botanical Survey Incidental wildlife	No
ANIMAL MOVEMENT CORRIDORS								

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36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1) in the center of the study area may be flooded in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area.	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested Ecosites identified in Study Area.	No	None required.	No

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7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

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13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

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21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No wetland communities identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No forested habitat identified in Study Area	No	No stick nests observed during SWH	No

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26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No habitat matching criteria identified in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No



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29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No wetland or woodland habitat identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No treed communities identified in Study Area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

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31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Graminoid Meadow within Study Area may provide suitable habitat, however it is limited in total size (~6.2 ha)	Yes	Breeding Bird Surveys to be completed if works are to occur within breeding season.	Unknown
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

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#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	<p>No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area</p> <p>Background Atlas review identified 6 Special concern species within 10km of the Study Area</p> <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	Yes- the graminoid meadow within and adjacent to the Study Area may provide suitable habitat for Grasshopper Sparrow.	One season Botanical Survey Incidental wildlife	Unknown
ANIMAL MOVEMENT CORRIDORS								

APPENDIX 6i. CANDIDATE SIGNIFICANT WILDLIFE HABITAT ASSESSMENT  
HILLSBURGH SITE 4

Project #: AA17-197A

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
<b>SEASONAL CONCENTRATION AREAS OF ANIMALS</b>								
1	Waterfowl stopover and Staging Areas (terrestrial)	<ul style="list-style-type: none"> <li>- Fields with Sheet water in spring (incl. agricultural)</li> <li>- At least 100m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Mixed species aggregations of 100 or more individuals confirms SWH</li> </ul>	flooded field ecosite and 100-300m radius is the SWH	Annual Row crops (OAGM1) in the study area may be flooded in spring and may provide habitat for staging and stopover.	Yes	No Surveys completed. No evidence of flooding on aerial imagery.	unknown
2	Waterfowl Stopover and Staging (Aquatic)	<ul style="list-style-type: none"> <li>- Ponds, marshes, lakes, bays, coastal inlets and watercourses and reservoirs</li> <li>- SWTP &amp; SWMP are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Aggregations of 100 or more listed species for 7 days (ie. &gt;700 waterfowl use days) confirms SWH</li> </ul>	Aquatic ecosite and 100m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
3	Shorebird Migratory stopover	<ul style="list-style-type: none"> <li>- Shorelines of Lakes, rivers, wetlands, beaches, bars; seasonally flooded, muddy and un-vegetated shoreline habitat</li> </ul>	<ul style="list-style-type: none"> <li>- 3 or more listed species and &gt;1000 shorebird use days, or &gt;100 whimbrel, confirms SWH</li> </ul>	Shoreline ecosite and 100m radius is the SWH	No Habitat matching Criteria identified in Study Area, >5km from any Lake Ontario	No	None required.	No
4	Raptor Wintering Area	<ul style="list-style-type: none"> <li>- Combination of upland field and woodland habitat &gt;20ha total (includes, &gt;15ha upland field)</li> <li>- least disturbed sites, idle, fallow or lightly grazed field/meadow best</li> </ul>	<ul style="list-style-type: none"> <li>- 1 or more Short-eared Owl, or, at least 10 individuals and 2 listed species for a minimum of 20 days, and 3 of 5 years, confirms SWH</li> </ul>	Ecosite communities (field and woodland) is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
5	Bat Hibernacula	<ul style="list-style-type: none"> <li>- Caves, mine shafts, underground foundations, karsts</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- All sites with confirmed hibernating bats, confirms SWH</li> </ul>	Ecosite and 200m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
6	Bat Maternity Colony	<ul style="list-style-type: none"> <li>- All forested ecosites, FOD, FOC, FOM, SWD, SWM, SWC with &gt;10/ha trees (&gt;25cm DBH) in early stages of decay (class 1-3)</li> <li>- buildings are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- &gt;10 Big Brown Bats, &gt;20 Little Brown Myotis, &gt;5 adult female Silver-haired Bats confirms SWH</li> </ul>	Entire woodland or forest stand ELC ecosite containing colony is the SWH	No forested Ecosites identified in the Study Area	No	None required.	No

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
7	Turtle Wintering Area	- Areas with permanent water deep enough not to freeze, with mud/soft substrates	- 5 over-wintering Midland Painted Turtles, 1 or more Northern Map Turtle or Snapping Turtle confirms SWH	Mapped ELC ecosite, or deep pool element where turtles overwinter is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
8	Reptile Hibernaculum	- Sites below the frost line; rock barren, crevice and cave, talus, alvar, rock piles, slopes, stone fences and crumbling foundations	- Presence of hibernacula with minimum 5 individuals of 1 snake species/ individuals of 2 or more species confirms SWH - Congregations of a minimum of 5 snakes of 1 species/ individuals of 2 or more snake species, near potential hibernacula on sunny warm days in spring and fall confirms SWH	Feature hibernacula is located in, and 30m radius is the SWH	No habitat matching criteria identified in Study Area	No	None required.	No
9	Colonially-nesting Bird Habitat (cliff/bank)	- Eroding banks, sandy hills, borrow pits, steep slopes, sand piles, cliff faces, bridge abutments, silos, barns	- 1 or more nest sites with 8 or more Cliff Swallow or, 50 Bank Swallow and Rough-winged Swallow pairs during the breeding season.	Colony and 50m radius around peripheral nest is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
10	Colonially-nesting Bird Habitat (Tree/shrub)	- Live or dead standing trees in wetlands, lakes, islands and peninsulas, occasionally shrubby and emergent vegetation	- 5 or more active Great-blue Heron or other listed species nests	Edge of the colony plus minimum 300m radius, or extent of the forest ecosite, or entire island <15ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
11	Colonially-nesting Bird Habitat (Ground)	- Rocky islands or peninsulas within a lake or large river(natural or artificial)	- >25 active nests of Herring Gull, Ring-billed Gull, >5 active nests of Common Tern, or >2 active nests of Caspian Tern. 5 or more pairs of Brewer's Blackbird. Any active nesting colony of Little Gull, Great Black-backed Gull.	Edge of colony plus min 150m radius or extent of ELC ecosite, or island <3ha is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
12	Migratory Butterfly Stopover Area	- At least 10ha, with undisturbed field/meadow and forest or woodland edge habitat present, within 5km of Lake Ontario.	- Presence of Monarch use days >5000 or >3000 where there is a mix of Monarch with Painted Ladies or White Admirals	Field/meadow and forest/woodland is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
13	Land bird Migratory Stopover Area	- Woodlots >5ha in size - within 5km of lake Ontario	- Use by >200 birds/day, with >35species, with at least 10sp recorded on 5 different survey dates.	Woodlot is the SWH	No habitat matching criteria identified in Study Area, >5km from Lake Ontario	No	None required.	No
14	Deer Yarding Areas	- ELC communities providing Thermal cover (FOM,FOC,SWM,SWC, CUP2, CUP3, FOD3, CUT)	- Deer yards are managed by MNRF, available through district offices and LIO.	LIO mapping	No Deer yarding areas identified on LIO Mapping	No	None required.	No
15	Deer Winter Congregation Areas	- All forested ecosites >100ha - Conifer Plantations <50ha may be used	- Deer management is the responsibility of the MNRF - Contact MNRF or LIO for known deer winter areas.	LIO mapping	No Deer Winter Congregation areas identified on LIO Mapping	No	None required.	No
<b>RARE VEGETATION COMMUNITIES</b>								
16	Cliffs & Talus Slopes	- Cliff: vertical to near vertical bedrock >3m in height - Talus slope: rock rubble at the base of a cliff made up of coarse rocky debris	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes	Area of ELC sites: TAO, TAS, TAT, CLO, CLS, CLT	No habitat matching criteria identified in Study Area	No	None required	No
17	Sand Barren	- Exposed, sparsely vegetated & caused by lack of moisture, fires and erosion.	- area >0.5ha in size - Confirm any ELC vegetation Type for Sand Barren - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
18	Alvar	- Level, mostly un-fractured calcareous bedrock feature, overlain by a thin veneer or soil	- area >0.5ha in size - Field Studies that identify four of the five Alvar Indicator Species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
19	Old Growth Forest	- >30ha forests with at least 10ha interior habitat and multi-layered canopy	- Dominant Tree Species >140 years old - No recognizable signs forestry practices (old stumps)	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
20	Savannah	- Tall Grass Prairie Habitat with 25%-60% Tree cover - Remnant sites such as Railway Right of ways are not SWH	- No minimum size, and must be restored to a natural state. - Confirm one or more savannah indicator species - Not dominated by exotic or introduced species	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
21	Tallgrass Prairie	<ul style="list-style-type: none"> <li>- Ground cover dominated by prairie grasses with &lt;25% tree cover</li> <li>- Remnant sites such as Railway Right of ways are not SWH</li> </ul>	<ul style="list-style-type: none"> <li>- No minimum size, and must be restored to a natural state.</li> <li>- Confirm one or more prairie indicator species</li> <li>- Not dominated by exotic or introduced species</li> </ul>	Area of ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
22	Other Rare Vegetation Communities	<ul style="list-style-type: none"> <li>- All Provincially Rare S1, S2, S3 Vegetation Communities (Appendix M of SWHTG)</li> </ul>	<ul style="list-style-type: none"> <li>- Field Studies Confirming ELC vegetation type is a rare vegetation community</li> </ul>	Area of ELC ecosite is the SWH	No communities identified on site are S1-S3 communities	No	None required	No
<b>SPECIALIZED HABITAT FOR WILDLIFE</b>								
23	Waterfowl Nesting Areas	<ul style="list-style-type: none"> <li>- Upland Habitat, adjacent to Wetland ELC ecosites (except SWC, SWM)</li> <li>- Extends 120m from a wetland (&gt;0.5ha) and any small wetlands (&lt;0.5ha) within a cluster of at least 3</li> <li>- Upland area at least 120m wide</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 3 or more nesting pairs of listed species excluding Mallards</li> <li>- Presence of 10 or more nesting pairs including mallards</li> <li>- Any active Black Duck nesting site</li> </ul>	SWH may be greater than or less than 120m from the wetland edge and must provide enough habitat for waterfowl to successfully nest	No wetland communities identified in Study Area	No	None required	No
24	Bald Eagle or Osprey Nesting, Foraging and Perching Habitat	<ul style="list-style-type: none"> <li>- Forest communities, adjacent to riparian areas</li> <li>- Osprey nests usually at top of tree</li> <li>- Bald Eagle nest usually in super canopy tree in a notch within canopy</li> </ul>	<ul style="list-style-type: none"> <li>- Studies confirm one or more active Bald Eagle or Osprey nest</li> <li>- Alternate nests included in SWH</li> <li>- Nests must be used annually, if found inactive, must be known inactive at least 3 years, or suspected unused for 5 years if unknown</li> </ul>	Active nest plus 300m for Osprey Active nest plus 400-800m for Bald Eagle	No habitat matching criteria identified in Study Area	No	None required	No
25	Woodland Raptor Nesting Habitat	<ul style="list-style-type: none"> <li>- Forested communities, forested swamp communities and cultural Plantations</li> <li>- Natural Forested/conifer plantations &gt;30ha with &gt;10ha interior habitat (200m buffer)</li> </ul>	<ul style="list-style-type: none"> <li>- One or more active nest of listed species</li> </ul>	Nest protection radius: <ul style="list-style-type: none"> <li>- Red-Shouldered Hawk, Northern Goshawk 400m</li> <li>- Barred Owl 200m</li> <li>- Broad-winged Hawk, Coopers Hawk 100m</li> <li>- Sharp-shinned Hawk 50</li> </ul>	No forested habitat identified in Study Area	No	No stick nests observed during SWH	No



ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
26	Turtle Nesting Areas	<ul style="list-style-type: none"> <li>- Exposed Mineral soil (sand or gravel) adjacent (&lt;100m) or within shallow marsh, shallow submerged, shallow floating, bog or fen communities</li> <li>- Located in open sunny areas, away from roads and less prone to predation</li> <li>- Municipal and provincial road shoulders are not SWH.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm 5 or more nesting Midland Painted Turtles, 1 or more nesting Northern Map Turtle or Snapping Turtle</li> </ul>	Area or sites with exposed mineral soils, plus a radius of 30-100m around the nesting area is the SWH.	No habitat matching criteria identified in Study Area	No	None required	No
27	Seeps and Springs	<ul style="list-style-type: none"> <li>- Areas where ground water comes to the surface</li> <li>- Any forested area within the headwaters of a stream or river system</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm site with 2 or more seeps/springs.</li> <li>-</li> </ul>	Area of ELC forest ecosite containing seep/spring is the SWH	No forested communities identified in Study Area	No	ELC complete	No seeps or springs identified
28	Amphibian Breeding Habitat (woodland)	<ul style="list-style-type: none"> <li>- Breeding pools within woodlands</li> <li>- Wetland, pond or pool &gt;500m<sup>2</sup> within or adjacent (&lt;120m) to a woodland.</li> <li>- Woodlands with permanent ponds, or those with water until mid-July more likely to be used.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding population of 1 or more listed newt/salamander species, 2 or more of the listed frog species with at least 20 individuals (adults or egg masses), 2 or more of the listed frog species with call code levels of 3.</li> <li>- Wetland adjacent to woodlands includes travel corridor connecting features as SWH.</li> </ul>	Wetland area, plus 230m radius of woodland is the SWH.	No habitat matching criteria identified in Study Area	No	None required.	No

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
29	Amphibian Breeding Habitat (Wetland)	<ul style="list-style-type: none"> <li>- Swamp, marsh, fen, bog, open aquatic and shallow aquatic ELC communities.</li> <li>- Typically isolated from woodlands (&gt;120m), but includes larger wetlands with primarily aquatic species (bull frogs) that are adjacent to woodlands.</li> <li>- Wetlands &gt;500m<sup>2</sup></li> <li>- Presence of shrubs &amp; logs</li> <li>- Bullfrogs require permanent water bodies and abundant emergent vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm Breeding populations of 1 or more listed newt/salamander species, or 2 or more listed frog/toad species with at least 20 individuals (adults or egg masses), or 2 or more listed frog/toad species with a call code level of 3</li> <li>- Or any wetland with confirmed breeding Bullfrog.</li> </ul>	ELC ecosite and shoreline is the SWH Movement corridors (SWH) must be considered if this habitat is significant	No wetland or woodland habitat identified in Study Area	No	None required.	No
30	Area-sensitive Breeding Bird Habitat	<ul style="list-style-type: none"> <li>- Habitats where interior breeding birds are breeding</li> <li>- Large mature(&gt;60 years) forest stands or woodlots &gt;30ha</li> <li>- Forest and swamp ELC communities</li> <li>- Interior habitat at least 200m from edge</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of nesting or breeding pairs of 3 or more of the listed species</li> <li>- Any site with Cerulean Warbler or Canada Warbler is SWH</li> </ul>	ELC ecosite is the SWH	No treed communities identified in Study Area	No	None required	No
HABITATS OF SPECIES OF CONSERVATION CONCERN CONSIDERED SWH								

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
31	Marsh Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Some meadow marsh, shallows submerged, shallow floating, mixed shallow floating, fen and bog communities (see SWH Ecoregion guide for specifics)</li> <li>- Nesting occurs in wetlands, all wetland habitat is considered with presence of shallow water with emergent aquatic vegetation</li> <li>- Green heron at edge of water sheltered by shrubs and trees.</li> </ul>	<ul style="list-style-type: none"> <li>- 5 or more nesting pairs of Sedge Wren or Marsh Wren, 1 pair of Sandhill Crane, or breeding by any combination of 5 or more of the listed species</li> <li>- Any Wetland with 1 or more breeding pair Black Tern, Trumpeter Swan, Green Heron or Yellow Rail</li> </ul>	ELC ecosite is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
32	Open Country Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Grassland area &gt;30ha (natural &amp; cultural fields and meadows)</li> <li>- Grasslands not class 1 or 2 agriculture (no row crops or intensive hay or livestock pasturing)</li> <li>- Mature hayfields or pasture at least 5 years old</li> </ul>	<ul style="list-style-type: none"> <li>- Nesting or breeding of 2 or more of the listed species</li> <li>- Field with 1 or more Short-eared Owls</li> </ul>	Contiguous ELC ecosite is the SWH	Only Annual Row Crops and Open Pasture identified in Study Area.	No	Based on correspondence with MNRF, grassland bird surveys should be conducted if works are to occur during breeding season	Unknown
33	Shrub/Early Successional Bird Breeding Habitat	<ul style="list-style-type: none"> <li>- Cultural thickets, savannah and woodland habitat</li> <li>- Large field area succeeding to shrub and thicket habitat &gt;10ha in size</li> <li>- Patches of shrub ecosite may be complexed into larger old field ecosites for some species</li> </ul>	<ul style="list-style-type: none"> <li>- Confirm nesting or breeding of 1 of the listed indicator species and at least 2 of the common species</li> <li>- Habitat with Yellow-breasted Chat Or Golden-winged Warbler is SWH</li> </ul>	SWH is contiguous ELC ecosite field/thicket area	No habitat matching criteria identified in Study Area	No	None required	No

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
34	Terrestrial Crayfish	<ul style="list-style-type: none"> <li>- Meadow marsh, shallow marsh, swamp thicket, deciduous swamp and mixed swamp communities</li> <li>- Cultural meadow with inclusions of meadow marsh may be used</li> <li>- Wet edges of marshes and wet meadows should be surveyed for crayfish</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of 1 or more individuals of listed species or their chimneys in suitable habitat</li> </ul>	Area of ELC ecosite or Eco element area of meadow marsh or swamp within the larger ecosite area is the SWH	No habitat matching criteria identified in Study Area	No	Incidental observation during ELC conducted	No
35	Special Concern & Rare Wildlife Species	<ul style="list-style-type: none"> <li>- All Special concern and Provincially Rare plant and animal species</li> <li>- Where an element occurrence is identified within a 1 or 10km grid for a species listed, linking candidate habitat on the site must be completed to ELC ecosites</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment/inventory of site for identified special concern or rare species completed during time of year when species is present or easily identifiable</li> <li>- Habitat must be easily mapped and cover an important life stage component (specific nesting habitat, foraging)</li> </ul>	SWH is the finest ELC scale that protects the form and function of the habitat	No element occurrences for Special Concern or rare Wildlife Species identified within 1km of the study area Background Atlas review identified 6 Special concern species within 10km of the Study Area <ul style="list-style-type: none"> <li>- Snapping Turtle (ORAA)</li> <li>- Red-headed Woodpecker (OBBA)</li> <li>- Eastern Wood-pewee (OBBA)</li> <li>- Wood Thrush (OBBA)</li> <li>- Canada Warbler (OBBA)</li> <li>- Grasshopper Sparrow (OBBA)</li> </ul>	Yes- Open pasture identified in Study Area may provide habitat for Grasshopper Sparrow.	One season Botanical Survey Incidental wildlife	Unknown
ANIMAL MOVEMENT CORRIDORS								

ERIN SITE 3B

#	SIGNIFICANT WILDLIFE HABITAT (SWH)	CANDIDATE SWH CRITERIA	CRITERIA FOR SWH CONFIRMATION	SWH PROTECTED AREA	SITE ASSESSMENT DETAILS	CANDIDATE SWH	FIELD STUDIES REQUIRED/ COMPLETED	CONFIRMED SWH
36	Amphibian Movement Corridor	<ul style="list-style-type: none"> <li>- Corridors may occur in all ecosites associated with water</li> <li>- Presence of significant amphibian breeding indicates the requirement for identifying corridors</li> <li>- Movement corridors between breeding habitat and summer habitat</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors typically include areas with native vegetation, with several layers of vegetation, unbroken by roads, waterways or waterbodies are most significant</li> <li>- At least 15 of vegetation on both sides of the waterway or up to 200m wide of woodland habitat with gaps of &lt;20m</li> <li>- Shorter corridors are more significant than longer, but amphibians must be able to get to and from their summer breeding habitat</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No
37	Deer Movement Corridor	<ul style="list-style-type: none"> <li>- May occur in all forested ecosites</li> <li>- Determined when deer wintering habitat is confirmed as SWH</li> </ul>	<ul style="list-style-type: none"> <li>- Corridors at least 200m wide with gaps &lt;20m leading to wintering habitat</li> <li>- Unbroken by roads and residential areas</li> <li>- Shorter corridors are more significant</li> </ul>	Corridor is the SWH	No habitat matching criteria identified in Study Area	No	None required	No

APPENDIX 7  
Species at Risk Habitat Assessment

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	<i>Pseudacris triseriata</i> pop. 2	NAR	THR	S3	ORAA (2012)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog <i>Pseudacris triseriata</i> Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Gypsy Cuckoo Bumble Bee	<i>Bombus bohemicus</i>	END	END	S4	NHIC (1979)	Occurs in open meadows, mixed farmlands, urban areas, boreal forests and montane meadows. Host nests occur in abandoned underground rodent burrows and rotten logs (COSEWIC 2014)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2014. COSEWIC assessment and status report on the Gypsy Cuckoo Bumble Bee <i>Bombus bohemicus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 56 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Buildings within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	OBBA (2007) MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.



COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Agricultural fields within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNR (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNR (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNR (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNR (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNR (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNR (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.

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Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	OBBA (2007) MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>Icteria virens auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.

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Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
<b>Mammals</b>										
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus interior</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNRF (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNRF (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNRF (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNRF (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNRF (Wellington County)	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNRF (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNRF (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	<i>Pseudacris triseriata</i> pop. 2	NAR	THR	S3	ORAA (2012)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog <i>Pseudacris triseriata</i> Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

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Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	OBBA (2007) MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	NHIC (2001) OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Agricultural fields within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>

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Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNRF (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNRF (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239/">http://bna.birds.cornell.edu/bna/species/239/</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNRF (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNRF (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNRF (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.



COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	OBBA (2007) MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
Mammals										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernates singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNR (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNR (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNR (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNR (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNR (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNR (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNR (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.

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Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	<i>Pseudacris triseriata</i> pop. 2	NAR	THR	S3	ORAA (2012)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog <i>Pseudacris triseriata</i> Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Open pasture within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	OBBA (2007) MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.

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Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	NHIC (2001) OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Agricultural fields and pasture within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNRF (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNRF (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNRF (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNRF (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNRF (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.

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Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	OBBA (2007) MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>Icteria virens auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.



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Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
<b>Mammals</b>										
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Wavy-rayed Lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNRF (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNRF (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNRF (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNRF (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNRF (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNRF (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNRF (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	<i>Pseudacris triseriata</i> pop. 2	NAR	THR	S3	ORAA (2012)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog <i>Pseudacris triseriata</i> Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

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Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Open pasture within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	OBBA (2007) MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.

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Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	NHIC (2001) OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Agricultural fields and pasture within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNRF (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNRF (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNRF (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNRF (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNRF (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	OBBA (2007) MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>Icteria virens auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
<b>Mammals</b>										
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus interior</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										



COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Wavy-rayed Lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNRF (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNRF (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNRF (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNRF (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNRF (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.

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Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNRF (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNRF (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	<i>Pseudacris triseriata</i> pop. 2	NAR	THR	S3	ORAA (2012)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog <i>Pseudacris triseriata</i> Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Buildings within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNR (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNR (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	NHIC (2002) MNR (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Hayfield within study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNR (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNR (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	OBBA (2007) MNR (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNR 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNR, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNR (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	NHIC (2002) MNR (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Agricultural fields within the study area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNRF (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNRF (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239/">http://bna.birds.cornell.edu/bna/species/239/</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNRF (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNRF (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNRF (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	OBBA (2007) MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
Mammals										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernates singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNR (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNR (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNR (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNR (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNR (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNR (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNR (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.



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Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
Western Chorus Frog – Great Lakes / St. Lawrence - Canadian Shield Population	<i>Pseudacris triseriata</i> pop. 2	NAR	THR	S3	ORAA (2012)	Generally found in lowland communities, such as swamps, inhabiting lowland shrubs and grasses in the community, near breeding habitat. Breeding occurs in lowland, ephemeral ponds, devoid of predatory fish species (COSEWIC 2008a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Western Chorus Frog <i>Pseudacris triseriata</i> Carolinian population and Great Lakes/St. Lawrence – Canadian Shield population in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	Milkweed found within pasture and along roadside may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	Open pasture may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

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Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Buildings within and adjacent to the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNR (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	Pasture within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNR (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Pasture within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNR (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNR (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	Deciduous forest within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	OBBA (2007) MNR (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNR 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNR, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNR (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.

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Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Pasture within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNR (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	NHIC (Unk. Date) OBBA (2007) MNR (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	Deciduous forest within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNR (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	Pasture within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNR (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNR (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNR (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	OBBA (2007) MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	Pasture within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	Deciduous forest within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>Icteria virens auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.

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Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
<b>Mammals</b>										
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	Deciduous forest within Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required. Access to polygon restricted.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	Deciduous forest within Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required. Access to polygon restricted.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	Deciduous forest within Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required. Access to polygon restricted.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										

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Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNRF (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNRF (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNRF (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNRF (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNRF (Wellington County)	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.

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Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNRF (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	Deciduous forest within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNRF (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	Deciduous forest within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	Meadows within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	Meadows within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Meadows within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	Buildings within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Meadows within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.

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Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNR (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	? COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNR (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	Meadows within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNR (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNR (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNR (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbed wire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNR (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNR (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNR (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.

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Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture, marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	Meadows within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
Mammals										
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernates singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).

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Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	The treed area within the residential property may contain suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	Unable to be assessed due to property access restrictions	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	The treed area within the residential property may contain suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	Unable to be assessed due to property access restrictions	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	The treed area within the residential property may contain suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	Unable to be assessed due to property access restrictions	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNRF (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNRF (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNRF (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	Meadow community in Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNRF (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNRF (Wellington County)	Only historic observations of Masassauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNRF (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNRF (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )

APPENDIX 7f. SPECIES AT RISK HABITAT ASSESSMENT  
HILLSBURGH SITE 1

PROJECT #: AA17-197A

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

References:

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COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.



COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Farmland and residential communities within Study Area may contain suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.
Barn Owl	<i>Tyto alba</i>	END	END	S1	MNR (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNR (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNR (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNR (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	MNR (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNR 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNR, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNR (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	OBBA (2007) MNR (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNR (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNR (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	? COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNR (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNR (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNR (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNR (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbed wire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNR (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COEWSIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>Icteria virens auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
<b>Mammals</b>										
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernate singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	The residential community within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										
Wavy-rayed Lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										

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Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNRF (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNRF (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNRF (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNRF (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNRF (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNRF (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils, Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )

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American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNRF (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a>
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None Observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	Agricultural lands within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Farmland within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

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Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	Buildings within the Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	NHIC (2001) OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.



COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNR (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNR (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239">http://bna.birds.cornell.edu/bna/species/239</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNR (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNR (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNR (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbed wire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNR (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNR (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	Agricultural fields within the Study Area may provide suitable habitat.	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
Mammals										

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Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernates singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNR (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNR (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNR (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. Only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNR (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNR (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNR (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNR (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
<b>Amphibians</b>										
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	END	END	S2	MNRF (Wellington County)	Adults are found within upland deciduous or mixed forest habitat with suitable breeding ponds, such as kettle ponds, natural basins and limestone sink holes, which can be permanent or ephemeral, and include appropriate egg attachment sites and lack of predatory fish (COSEWIC 2010).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Jefferson Salamander <i>Ambystoma jeffersonianum</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. xi + 38 pp.
<b>Butterflies, Bees, Damselflies, Dragonflies &amp; Insects</b>										
Monarch	<i>Danaus plexippus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Requires milkweed for larval feeding, other wildflower species are also important for adult feeding when milkweed is not in flower; often found in abandoned farmland, along roadsides, and other open spaces (COSEWIC 2010b)	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Monarch <i>Danaus plexippus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 43 pp.
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	END	END	S1	MNRF (Wellington County)	Uses a variety of open or semi-open habitat, including meadows, agricultural land and savannah habitat for foraging. Nests are often found underground, in old rodent burrows (COSEWIC 2010c).	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Rusty-patched Bumble Bee <i>Bombus affinis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 34 pp.
West Virginia White	<i>Pieris virginensis</i>	SC	NAR	S3	MNRF (Wellington County)	Found in rich deciduous and mixed forests and swamps with a poorly vegetated shrub layer. The larvae feed only on the leaves of a few host plants, including the Two-leaved Toothwort ( <i>Cardamine diphylla</i> ) and cut-leaved toothwort (Burke 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2013. Management Plan for the West Virginia White ( <i>Pieris virginensis</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. v + 44 pp.
<b>Birds</b>										
Acadian Flycatcher	<i>Empidonax virens</i>	END	END	S2S3B	MNRF (Wellington County)	Breeds in mature deciduous and mixed forests, using tableland forests and ravine habitats. Nests are often located over vernal pools, trails or bare ground in tablelands or over streams in ravines (COSEWIC 2010d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Acadian Flycatcher <i>Empidonax virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 38 pp.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	NAR	S2N, S4B	MNRF (Wellington County)	Prefers deciduous and mixed-deciduous mature forest habitat close to water bodies including lakes and rivers; nests in super canopy trees including Pine (Armstrong 2014).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Armstrong, Ted (E.R.). 2014. Management Plan for the Bald Eagle ( <i>Haliaeetus leucocephalus</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 53 pp.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Breeds in a variety of natural and artificial bank type habitat, such as bluffs, stream and river banks, sand and gravel pits, piles of sand, topsoil and other material. Nests are typically in vertical or near-vertical surfaces (COSEWIC 2013b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Bank Swallow <i>Riparia riparia</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Occurs in farmland, along lake/river shorelines, in wooded clearings and in urban populated areas. Nesting may occur inside or outside buildings; under bridges and in road culverts (COSEWIC 2011a).	Farmland within Study Area may contain suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Barn Swallow <i>Hirundo rustica</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 37 pp.

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Barn Owl	<i>Tyto alba</i>	END	END	S1	MNRF (Wellington County)	Requires open habitat for foraging, such as old fields and pastures, that provide habitat for rodents, and uses a variety of natural and man-made structures for nesting (COSEWIC 2010e)	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. <a href="#">COSEWIC assessment and status report on the Barn Owl <i>Tyto alba</i> (Eastern population and Western population) in Canada</a> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 34 pp.
Black Tern	<i>Chlidonias niger</i>	SC	NAR	S3B	MNRF (Wellington County)	Breeds in large, freshwater marshes, with emergent vegetation, and large areas of open water. Nests are typically within 6 meters of the water, on low emergent vegetation (Burke 2012).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Peter S. Burke. 2012. Management Plan for the Black Tern ( <i>Chlidonias niger</i> ) in Ontario. Ontario Management Plan Series. Prepared for the Ontario Ministry of Natural Resources (OMNR), Peterborough, Ontario. vi + 47 pp.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	NHIC (2001) OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields and meadows with a mixture of grasses and broad-leaved forbs with a high litter cover. Area Sensitive, with increased density in grasslands greater than 10ha (Renfrew et. al. 2015)	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Renfrew, R., A.M. Strong, N.G. Perlut, S.G. Martin and T.A. Gavin. 2015. Bobolink ( <i>Dolichonyx oryzivorus</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/176">http://bna.birds.cornell.edu/bna/species/176</a>
Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer (COSEWIC 2008b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Canada Warbler <i>Wilsonia Canadensis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 35 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Cerulean Warbler	<i>Setophaga cerulea</i>	THR	END	S3B	MNRF (Wellington County)	Occur in older, mature, deciduous forests, preferentially oak-maple composition, with a full, to partially open canopy, and little to no understory cover. Often in bottomland forests, or adjacent to treed swamplands (COSEWIC 2010f).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Cerulean Warbler <i>Dendroica cerulea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B, S4N	MNRF (Wellington County)	Typically nests in traditional chimneys of older buildings, which also provide roosting sites for many individuals during spring and fall migration (MNRF 2013).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	MNRF, 2013. General Habitat Description for the Chimney Swift ( <i>Chaetura pelagica</i> ). Ontario Ministry of Natural Resources and Forestry. July 2, 2013.
Common Nighthawk	<i>Chordeiles minor</i>	SC	THR	S4B	MNRF (Wellington County)	Breeds in open habitat, on the ground, in areas with no vegetation, including sand dunes, burned areas, open forests, railways, and gravel rooftops. Eggs are laid directly on the ground (COSEWIC 2007b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and status report on the Common Nighthawk <i>Chordeiles minor</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 25 pp.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	OBBA (2007) MNRF (Wellington County)	Nest in grassland habitats, including hayfields, pasture, savannahs, and other open areas. Preferential habitat includes areas with good grass and thatch (litter) cover (Jaster et. al. 2012).	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	aster, Levi A., William E. Jensen and Wesley E. Lanyon. (2012). Eastern Meadowlark ( <i>Sturnella magna</i> ), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America: <a href="https://birdsna.org/Species-Account/bna/species/easmea">https://birdsna.org/Species-Account/bna/species/easmea</a>

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Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	THR	THR	S4B	MNRF (Wellington County)	Often found breeding in semi-open habitats, with little ground cover, and canopy openings allowing light to penetrate the forest floor, often associated with pine or oak, savannahs and barrens, early-successional poplar stands and open conifer plantations (COSEWIC 2009a)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and status report on the Whip-poor-will <i>Caprimulgus vociferus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B	OBBA (2007) MNRF (Wellington County)	Associated with mid-age mixed and deciduous forest stands, often dominated by Maple ( <i>Acer</i> ), Elm ( <i>Ulmus</i> ) or Oak ( <i>Quercus</i> ), and include areas with clear-cuts, openings or forest edges. Also prefers forest stands with little to no understory vegetation (COSEWIC 2012a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	? COSEWIC. 2012. COSEWIC assessment and status report on the Eastern Wood-pewee <i>Contopus virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 39 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	THR	S4B	MNRF (Wellington County)	Nests in early successional shrub habitat, with adjacent forest edges for singing perches, often in hydro cut-overs, recently logged areas and beaver marshes (COSEWIC 2006a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and status report on the Golden-winged Warbler <i>Vermivora chrysoptera</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 30 pp.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	OBBA (2007)	Prefers moderately open grasslands and prairies with patchy bare ground; avoids grasslands with extensive shrub cover (Vickery 1996).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Vickery, Peter D. 1996. Grasshopper Sparrow ( <i>Ammodramus savannarum</i> ), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <a href="http://bna.birds.cornell.edu/bna/species/239/">http://bna.birds.cornell.edu/bna/species/239/</a>
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	END	SHB	MNRF (Wellington County)	Breeds in grassland habitat, and is area sensitive. Grasslands with tall, dense cover a thick thatch layer, and are greater than 30ha, but preferentially larger than 100ha are preferred (COSEWIC 2011b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Henslow's Sparrow <i>Ammodramus henslowii</i> in Canada. <a href="#">Committee on the Status of Endangered Wildlife in Canada</a> . Ottawa. x + 37 pp.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	MNRF (Wellington County)	Breeds in large marshes (>5ha) with emergent vegetation, typically cattails, with at least 50% open water, and relatively stable water levels (COSEWIC 2009b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2009. COSEWIC assessment and update status report on the Least Bittern <i>Ixobrychus exilis</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 36 pp.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	MNRF (Wellington County)	Nests in open, low, grassy habitat with scattered shrubs. Presence of thorny shrubs, such as hawthorn, or barbwire fencing required for impaling prey. Only two recent areas of breeding in the province (Carden Plain and Napanee Plain) (Environment Canada 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	Environment Canada. 2015. Recovery Strategy for the Loggerhead Shrike, migrans subspecies ( <i>Lanius ludovicianus migrans</i> ), in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 35 pp.
Louisiana Waterthrush	<i>Seiurus motacilla</i>	SC	THR	S3B	MNRF (Wellington County)	Nests along headwater streams and associated wetlands which occur within large tracts of mature forest especially mixed wood forests with a component of hemlock. Nests are located in stream bank niches, under mossy logs, and within the roots of fallen trees (COSEWIC 2006b)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2006. COSEWIC assessment and update status report on the Louisiana Waterthrush <i>Seiurus motacilla</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 26 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Northern Bobwhite	<i>Colinus virginianus</i>	END	END	S1	MNRF (Wellington County)	Requires early successional habitat with a mix of croplands, dense brush cover and grassland in close proximity for feeding, dusting, roosting, escaping predators and nesting. Only known self-sustaining population found on Walpole island (COSEWIC 2003).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and update status report on the Northern Bobwhite <i>Colinus virginianus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 20 pp.



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Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	THR	S4B	MNRF (Wellington County)	Associated with natural forest openings (usually conifer or mixed), and edges of forests adjacent wetlands or watercourses, will also use open and semi-open forests and clear-cuts. Presence of tall snags and residual live trees required for nesting and foraging (COSEWIC 2007c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2007. COSEWIC assessment and status report on the Olive-sided Flycatcher <i>Contopus cooperi</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 25 pp.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	THR	S4B	MNRF (Wellington County)	Found in a variety of open areas, with a high density of dead or dying trees, particularly forests dominated by oak or beech (COSEWIC 2007d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp.
Short-eared Owl	<i>Asio flammeus</i>	SC	SC	S2N, S4B	MNRF (Wellington County)	Breeds in open habitats, including grasslands, old pasture marshes, bogs, and sand-sage. Nests are scrapes, located on the ground (COSEWIC 2008c).	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and update status report on the Short-eared Owl <i>Asio flammeus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR	S4B	OBBA (2007) MNRF (Wellington County)	Prefers second growth moist deciduous forests, with tall trees, and a dense understory of low saplings and an open forest floor with decaying leaf litter. Often nests in saplings, shrubs or occasionally dead stumps (COSEWIC 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Wood Thrush <i>Hylocichla mustelina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 46 pp.
Yellow-breasted Chat	<i>Icteria virens</i>	END	END	S2B	MNRF (Wellington County)	Shrub specialist, nesting in early successional, dense, low-shrub habitat, including old fields, hydro-cutovers and forest edges experiencing regeneration (COSEWIC 2011c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2011. COSEWIC assessment and status report on the Yellow-breasted Chat <i>auricollis</i> subspecies <i>Icteria virens auricollis</i> and the Yellow-breasted Chat <i>virens</i> subspecies <i>Icteria virens virens</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Fish										
Black Redhorse	<i>Moxostoma duquesnei</i>	THR	THR	S2	MNRF (Wellington County)	Associated with cool, clear streams of moderate size with substrates of rocky, cobble, sand or silt. Found in the Lake Erie and Grand River Watersheds (COSEWIC, 2005a).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the black redhorse <i>Moxostoma duquesnei</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 21 pp.
Redside Dace	<i>Clinostomus elongatus</i>	END	END	S2	MNRF (Wellington County)	Associated with small, clear, head water streams and creeks with abundant overhanging vegetation and both pool and riffle habitat, often with gravel substrates and cool water temperature regimes (COSEWIC, 2007e).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2007. COSEWIC assessment and update status report on the Redside Dace <i>clinostomus elongatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. Vii + 59pp.
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	MNRF (Wellington County)	Associated with large, wide streams (usually >20m) in deep riffles and pools, with substrates of gravel, boulder, rubble and sand (COSEWIC, 2011d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2011. COSEWIC assessment and status report on the Silver Shiner in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 45 pp.
Mammals										

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Eastern Small-footed Myotis	<i>Myotis leibii</i>	END	NA	S2S3	MNRF (Wellington County)	Associated with hilly or mountainous terrain, in or near coniferous or deciduous forest habitat. Maternity roosts located in cracks and crevices of talus slopes and rocky outcrops, or, occasionally in bridges, old buildings, hollow trees (or loose bark) and caves and mines during the maternity season. Hibernates singly or in small clusters in mines and caves (NatureServe, 2015).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Grey Fox	<i>Urocyon cinereoargenteus</i>	SC	THR	S1	MNRF (Wellington County)	Often associated with deciduous forested habitats, with open areas. Dens often located in areas of dense brush near a water source, also occur in a variety of other habitats and considered a habitat generalist (COSEWIC, 2002).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and update status report on the grey fox <i>Urocyon cinereoargenteus</i> interior in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 32 pp.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	MNRF (Wellington County)	Hibernate in Caves; maternity colonies located in warm sites, often associated with human habitation; including attics, old buildings, under bridges, rock crevices and cavities in canopy trees in wooded areas (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013a COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	MNRF (Wellington County)	Hibernate in Caves; maternity colonies usually located in trees, and are closely associated with specific tree characteristics and density of suitable trees. Characterized by tall, large diameter trees in early stages of decay, located in openings in mature forest canopies (COSEWIC, 2013c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	MNRF (Wellington County)	Overwinters in deepest part of caves where temperature is least variable. Summer roosts consist of the same 4-6 trees per year, can also be in dead clusters of leaves on trees (COSEWIC 2013c)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2013. COSEWIC assessment and status report on the Little Brown Myotis <i>Myotis lucifugus</i> , Northern Myotis <i>Myotis septentrionalis</i> and Tri-colored Bat <i>Perimyotis subflavus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxiv + 93 pp. ( <a href="http://www.registrelep-sararegistry.gc.ca/default_e.cfm">www.registrelep-sararegistry.gc.ca/default_e.cfm</a> ).
<b>Molluscs</b>										
Wavy-rayed lampmussel	<i>Lampsilis fasciola</i>	THR	SC	S1	MNRF (Wellington County)	Occur in clear, flowing rivers and large creeks, in riffle areas with sand or gravel substrates, and occasional large substrates (COSEWIC, 2010g)	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Wavy-rayed Lampmussel <i>Lampsilis fasciola</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp.
<b>Reptiles</b>										
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	MNRF (Wellington County)	Use a variety of eutrophic wetland habitat types, including lakes, ponds, watercourses, marshes, man-made channels, farm fields, coastal areas and bays. Seasonal overland terrestrial movements up to 2.5 km occur to reach nesting and overwintering areas, generally through wooded coniferous or mixed forest habitat. Nests are usually laid in loose sand or organic soil (COSEWIC 2005b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005. COSEWIC assessment and update status report on the Blanding's Turtle <i>Emydoidea blandingii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	ORAA (2017) MNR (Wellington County)	Inhabit slow-moving waters with soft, muck bottom and dense aquatic vegetation. Ponds, sloughs and shallow bays are all often used as summering and overwintering habitat (COSEWIC 2008d).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2008. COSEWIC assessment and status report on the Snapping Turtle <i>Chelydra serpentina</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 47 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S3	MNR (Wellington County)	Found in wetlands with high organic content, including bogs, fens, marshes, woodland streams, sedge meadows, and shallow bays. Only one population is known from Wellington County, in Luther Marsh. Preferential to unpolluted shallow water with aquatic vegetation and soft substrates. Presence of Sphagnum moss, sedge tussocks, cattails and water lilies, may be important to Canadian populations (COSEWIC, 2002b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and update status report on the spotted turtle <i>Clemmys guttata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 27 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> ).
Butler's Gartersnake	<i>Thamnophis butleri</i>	END	END	S2	MNR (Wellington County)	Occupies open areas with dense grass and thatch cover, including tall grass prairie, old fields, abandoned sites in urban areas, drainage swales and seasonally dry marshes. Only one population is known from Wellington County, in Luther Marsh. Artificial cover features such as plywood, concrete, shingles, metal sheets etc., increases probability of encounters, but is not essential (COSEWIC, 2010h).	Meadow community within Study Area may provide suitable habitat	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2010. COSEWIC assessment and status report on the Butler's Gartersnake <i>Thamnophis butleri</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 51 pp.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S3	MNR (Wellington County)	A semi-aquatic species that inhabits dense, low- vegetation, edges of ponds, streams, marshes, fens and bogs, with open sunlit areas for basking (COSEWIC 2002c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2002. COSEWIC assessment and status report on the eastern ribbonsnake <i>Thamnophis sauritus</i> . Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 24 pp.
Massasauga Rattlesnake	<i>Sistrurus catenatus</i>	SC	THR	S3	MNR (Wellington County)	Only historic observations of Massasauga in the north western portion of Wellington County. Found in wet prairies, old fields, peatlands, rock barrens and coniferous forests, with open-areas, and areas of dense shrub cover. Hibernate in damp areas below the frost line (COSEWIC, 2012b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC. 2012. COSEWIC assessment and status report on the Massasauga <i>Sistrurus catenatus</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii + 84 pp.
Vascular Plants										
American Chestnut	<i>Castanea dentata</i>	END	END	S2	MNR (Wellington County)	Typically occur in upland deciduous forests in Southern Ontario with dry, sandy, acid-neutral soils. Typical associates include Red Oak, Black Cherry, Sugar Maple, American Beech, White Ash, White Oak, Red Maple and Sassafras (COSEWIC 2004).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2004. COSEWIC assessment and status report on the American chestnut <i>Castanea dentata</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	MNR (Wellington County)	Occur in moist, rich, undisturbed, mature Sugar Maple dominated deciduous woodlands. Often, colonies are located at the bottom of south facing slopes (COSEWIC, 2000).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2000. COSEWIC assessment and update status report on the American ginseng <i>Panax quinquefolius</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 17 pp.

COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	S-RANK	BACKGROUND SOURCES	HABITAT REQUIREMENTS	SUITABLE HABITAT IN STUDY AREA	FIELD STUDIES COMPLETED/ REQUIRED	OBSERVED BY A & A	REFERENCE
Butternut	<i>Juglans cinerea</i>	END	END	S3?	MNRF (Wellington County)	Occur in rich moist sites, that are well-drained, often found along stream banks or gravelly sites. Butternut is shade intolerant (COSEWIC, 2003b).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2003. COSEWIC assessment and status report on the butternut <i>Juglans cinerea</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp. ( <a href="http://www.sararegistry.gc.ca/status/status_e.cfm">www.sararegistry.gc.ca/status/status_e.cfm</a> )
Hill's Pondweed	<i>Potamogeton hillii</i>	SC	SC	S2	MNRF (Wellington County)	Occur in cold clear calcareous streams, ponds and ditches, which are alkaline in nature (COSEWIC 2005c).	No habitat matching criteria identified in Study Area	The Study Area was investigated for habitat during ELC and Vegetation Surveys. No further studies required.	None observed.	COSEWIC 2005c COSEWIC assessment and update status report on the Hill's pondweed <i>Potamogeton hillii</i> in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 19 pp.

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APPENDIX 8  
Background Wildlife List

DATE OBS	COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES (BCR 13)	CVC (2010)	WELLINGTON COUNTY (2009)	COMMENTS
	BEES												
NHIC (1979)	Gypsy Cuckoo Bumble Bee	Bombus bohemicus	END	END		S4	GH						
	AMPHIBIANS												
ORAA (2016)	Spotted Salamander	Ambystoma maculatum				S4	G5				2	✓	
ORAA (1982)	Mudpuppy	Necturus maculosus	NAR	NAR		S4	G5				2	✓	
ORAA (2017)	Red-spotted Newt	Notophthalmus viridescens viridescens				S5	G5				2	✓	
ORAA (2008)	American Toad	Anaxyrus americanus				S5	G5				3		
ORAA (2012)	Gray Treefrog	Hyla versicolor				S5	G5						
ORAA (2012)	Spring Peeper	Pseudacris crucifer				S5	G5				3		
ORAA (2012)	Western Chorus Frog - Great Lakes / St. Lawrence - Canadian Shield Population	Pseudacris triseriata pop. 2	NAR	THR	THR	S3	G5TNR				1		
ORAA (2012)	Green Frog	Lithobates clamitans				S5	G5				3		
ORAA (1985)	Pickerel Frog	Lithobates palustris	NAR	NAR		S4	G5				2	✓	
ORAA (2012)	Northern Leopard Frog	Lithobates pipiens	NAR	NAR		S5	G5				3		
ORAA (2012)	Wood Frog	Lithobates sylvaticus				S5	G5				2		
	SNAKES AND LIZARDS												
ORAA (2017)	Milksnake	Lampropeltis triangulum	SC	SC	SC	S3	G5T5				1	✓	
ORAA (1990)	DeKay's Brownsnake	Storeria dekayi	NAR	NAR		S5	G5T5				2	✓	
ORAA (1990)	Northern Red-bellied Snake	Storeria occipitomaculata occipitomaculata				S5	G5				2	✓	
ORAA (1990)	Eastern Gartersnake	Thamnophis sirtalis sirtalis				S5	G5T5				4		
	TURTLES												
ORAA (2017)	Snapping Turtle	Chelydra serpentina	SC	SC	SC	S3	G5T5				1	✓	
ORAA (2018)	Midland Painted Turtle	Chrysemys picta marginata				S5	G5T5				3		

	BIRDS											
OBBA (2007)	Great Blue Heron	Ardea herodias				S4	G5					3 ✓
OBBA (2007)	Green Heron	Butorides virescens				S4B	G5					2
OBBA (2007)	Canada Goose	Branta canadensis				S5	G5					4
OBBA (2007)	Wood Duck	Aix sponsa				S5	G5					2
OBBA (2007)	Mallard	Anas platyrhynchos				S5	G5					4
OBBA (2007)	Hooded Merganser	Lophodytes cucullatus				S5B,S5N	G5					2 ✓
OBBA (2007)	Common Merganser	Mergus merganser				S5B,S5N	G5	✓				2 ✓
OBBA (2007)	Turkey Vulture	Cathartes aura				S5B	G5					3 ✓
OBBA (2007)	Northern Harrier	Circus cyaneus	NAR	NAR		S4B	G5	✓	>30ha	✓		2
OBBA (2007)	Sharp-shinned Hawk	Accipiter striatus	NAR			S5	G5	✓	>30ha			3
OBBA (2007)	Cooper's Hawk	Accipiter cooperii	NAR	NAR		S4	G5	✓	>10ha			2
OBBA (2007)	Northern Goshawk	Accipiter gentilis	NAR	NAR		S4	G5T5	✓	>100ha			2 ✓
OBBA (2007)	Broad-winged Hawk	Buteo platypterus				S5B	G5	✓	>100ha			2 ✓
OBBA (2007)	Red-tailed Hawk	Buteo jamaicensis	NAR	NAR		S5	G5					4
OBBA (2007)	American Kestrel	Falco sparverius				S4	G5			✓		3
OBBA (2007)	Ring-necked Pheasant	Phasianus colchicus				SNA	G5					5
OBBA (2007)	Ruffed Grouse	Bonasa umbellus				S4	G5					2
OBBA (2007)	Wild Turkey	Meleagris gallopavo				S5	G5					3
OBBA (2007)	Virginia Rail	Rallus limicola				S5B	G5					2
OBBA (2007)	Sora	Porzana carolina				S4B	G5					2 ✓
OBBA (2007)	Killdeer	Charadrius vociferus				S5B,S5N	G5					3
OBBA (2007)	Spotted Sandpiper	Actitis macularius				S5	G5					3
OBBA (2007)	Upland Sandpiper	Bartramia longicauda				S4B	G5	✓	>25ha			2 ✓
OBBA (2007)	Wilson's Snipe	Gallinago delicata				S5B	G5					2
OBBA (2007)	American Woodcock	Scolopax minor				S4B	G5					2
OBBA (2007)	Rock Pigeon	Columba livia				SNA	G5					5
OBBA (2007)	Mourning Dove	Zenaida macroura				S5	G5					4
OBBA (2007)	Black-billed Cuckoo	Coccyzus erythrophthalmus				S5B	G5			✓		2
OBBA (2007)	Yellow-billed Cuckoo	Coccyzus americanus				S4B	G5					2 ✓
OBBA (2007)	Eastern Screech-Owl	Megascops asio	NAR	NAR		S4	G5					3
OBBA (2007)	Great Horned Owl	Bubo virginianus				S4	G5					3
OBBA (2007)	Short-eared Owl	Asio flammeus	SC	SC	SC	S2N,S4B	G5	✓	>75ha	✓		1
OBBA (2007)	Chimney Swift	Chaetura pelagica	THR	THR	THR	S4B,S4N	G5			✓		1 ✓
OBBA (2007)	Ruby-throated Hummingbird	Archilochus colubris				S5B	G5					3
OBBA (2007)	Belted Kingfisher	Megaceryle alcyon				S4B	G5			✓		3
OBBA (2007)	Red-bellied Woodpecker	Melanerpes carolinus				S4	G5					2 ✓
OBBA (2007)	Yellow-bellied Sapsucker	Sphyrapicus varius				S5B	G5	✓	2-5ha			2

OBBA (2007)	Downy Woodpecker	Picoides pubescens			S5	G5				4	
OBBA (2007)	Hairy Woodpecker	Picoides villosus			S5	G5	✓	4-8ha		3	
OBBA (2007)	Northern Flicker	Colaptes auratus			S4B	G5			✓	3	
OBBA (2007)	Pileated Woodpecker	Dryocopus pileatus			S5	G5	✓	>40ha		2	
NHIC (Date unk.)											
OBBA (2007)	Eastern Wood-pewee	Contopus virens	SC	SC	S4B	G5			✓	1	
OBBA (2007)	Alder Flycatcher	Empidonax alnorum			S5B	G5					
OBBA (2007)	Willow Flycatcher	Empidonax traillii			S5B	G5			✓	3	
OBBA (2007)	Least Flycatcher	Empidonax minimus			S4B	G5	✓	>100ha		3	
OBBA (2007)	Eastern Phoebe	Sayornis phoebe			S5B	G5				3	
OBBA (2007)	Great Crested Flycatcher	Myiarchus crinitus			S4B	G5				3	
OBBA (2007)	Eastern Kingbird	Tyrannus tyrannus			S4B	G5			✓	3	
OBBA (2007)	Horned Lark	Eremophila alpestris			S5B	G5				3	
OBBA (2007)	Tree Swallow	Tachycineta bicolor			S4B	G5				3	
OBBA (2007)	Northern Rough-winged Swallow	Stelgidopteryx serripennis			S4B	G5				3	
OBBA (2007)	Bank Swallow	Riparia riparia	THR	THR	S4B	G5			✓	1	
OBBA (2007)	Cliff Swallow	Petrochelidon pyrrhonota			S4B	G5				3	
OBBA (2007)	Barn Swallow	Hirundo rustica	THR	THR	S4B	G5				1	
OBBA (2007)	Blue Jay	Cyanocitta cristata			S5	G5				4	
OBBA (2007)	American Crow	Corvus brachyrhynchos			S5B	G5				2	
OBBA (2007)	Black-capped Chickadee	Poecile atricapillus			S5	G5				4	
OBBA (2007)	Tufted Titmouse	Baeolophus bicolor			S4	G5	✓	>4ha		1	✓
OBBA (2007)	Red-breasted Nuthatch	Sitta canadensis			S5	G5	✓	>10ha		3	
OBBA (2007)	White-breasted Nuthatch	Sitta carolinensis			S5	G5	✓	>10ha		3	
OBBA (2007)	Brown Creeper	Certhia americana			S5B	G5	✓	>30ha		2	
OBBA (2007)	Carolina Wren	Thryothorus ludovicianus			S4	G5					✓
OBBA (2007)	House Wren	Troglodytes aedon			S5B	G5				4	
OBBA (2007)	Winter Wren	Troglodytes troglodytes			S5B	G5	✓	>30ha		3	
OBBA (2007)	Golden-crowned Kinglet	Regulus satrapa			S5B	G5				2	✓
OBBA (2007)	Blue-gray Gnatcatcher	Poliopitila caerulea			S4B	G5	✓	>30ha		2	✓
OBBA (2007)	Eastern Bluebird	Sialia sialis	NAR	NAR	S5B	G5				3	
OBBA (2007)	Veery	Catharus fuscescens			S4B	G5	✓	>10ha		3	
OBBA (2007)	Wood Thrush	Hylocichla mustelina	SC	THR	S4B	G5			✓	1	
OBBA (2007)	American Robin	Turdus migratorius			S5B	G5				4	
OBBA (2007)	Gray Catbird	Dumetella carolinensis			S4B	G5				3	
OBBA (2007)	Northern Mockingbird	Mimus polyglottos			S4	G5				3	
OBBA (2007)	Brown Thrasher	Toxostoma rufum			S4B	G5			✓	2	
OBBA (2007)	Cedar Waxwing	Bombycilla cedrorum			S5B	G5				3	



OBBA (2007)	European Starling	<i>Sturnus vulgaris</i>				SNA	G5					5	
OBBA (2007)	Blue-headed Vireo	<i>Vireo solitarius</i>				S5B	G5	✓	>100ha			2	✓
OBBA (2007)	Yellow-throated Vireo	<i>Vireo flavifrons</i>				S4B	G5	✓	>30ha			2	✓
OBBA (2007)	Warbling Vireo	<i>Vireo gilvus</i>				S5B	G5					4	
OBBA (2007)	Red-eyed Vireo	<i>Vireo olivaceus</i>				S5B	G5					4	
OBBA (2007)	Nashville Warbler	<i>Vermivora ruficapilla</i>				S5B	G5					2	
OBBA (2007)	Yellow Warbler	<i>Dendroica petechia</i>				S5B	G5					4	
OBBA (2007)	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>				S5B	G5					2	
OBBA (2007)	Magnolia Warbler	<i>Dendroica magnolia</i>				S5B	G5	✓	>30ha			2	✓
OBBA (2007)	Yellow-rumped Warbler	<i>Dendroica coronata</i>				S5B	G5					2	
OBBA (2007)	Black-throated Green Warbler	<i>Dendroica virens</i>				S5B	G5	✓	>30ha			2	✓
OBBA (2007)	Blackburnian Warbler	<i>Dendroica fusca</i>				S5B	G5	✓	>50ha			2	✓
OBBA (2007)	Pine Warbler	<i>Dendroica pinus</i>				S5B	G5	✓	15-30ha			3	
OBBA (2007)	Black-and-white Warbler	<i>Mniotilta varia</i>				S5B	G5	✓	>100ha			3	
OBBA (2007)	American Redstart	<i>Setophaga ruticilla</i>				S5B	G5	✓	>100ha			3	
OBBA (2007)	Ovenbird	<i>Seiurus aurocapilla</i>				S4B	G5	✓	>70ha			3	
OBBA (2007)	Northern Waterthrush	<i>Seiurus noveboracensis</i>				S5B	G5					3	
OBBA (2007)	Mourning Warbler	<i>Oporornis philadelphia</i>				S4B	G5					3	
OBBA (2007)	Common Yellowthroat	<i>Geothlypis trichas</i>				S5B	G5					4	
OBBA (2007)	Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	THR	S4B	G5	✓	>30ha			1	✓
OBBA (2007)	Yellow-breasted Chat	<i>Icteria virens</i>	END	END	SC	S2B	G5TNR				✓	1	
OBBA (2007)	Scarlet Tanager	<i>Piranga olivacea</i>				S4B	G5	✓	>20ha			3	✓
OBBA (2007)	Northern Cardinal	<i>Cardinalis cardinalis</i>				S5	G5					4	
OBBA (2007)	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>				S4B	G5				✓	3	
OBBA (2007)	Indigo Bunting	<i>Passerina cyanea</i>				S4B	G5						
OBBA (2007)	Eastern Towhee	<i>Pipilo erythrophthalmus</i>				S4B	G5				✓	3	
OBBA (2007)	Chipping Sparrow	<i>Spizella passerina</i>				S5B	G5					4	
OBBA (2007)	Clay-colored Sparrow	<i>Spizella pallida</i>				S4B	G5					2	✓
OBBA (2007)	Field Sparrow	<i>Spizella pusilla</i>				S4B	G5				✓		
OBBA (2007)	Vesper Sparrow	<i>Poocetes gramineus</i>				S4B	G5				✓	2	
OBBA (2007)	Savannah Sparrow	<i>Passerculus sandwichensis</i>				S4B	G5	✓	>50ha		✓	4	
OBBA (2007)	Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC		S4B	G5TU	✓	>10ha		✓	1	✓
OBBA (2007)	Song Sparrow	<i>Melospiza melodia</i>				S5B	G5					4	
OBBA (2007)	Swamp Sparrow	<i>Melospiza georgiana</i>				S5B	G5					4	
OBBA (2007)	White-throated Sparrow	<i>Zonotrichia albicollis</i>				S5B	G5					3	
NHIC (2002)													
OBBA (2007)	Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR		S4B	G5	✓	>10ha		✓	1	
OBBA (2007)	Red-winged Blackbird	<i>Agelaius phoeniceus</i>				S4	G5					4	

NHIC (2001, 2002)														
OBBA (2007)	Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR		S4B	G5	✓	>10ha	✓	1			
OBBA (2007)	Common Grackle	<i>Quiscalus quiscula</i>				S5B	G5				4			
OBBA (2007)	Brown-headed Cowbird	<i>Molothrus ater</i>				S4B	G5				4			
OBBA (2007)	Baltimore Oriole	<i>Icterus galbula</i>				S4B	G5			✓	3			
OBBA (2007)	Purple Finch	<i>Carpodacus purpureus</i>				S4B	G5				2			
OBBA (2007)	House Finch	<i>Carpodacus mexicanus</i>				SNA	G5				5			
OBBA (2007)	American Goldfinch	<i>Carduelis tristis</i>				S5B	G5				4			
OBBA (2007)	House Sparrow	<i>Passer domesticus</i>				SNA	G5				5			
	MAMMALS													
OMA (1994)	Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	END	S4	G3G4				1			
OMA (1994)	Big Brown Bat	<i>Eptesicus fuscus</i>				S5	G5				3			
OMA (1994)	Hoary Bat	<i>Lasiurus cinereus</i>				S4	G4				3			
OMA (1994)	Eastern Cottontail	<i>Sylvilagus floridanus</i>				S5	G5				4			
OMA (1994)	European Hare	<i>Lepus europaeus</i>				SNA	G5				5			
OMA (1994)	Eastern Chipmunk	<i>Tamias striatus</i>				S5	G5				3			
OMA (1994)	Woodchuck	<i>Marmota monax</i>				S5	G5				3			
OMA (1994)	Eastern Gray Squirrel	<i>Sciurus carolinensis</i>				S5	G5				4			
OMA (1994)	Red Squirrel	<i>Tamiasciurus hudsonicus</i>				S5	G5				3			
OMA (1994)	Beaver	<i>Castor canadensis</i>				S5	G5				3			
OMA (1994)	Muskrat	<i>Ondatra zibethicus</i>				S5	G5				3			
OMA (1994)	Norway Rat	<i>Rattus norvegicus</i>				SNA	G5				5			
OMA (1994)	Porcupine	<i>Erethizon dorsatum</i>				S5	G5				2			
OMA (1994)	Coyote	<i>Canis latrans</i>				S5	G5				3			
OMA (1994)	Red Fox	<i>Vulpes vulpes</i>				S5	G5				3			
OMA (1994)	Northern Raccoon	<i>Procyon lotor</i>				S5	G5				4			
OMA (1994)	American Mink	<i>Mustela vison</i>				S4	G5				2			
OMA (1994)	Striped Skunk	<i>Mephitis mephitis</i>				S5	G5				4			
OMA (1994)	White-tailed Deer	<i>Odocoileus virginianus</i>				S5	G5				3			

DATE OBS	COMMON NAME	SCIENTIFIC NAME	SARO	COSEWIC	SARA	S-RANK	G-RANK	AREA SENSITIVE	AREA REQUIRED	PIF SPECIES (BCR 13)	CVC (2010)	WELLINGTON COUNTY (2009)	COMMENTS
	AMPHIBIANS												
ORAA (2018)	American Toad	Anaxyrus americanus				S5	G5				3		
ORAA (1990)	Gray Treefrog	Hyla versicolor				S5	G5						
ORAA (1994)	Spring Peeper	Pseudacris crucifer				S5	G5				3		
ORAA (2018)	Green Frog	Lithobates clamitans				S5	G5				3		
	SNAKES AND LIZARDS												
ORAA (1989)	Eastern Gartersnake	Thamnophis sirtalis sirtalis				S5	G5T5				4		
	TURTLES												
ORAA (2017)	Snapping Turtle	Chelydra serpentina	SC	SC	SC	S3	G5T5				1	✓	
ORAA (2017)	Midland Painted Turtle	Chrysemys picta marginata				S5	G5T5				3		
	BIRDS												
OBBA (2007)	Great Blue Heron	Ardea herodias				S4	G5				3	✓	
OBBA (2007)	Green Heron	Butorides virescens				S4B	G5				2		
OBBA (2007)	Trumpeter Swan	Cygnus buccinator	NAR	NAR		S4	G4				1	✓	
OBBA (2007)	Canada Goose	Branta canadensis				S5	G5				4		
OBBA (2007)	Wood Duck	Aix sponsa				S5	G5				2		
OBBA (2007)	Green-winged Teal	Anas crecca				S4	G5				2	✓	
OBBA (2007)	Mallard	Anas platyrhynchos				S5	G5				4		
OBBA (2007)	Turkey Vulture	Cathartes aura				S5B	G5				3	✓	
OBBA (2007)	Northern Harrier	Circus cyaneus	NAR	NAR		S4B	G5	✓	>30ha	✓	2		
OBBA (2007)	Sharp-shinned Hawk	Accipiter striatus	NAR			S5	G5	✓	>30ha		3		
OBBA (2007)	Northern Goshawk	Accipiter gentilis	NAR	NAR		S4	G5T5	✓	>100ha		2	✓	
OBBA (2007)	Broad-winged Hawk	Buteo platypterus				S5B	G5	✓	>100ha		2	✓	
OBBA (2007)	Red-tailed Hawk	Buteo jamaicensis	NAR	NAR		S5	G5				4		
OBBA (2007)	American Kestrel	Falco sparverius				S4	G5			✓	3		
OBBA (2007)	Ruffed Grouse	Bonasa umbellus				S4	G5				2		

OBBA (2007)	Wild Turkey	Meleagris gallopavo			S5	G5				3	
OBBA (2007)	Virginia Rail	Rallus limicola			S5B	G5				2	
OBBA (2007)	Killdeer	Charadrius vociferus			S5B,S5N	G5				3	
OBBA (2007)	Spotted Sandpiper	Actitis macularius			S5	G5				3	
OBBA (2007)	Wilson's Snipe	Gallinago delicata			S5B	G5				2	
OBBA (2007)	American Woodcock	Scolopax minor			S4B	G5				2	
OBBA (2007)	Rock Pigeon	Columba livia			SNA	G5				5	
OBBA (2007)	Mourning Dove	Zenaida macroura			S5	G5				4	
OBBA (2007)	Black-billed Cuckoo	Coccyzus erythrophthalmus			S5B	G5			✓	2	
OBBA (2007)	Yellow-billed Cuckoo	Coccyzus americanus			S4B	G5				2	✓
OBBA (2007)	Eastern Screech-Owl	Megascops asio	NAR	NAR	S4	G5				3	
OBBA (2007)	Great Horned Owl	Bubo virginianus			S4	G5				3	
OBBA (2007)	Long-eared Owl	Asio otus			S4	G5				2	✓
OBBA (2007)	Ruby-throated Hummingbird	Archilochus colubris			S5B	G5				3	
OBBA (2007)	Belted Kingfisher	Megaceryle alcyon			S4B	G5			✓	3	
OBBA (2007)	Yellow-bellied Sapsucker	Sphyrapicus varius			S5B	G5	✓	2-5ha		2	
OBBA (2007)	Downy Woodpecker	Picoides pubescens			S5	G5				4	
OBBA (2007)	Hairy Woodpecker	Picoides villosus			S5	G5	✓	4-8ha		3	
OBBA (2007)	Northern Flicker	Colaptes auratus			S4B	G5			✓	3	
OBBA (2007)	Pileated Woodpecker	Dryocopus pileatus			S5	G5	✓	>40ha		2	
OBBA (2007)	Eastern Wood-pewee	Contopus virens	SC	SC	S4B	G5			✓	1	
OBBA (2007)	Alder Flycatcher	Empidonax alnorum			S5B	G5					
OBBA (2007)	Willow Flycatcher	Empidonax traillii			S5B	G5			✓	3	
OBBA (2007)	Least Flycatcher	Empidonax minimus			S4B	G5	✓	>100ha		3	
OBBA (2007)	Eastern Phoebe	Sayornis phoebe			S5B	G5				3	
OBBA (2007)	Great Crested Flycatcher	Myiarchus crinitus			S4B	G5				3	
OBBA (2007)	Eastern Kingbird	Tyrannus tyrannus			S4B	G5			✓	3	
OBBA (2007)	Horned Lark	Eremophila alpestris			S5B	G5				3	
OBBA (2007)	Tree Swallow	Tachycineta bicolor			S4B	G5				3	
OBBA (2007)	Northern Rough-winged Swallow	Stelgidopteryx serripennis			S4B	G5				3	
OBBA (2007)	Bank Swallow	Riparia riparia	THR	THR	S4B	G5			✓	1	
OBBA (2007)	Cliff Swallow	Petrochelidon pyrrhonota			S4B	G5				3	
OBBA (2007)	Barn Swallow	Hirundo rustica	THR	THR	S4B	G5				1	
OBBA (2007)	Blue Jay	Cyanocitta cristata			S5	G5				4	
OBBA (2007)	American Crow	Corvus brachyrhynchos			S5B	G5				2	
OBBA (2007)	Common Raven	Corvus corax			S5	G5					✓
OBBA (2007)	Black-capped Chickadee	Poecile atricapillus			S5	G5				4	
OBBA (2007)	Red-breasted Nuthatch	Sitta canadensis			S5	G5	✓	>10ha		3	

OBBA (2007)	White-breasted Nuthatch	<i>Sitta carolinensis</i>				S5	G5	✓	>10ha		3	
OBBA (2007)	Brown Creeper	<i>Certhia americana</i>				S5B	G5	✓	>30ha		2	
OBBA (2007)	House Wren	<i>Troglodytes aedon</i>				S5B	G5				4	
OBBA (2007)	Winter Wren	<i>Troglodytes troglodytes</i>				S5B	G5	✓	>30ha		3	
OBBA (2007)	Sedge Wren	<i>Cistothorus platensis</i>	NAR	NAR		S4B	G5				2	✓
OBBA (2007)	Marsh Wren	<i>Cistothorus palustris</i>				S4B	G5				2	
OBBA (2007)	Golden-crowned Kinglet	<i>Regulus satrapa</i>				S5B	G5				2	✓
OBBA (2007)	Eastern Bluebird	<i>Sialia sialis</i>	NAR	NAR		S5B	G5				3	
OBBA (2007)	Veery	<i>Catharus fuscescens</i>				S4B	G5	✓	>10ha		3	
OBBA (2007)	Wood Thrush	<i>Hylocichla mustelina</i>	SC	THR		S4B	G5			✓	1	
OBBA (2007)	American Robin	<i>Turdus migratorius</i>				S5B	G5				4	
OBBA (2007)	Gray Catbird	<i>Dumetella carolinensis</i>				S4B	G5				3	
OBBA (2007)	Brown Thrasher	<i>Toxostoma rufum</i>				S4B	G5			✓	2	
OBBA (2007)	Cedar Waxwing	<i>Bombycilla cedrorum</i>				S5B	G5				3	
OBBA (2007)	European Starling	<i>Sturnus vulgaris</i>				SNA	G5				5	
OBBA (2007)	Warbling Vireo	<i>Vireo gilvus</i>				S5B	G5				4	
OBBA (2007)	Red-eyed Vireo	<i>Vireo olivaceus</i>				S5B	G5				4	
OBBA (2007)	Nashville Warbler	<i>Vermivora ruficapilla</i>				S5B	G5				2	
OBBA (2007)	Yellow Warbler	<i>Dendroica petechia</i>				S5B	G5				4	
OBBA (2007)	Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>				S5B	G5				2	
OBBA (2007)	Magnolia Warbler	<i>Dendroica magnolia</i>				S5B	G5	✓	>30ha		2	✓
OBBA (2007)	Black-throated Green Warbler	<i>Dendroica virens</i>				S5B	G5	✓	>30ha		2	✓
OBBA (2007)	Pine Warbler	<i>Dendroica pinus</i>				S5B	G5	✓	15-30ha		3	
OBBA (2007)	Black-and-white Warbler	<i>Mniotilta varia</i>				S5B	G5	✓	>100ha		3	
OBBA (2007)	American Redstart	<i>Setophaga ruticilla</i>				S5B	G5	✓	>100ha		3	
OBBA (2007)	Ovenbird	<i>Seiurus aurocapilla</i>				S4B	G5	✓	>70ha		3	
OBBA (2007)	Northern Waterthrush	<i>Seiurus noveboracensis</i>				S5B	G5				3	
OBBA (2007)	Mourning Warbler	<i>Oporornis philadelphia</i>				S4B	G5				3	
OBBA (2007)	Common Yellowthroat	<i>Geothlypis trichas</i>				S5B	G5				4	
OBBA (2007)	Canada Warbler	<i>Wilsonia canadensis</i>	SC	THR	THR	S4B	G5	✓	>30ha		1	✓
OBBA (2007)	Scarlet Tanager	<i>Piranga olivacea</i>				S4B	G5	✓	>20ha		3	✓
OBBA (2007)	Northern Cardinal	<i>Cardinalis cardinalis</i>				S5	G5				4	
OBBA (2007)	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>				S4B	G5			✓	3	
OBBA (2007)	Indigo Bunting	<i>Passerina cyanea</i>				S4B	G5					
OBBA (2007)	Eastern Towhee	<i>Pipilo erythrophthalmus</i>				S4B	G5			✓	3	
OBBA (2007)	Chipping Sparrow	<i>Spizella passerina</i>				S5B	G5				4	
OBBA (2007)	Field Sparrow	<i>Spizella pusilla</i>				S4B	G5			✓		
OBBA (2007)	Vesper Sparrow	<i>Poocetes gramineus</i>				S4B	G5			✓	2	

OBBA (2007)	Savannah Sparrow	Passerculus sandwichensis				S4B	G5	✓	>50ha	✓	4	
OBBA (2007)	Grasshopper Sparrow	Ammodramus savannarum	SC	SC		S4B	G5TU	✓	>10ha	✓	1	✓
OBBA (2007)	Song Sparrow	Melospiza melodia				S5B	G5				4	
OBBA (2007)	Swamp Sparrow	Melospiza georgiana				S5B	G5				4	
OBBA (2007)	White-throated Sparrow	Zonotrichia albicollis				S5B	G5				3	
OBBA (2007)	Bobolink	Dolichonyx oryzivorus	THR	THR		S4B	G5	✓	>10ha	✓	1	
OBBA (2007)	Red-winged Blackbird	Agelaius phoeniceus				S4	G5				4	
OBBA (2007)	Eastern Meadowlark	Sturnella magna	THR	THR		S4B	G5	✓	>10ha	✓	1	
OBBA (2007)	Common Grackle	Quiscalus quiscula				S5B	G5				4	
OBBA (2007)	Brown-headed Cowbird	Molothrus ater				S4B	G5				4	
OBBA (2007)	Baltimore Oriole	Icterus galbula				S4B	G5			✓	3	
OBBA (2007)	Purple Finch	Carpodacus purpureus				S4B	G5				2	
OBBA (2007)	House Finch	Carpodacus mexicanus				SNA	G5				5	
OBBA (2007)	American Goldfinch	Carduelis tristis				S5B	G5				4	
OBBA (2007)	House Sparrow	Passer domesticus				SNA	G5				5	
	MAMMALS											
OMA (1994)	Virginia Opossum	Didelphis virginiana				S4	G5				4	
OMA (1994)	Little Brown Myotis	Myotis lucifugus	END	END	END	S4	G3G4				1	
OMA (1994)	Big Brown Bat	Eptesicus fuscus				S5	G5				3	
OMA (1994)	Eastern Cottontail	Sylvilagus floridanus				S5	G5				4	
OMA (1994)	Eastern Chipmunk	Tamias striatus				S5	G5				3	
OMA (1994)	Woodchuck	Marmota monax				S5	G5				3	
OMA (1994)	Eastern Gray Squirrel	Sciurus carolinensis				S5	G5				4	
OMA (1994)	Red Squirrel	Tamiasciurus hudsonicus				S5	G5				3	
OMA (1994)	Beaver	Castor canadensis				S5	G5				3	
OMA (1994)	Muskrat	Ondatra zibethicus				S5	G5				3	
OMA (1994)	Porcupine	Erethizon dorsatum				S5	G5				2	
OMA (1994)	Coyote	Canis latrans				S5	G5				3	
OMA (1994)	Red Fox	Vulpes vulpes				S5	G5				3	
OMA (1994)	Northern Raccoon	Procyon lotor				S5	G5				4	
OMA (1994)	Striped Skunk	Mephitis mephitis				S5	G5				4	
OMA (1994)	White-tailed Deer	Odocoileus virginianus				S5	G5				3	

Legend:

COSARO: Committee on Species at Risk Ontario

COSEWIC: Committee on the status of endangered wildlife in Canada

SARA: Species at Risk Act

ESA: Endangered Species Act

END: Endangered

THR: Threatened

SC: special Concern

NAR: Not At Risk

NL: Not listed

DD: Data Deficient

S-Rank:

S1: Critically Imperiled

S2: Imperiled

S3: Vulnerable

S4: Apparently Secure

S5: Secure

SX: Presumed extirpated

SH: Possibly Extirpated (Historical)

SNR: Unranked

SU: Unrankable— lack of information

SNA: Not applicable— not a suitable target for conservation activities

S#S#: Range Rank— (e.g., S2S3) indicate any range of uncertainty about the status

S#B- Breeding status rank

S#N- Non Breeding status rank

?: Indicates uncertainty in the assigned rank

G-Rank:

G1: Extremely rare globally

G1G2: Extremely rare to very rare globally

G2: Very rare globally

G2G3: Very rare to uncommon globally

G3: Rare to uncommon globally

G3G4: Rare to common globally

G4: Common globally

G4G5: Common to very common globally

G5: Very common globally; demonstrably secure

T: Denotes that the rank applies to a subspecies or variety

Credit Valley Conservation Authority:

<u>TIER</u>	<u>TITLE</u>	<u>CVC RANKING CRITERIA USED</u>
<u>1</u>	Species of Conservation Concern	Federal and provincial legislation, COSEWIC and COSSARO designations, NHIC S1-S3? ranks, local rarity
<u>2</u>	Species of Interest	Local lists, CVC data, professional judgment
<u>3</u>	Species of Urban Interest	Mississauga NAS Ranks, CVC data, professional judgment
<u>4</u>	Secure Species	CVC data, professional judgment
<u>5</u>	Non-native& Non-native Hybrid Species	Not native to Ontario and/or the Credit River watershed but found planted or naturalized

Source codes

OBAA: Ontario butterfly Atlas Online

ORAA: Ontario Reptile and Amphibian Atlas

OMA: Ontario Mammal Atlas

OBBA: Ontario Breeding Bird Atlas

References:

Ontario Partners in Flight (PIF). 2008. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain (North American Bird Conservation Region 13), Priorities, Objectives and Recommended Actions. Environment Canada (Ontario Region) and Ontario Ministry of Natural Resources. Final Draft, November, 2008.

COSSARO Status Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. June 30 2008.

COSEWIC Status COSEWIC. 2014. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada.

Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. April 21, 2015

5. Credit Valley Conservation, 2010. Credit Valley Conservation Species of Conservation Concern List, Draft.



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Credit Valley Conservation Authority:

<u>TIER</u>	<u>TITLE</u>	<u>CVC RANKING CRITERIA USED</u>
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<u>4</u>	Secure Species	CVC data, professional judgment
<u>5</u>	Non-native & Non-native Hybrid Species	Not native to Ontario and/or the Credit River watershed but found planted or naturalized

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OMA: Ontario Mammal Atlas

OBBA: Ontario Breeding Bird Atlas

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COSEWIC Status COSEWIC. 2014. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada.

Endangered Species Act, 2007 (Bill 184). Schedules 1- 5. April 21, 2015

5. Credit Valley Conservation, 2010. Credit Valley Conservation Species of Conservation Concern List, Draft.

APPENDIX 9  
MNRF Request for Information

## Shannon Davison

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**From:** Vandervoort, Alaina (MNRF) <Alaina.Vandervoort@ontario.ca>  
**Sent:** May-04-18 9:35 AM  
**To:** Shannon Davison  
**Subject:** RE: 17-197 Information Request Forms  
**Attachments:** C7L23-24,26\_C8L24\_InfoRequest\_Part1.pdf; C8L16\_C9L13\_C10L17-18\_InfoRequest\_Part2.pdf; C10L3\_InfoRequest\_Part3.pdf; Wellington\_County\_SAR.rtf

Hi Shannon,

Please see the attached documents for the SAR information you have requested. I divided the nine lots you requested information for into three main areas and labelled the documents with C#L# for concession and lot numbers within each grouped response letter. Hope it makes sense! If you need any further information or have any questions, please don't hesitate to contact me.

Alaina Vandervoort

A/ Management Biologist  
Ministry of Natural Resources and Forestry  
1 Stone Road West, 1<sup>st</sup> Floor SW  
Guelph, ON N1G 4Y2

519-826-4419  
[alaina.vandervoort@ontario.ca](mailto:alaina.vandervoort@ontario.ca)

---

**From:** Shannon Davison [mailto:[sdavison@abouttng.com](mailto:sdavison@abouttng.com)]  
**Sent:** April-17-18 8:43 AM  
**To:** ESA Guelph (MNRF)  
**Subject:** 17-197 Information Request Forms

Good Morning,

Please find attached a series of Information Request Forms and associated maps for nine sites in the communities of Erin and Hillsburgh that are being investigated as part of a municipal class EA for the additional supply of water. An information request form and map has been completed for each individual location. Any information you are able to give would be greatly appreciated.

If you have any questions, please let me know.

Regards,

**Shannon Davison B.Env. Eco. Rest. Cert.**  
Ecologist  
MNRF Certified Wetland Evaluation . MNRF Certified Ecological Land Classification  
**ABOUD & ASSOCIATES INC.** 190 Nicklin Road . Guelph . Ontario . N1H 7L5  
T : 519.822.6839 x5 C : 226.581.0707 [www.abouttng.com](http://www.abouttng.com) [sdavison@abouttng.com](mailto:sdavison@abouttng.com)

May 03, 2018

Shannon Davison  
Aboud & Associates Inc.  
190 Nicklin Road  
Guelph, ON N1H 7L5  
sdavison@aboudtng.com

**RE: TOWN OF ERIN POTABLE WATER CLASS EA  
CONCESSION 7 LOT 23  
CONCESSION 7 LOT 24  
CONCESSION 7 LOT 26  
CONCESSION 8 LOT 24**

Dear Ms. Davison,

The Ministry of Natural Resources and Forestry (MNR), Guelph District Office, has reviewed the natural heritage information available for the above-noted property and surrounding area (the “study area”), and offers the following comments:

**SPECIES AT RISK**

There are records in the area for the following species at risk (SAR):

- Butternut (*Juglans cinerea*) (Endangered)
- Little Brown Myotis (*Myotis lucifugus*) (Endangered)
- Eastern Meadowlark (*Sturnella magna*) (Threatened)
- Bobolink (*Dolichonyx oryzivorus*) (Threatened)
- Bank Swallow (*Riparia riparia*) (Threatened)
- Barn Swallow (*Hirundo rustica*) (Threatened)
- Grasshopper Sparrow (*Ammodramus savannarum*) (Special Concern)

Threatened and Endangered Species receive both individual species and habitat protection under the *Endangered Species Act, 2007* (ESA). SAR habitat prescribed under regulation is listed in Ont. Reg. 242/08 (<https://www.ontario.ca/laws/regulation/080242>).

Please be advised that because the province has not been surveyed comprehensively for the presence of listed species, the absence of a record does not necessarily indicate the absence of SAR from an area. To determine the presence of SAR for a given study area, the District’s recommended approach is as follows:

## I. Habitat Inventory

The Ministry recommends undertaking a comprehensive botanical inventory of the entire area that may be subject to direct and indirect impacts from the proposed activity. The vegetation communities should be classified as per the “Ecological Land Classification (ELC) for Southern Ontario” system, to either the “Ecosite” or “Vegetation Type” level. For aquatic habitats in the study area, we recommend that you collect data on the physical characteristics of the waterbodies and inventory the riparian zone vegetation, so that these habitats can be classified as per the Aquatic Ecosites described in the ELC manual.

## II. Potential SAR within the Study Area

A list of SAR that have the potential to occur in the area can be produced by cross-referencing the ecosites described during the habitat inventory with the habitat descriptions of SAR known to occur within the planning area. The list of SAR known to occur in the **COUNTY OF WELLINGTON** is attached for your reference. The species-specific COSEWIC status reports (<https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html>) are a good source of information on habitat needs and will be helpful in determining the suitability of the study areas ecosites for a given species.

Please note that the Species at Risk in Ontario (SARO) List is a living document that is periodically amended as a result of species assessment and re-assessments conducted by the Committee on the Status of Species at Risk in Ontario (COSSARO). The SARO List can be accessed on the following webpage: <https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>.

COSSARO also maintains a list of species to be assessed in the future. It is recommended that you take COSSARO’s list of anticipated assessments into consideration, especially when the proposed start date of an activity is more than 6 months away, or the project will be undertaken over a period greater than 6 months. This list can be viewed at: <https://www.ontario.ca/page/how-comment-protecting-species-risk>.

## III. SAR Surveys

The Ministry recommends that each potential SAR identified under Step II is surveyed for, regardless of whether or not the species has been previously recorded in the area. The survey report should describe how each SAR was surveyed for, and provide a rationale for why certain species were not afforded a survey (e.g., habitat within the study area is not suitable for a specific SAR). Please note that some targeted surveys may require provincial authorizations (e.g., ESA permit or Wildlife Scientific Collector’s Permit).

## **ADDITIONAL INFORMATION**

Natural heritage features (e.g. wetlands, ANSIs) can be viewed for a given study area through the MNR’s “Make a Map” web application: <https://www.ontario.ca/page/make-natural-heritage-area-map>. Digital data layers can be obtained through the Land Information Ontario (LIO) geowarehouse <https://www.ontario.ca/page/land-information-ontario>.

Additionally, the MNR recommends contacting the municipality and the conservation authority to determine if they have any additional information or records of interest for the study area.

Please be advised that it is your responsibility to comply with all other relevant provincial or federal legislation, municipal by-laws, other MNR approvals or required approvals from other agencies. If

your investigations reveal the presence of Threatened or Endangered species, please contact the MNRF at [esa.guelph@ontario.ca](mailto:esa.guelph@ontario.ca) for further direction.

I trust that the above information is of assistance.

Sincerely,

A handwritten signature in cursive script that reads "Alaina Vandervoort".

Alaina Vandervoort  
A/Management Biologist

May 03, 2018

Shannon Davison  
Aboud & Associates Inc.  
190 Nicklin Road  
Guelph, ON N1H 7L5  
sdavison@aboudtng.com

**RE: TOWN OF ERIN POTABLE WATER CLASS EA  
CONCESSION 8 LOT 16  
CONCESSION 9 LOT 13  
CONCESSION 10 LOT 17  
CONCESSION 10 LOT 18**

Dear Ms. Davison,

The Ministry of Natural Resources and Forestry (MNR), Guelph District Office, has reviewed the natural heritage information available for the above-noted property and surrounding area (the “study area”), and offers the following comments:

**SPECIES AT RISK**

There are records in the area for the following species at risk (SAR):

- Butternut (*Juglans cinerea*) (Endangered)
- Redside Dace (*Clinostomus elongatus*) (Endangered)
- Eastern Meadowlark (*Sturnella magna*) (Threatened)
- Bobolink (*Dolichonyx oryzivorus*) (Threatened)
- Bank Swallow (*Riparia riparia*) (Threatened)
- Barn Swallow (*Hirundo rustica*) (Threatened)

Threatened and Endangered Species receive both individual species and habitat protection under the *Endangered Species Act, 2007* (ESA). SAR habitat prescribed under regulation is listed in Ont. Reg. 242/08 (<https://www.ontario.ca/laws/regulation/080242>).

Please be advised that because the province has not been surveyed comprehensively for the presence of listed species, the absence of a record does not necessarily indicate the absence of SAR from an area. To determine the presence of SAR for a given study area, the District’s recommended approach is as follows:



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Sincerely,

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Alaina Vandervoort  
A/Management Biologist

May 03, 2018

Shannon Davison  
Aboud & Associates Inc.  
190 Nicklin Road  
Guelph, ON N1H 7L5  
sdavison@aboudtng.com

**RE: TOWN OF ERIN POTABLE WATER CLASS EA  
CONCESSION 10 LOT 3**

Dear Ms. Davison,

The Ministry of Natural Resources and Forestry (MNRF), Guelph District Office, has reviewed the natural heritage information available for the above-noted property and surrounding area (the “study area”), and offers the following comments:

**SPECIES AT RISK**

There are records in the area for the following species at risk (SAR):

- Butternut (*Juglans cinerea*) (Endangered)
- American Ginseng (*Panax quinquefolius*) (Endangered)
- Eastern Meadowlark (*Sturnella magna*) (Threatened)
- Bobolink (*Dolichonyx oryzivorus*) (Threatened)
- Bank Swallow (*Riparia riparia*) (Threatened)
- Barn Swallow (*Hirundo rustica*) (Threatened)
- Unisexual Ambystoma, Jefferson Dominated (*Ambystoma laterale*-(2) *jeffersonianum*) (Endangered)

Threatened and Endangered Species receive both individual species and habitat protection under the *Endangered Species Act, 2007* (ESA). SAR habitat prescribed under regulation is listed in Ont. Reg. 242/08 (<https://www.ontario.ca/laws/regulation/080242>).

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I trust that the above information is of assistance.

Sincerely,

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Alaina Vandervoort  
A/Management Biologist

## Amphibian

<p><b>Jefferson Salamander</b> <i>Ambystoma jeffersonianum</i></p>	END	Species Protection and Habitat Regulation	Inhabits deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	<p>Active: March – October Hibernates: October – March Breeding: Late March - Mid April</p>	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
<p><b>Unisexual Ambystoma - Jefferson-dominated</b> <i>Ambystoma laterale - jeffersonianum</i></p>	END	Species Protection and General Habitat Protection	Inhabits deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	<p>Active: March – October Hibernates: October – March Breeding: Late March - Mid April</p>	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

## Bird

<p><b>Acadian Flycatcher</b> <i>Empidonax virescens</i></p>	END	Species Protection and General Habitat Protection	Generally requires large areas of mature, undisturbed forest; avoids the forest edge; often found in well wooded swamps and ravines.	Migrate South before Winter	Follow Breeding Bird Survey Protocol
<p><b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i></p>	SC	N/A	Prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers. They roost in super canopy trees such as Pine.	Breed and Nest - April or May Some Migrate South when waterbodies freeze over	Follow Breeding Bird Survey Protocol
<p><b>Bank Swallow</b> <i>Riparia riparia</i></p>	THR	Species Protection and General Habitat Protection	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers.	Migrate South before Winter	Follow Breeding Bird Survey Protocol. Colony and Roost information should be recorded and submitted using Bird Studies Canada's Ontario Bank Swallow Project data forms (2010).
<p><b>Barn Owl</b> <i>Tyto alba</i></p>	END	Species Protection and Habitat Regulation	Generally prefer low-elevation, open country; often associated with agricultural lands, especially pasture. Nests are located in buildings, hollow trees and cavities in cliffs.	Active Year Round Some leave for the Winter	Follow Breeding Bird Survey Protocol Night surveys may be helpful as they are very vocal

<b>Barn Swallow</b> <i>Hirundo rustica</i>	THR	Species Protection and General Habitat Protection	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	Migrate South before Winter	Follow Breeding Bird Survey Protocol
<b>Black Tern</b> <i>Chlidonias niger</i>	SC	N/A	Generally prefer freshwater marshes and wetlands; nest either on floating material in a marsh or on the ground very close to water	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Bobolink</b> <i>Dolichonyx oryzivorus</i>	THR	Species Protection and General Habitat Protection	Generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
<b>Canada Warbler</b> <i>Cardellina canadensis</i>	SC	N/A	Generally prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	Arrive in Early May Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Cerulean Warbler</b> <i>Setophaga cerulea</i>	THR	Species Protection and General Habitat Protection	Generally found in mature deciduous forests with an open understorey; also nests in older, second-growth deciduous forests.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Chimney Swift</b> <i>Chaetura pelagica</i>	THR	Species Protection and General Habitat Protection	Historically found in deciduous and coniferous, usually wet forest types, all with a well developed, dense shrub layer; now most are found in urban areas in large uncapped chimneys	Nesting - Late April to Mid-May Migrate South in September or Early October	Chimney Swift Monitoring Protocol. Bird Studies Canada, March 2009

<b>Common Nighthawk</b> <i>Chordeiles minor</i>	SC	N/A	Generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops).	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
<b>Eastern Meadowlark</b> <i>Sturnella magna</i>	THR	Species Protection and General Habitat Protection	Generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	Migrate South for the Winter	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
<b>Eastern Whip-poor-will</b> <i>Caprimulgus vociferus</i>	THR	Species Protection and General Habitat Protection	Generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred; In winter they occupy primarily mixed woods near open areas.	Nesting: May - July	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
<b>Eastern Wood-Pewee</b> <i>Contopus virens</i>	SC	N/A	Associated with deciduous and mixed forests. Within mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Golden-winged Warbler</b> <i>Vermivora chrysoptera</i>	SC	N/A	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Henslow's Sparrow</b> <i>Ammodramus henslowii</i>	END	Species Protection and General Habitat Protection	Generally found in old fields, pastures and wet meadows. They prefer areas with dense, tall grasses, and thatch, or decaying plant material	Migrate South for the Winter	Follow Breeding Bird Survey Protocol



<b>Least Bittern</b> <i>Ixobrychus exilis</i>	THR	Species Protection and General Habitat Protection	Generally located near pools of open water in relatively large marshes and swamps that are dominated by cattail and other robust emergent plants	Migrate South for the Winter	Follow Marsh Monitoring Protocol; 10 day window of male calling (variable timing). Does not respond well to playback. Very difficult to detect.
<b>Loggerhead Shrike</b> <i>Lanius ludovicianus</i>	END	Species Protection and General Habitat Protection	Generally prefer a combination of pasture or other grassland with scattered low trees and shrubs. They build their nests in small trees or shrubs.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Louisiana Waterthrush</b> <i>Seiurus motacilla</i>	THR	Species Protection and General Habitat Protection	Generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps	Migrate South for the Winter	Follow Breeding Bird Survey Protocol or Marsh Monitoring Protocol
<b>Northern Bobwhite</b> <i>Colinus virginianus</i>	END	Species Protection and General Habitat Protection	Generally inhabits a variety of edge and grassland type - habitats including non-intensively farmed agricultural lands.	Active Year Round	Follow Breeding Bird Survey Protocol
<b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i>	SC	N/A	Generally prefers natural forest edges and openings adjacent to rivers or wetlands. Commonly nest in conifers such as White and Black Spruce, Jack Pine and Balsam Fir.	Migrate South for the Winter	Follow Breeding Bird Survey Protocol
<b>Red-Headed Woodpecker</b> <i>Melanerpes erythrocephalus</i>	SC	N/A	Generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks	Active from May to September	Follow Breeding Bird Survey Protocol
<b>Short-eared Owl</b> <i>Asio flammeus</i>	SC	N/A	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields	Active Year Round	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

<b>Wood Thrush</b> <i>Hylocichla mustelina</i>	SC	N/A	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments.	Migrate South for the Winter Arrive in Ontario in mid to late spring	Follow Breeding Bird Survey Protocol
<b>Yellow-breasted Chat</b> <i>Icteria virens</i>	END	Species Protection and General Habitat Protection	Generally prefer dense thickets around wood edges, riparian areas, and in overgrown clearings	Migrate South for the Winter Arrive in Ontario Early May	Follow Breeding Bird Survey Protocol
<b>Fish</b>					
<b>Black Redhorse</b> <i>Moxostoma duquesnei</i>	THR	Species Protection and General Habitat Protection	Generally lives in moderately sized rivers and streams, with generally moderate to fast currents	Active Year Round	For information please contact your local MNR office, CA or DFO
<b>Redside Dace</b> <i>Clinostomus elongatus</i>	END	Species Protection and Habitat Regulation	Generally found in pools and slow-moving areas of small headwater streams with a moderate to high gradient	Spawning occurs in May Timing Window is Coldwater - June 1 - September 15	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
<b>Silver Shiner</b> <i>Notropis photogenis</i>	THR	Species Protection and General Habitat Protection	Generally prefer moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients	Spawning occurs in May and June	For information please contact your local MNR office, CA and/or DFO
<b>Insect</b>					
<b>Monarch Butterfly</b> <i>Danaus plexippus</i>	SC	N/A	Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces	Usually migrate south in late September and October	Watch for adults along roadsides and in open fields. Caterpillars feed on milkweeds: Common milkweed grows in open disturbed habitats (fields, roadsides, etc) and swamp milkweed grows in wet habitats (along streams, lakes, marshes) Adults can be spotted from a distance; caterpillars must be looked for carefully on the host plant.

<b>Rusty-patched Bumble Bee</b> <i>Bombus affinis</i>	END	Species Protection and General Habitat Protection	Generally inhabits a range of diverse habitats including mixed farmland, sand dunes, marshes, urban and wooded areas. It usually nests underground in abandoned rodent burrows	Active from early Spring to late Fall	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
<b>West Virginia White</b> <i>Pieris virginiensis</i>	SC	N/A	Generally prefer moist, deciduous woodlands. The larvae feed only on the leaves of the two-leaved toothwort ( <i>Cardamine diphylla</i> ), which is a small, spring-blooming plant of the forest floor.	Adult butterfly emerges from pupa in late March; flies only in April and May	Watch for adults within moist, deciduous woodlands Caterpillars feed on the two-leaved toothwort: Toothwort grows in damp, open, rich hardwood woodlands and blooms from April to June. Adults can be spotted from a distance; caterpillars must be searched for carefully by checking host plant
<b>Mammal</b>					
<b>Eastern Small-footed Myotis</b> <i>Myotis leibii</i>	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses and under tree bark.	Hibernates in caves and mines during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
<b>Gray Fox</b> <i>Urocyon cinereoargenteus</i>	THR	Species Protection and General Habitat Protection	Generally prefers deciduous forests, marshes, swampy areas, and urban areas	Active Year Round	Opportunistically or by examining tracks in winter and summer
<b>Little Brown Myotis</b> <i>Myotis lucifugus</i>	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh).	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol

<b>Northern Myotis</b> <i>Myotis septentrionalis</i>	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius  Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
<b>Tri-colored Bat</b> <i>Perimyotis subflavus</i>	END	Species Protection and General Habitat Protection	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius  Maternal Roosts: Can be in trees or dead clusters of leaves or arboreal lichens on trees. May also use barns or similar structures.	Hibernates during winter	Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol
<b>Mollusc</b>					
<b>Wavy-rayed Lampmussel</b> <i>Lampsilis fasciola</i>	THR	Species Protection and Habitat Regulation	Generally inhabit clear rivers and streams of a variety of sizes, where the water flow is steady and the substrate is stable	Active Year Round	Please reference: Mackie, G, T.J Morris, and D Ming. "Protocol for the Detection and Relocation of Freshwater Mussel Species at Risk in Ontario Great Lakes Area (OGLA)." Fisheries and Oceans Canada. (2008): Print.
<b>Plant</b>					
<b>American Chestnut</b> <i>Castanea dentata</i>	END	Species Protection and General Habitat Protection	Found in deciduous forest communities; this tree prefers arid forests with acid and sandy soils.	Flowers occur in Late Spring and Early Summer	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters  Use a plant field guide to distinguish from similar species  Perform detailed floristic inventory  Look for distinctive fruits on the ground
<b>American Ginseng</b> <i>Panax quinquefolius</i>	END	Species Protection and General Habitat Protection	Grows in rich, moist, undisturbed and relatively mature deciduous woods in areas of neutral soil (such as over limestone or marble bedrock).	Flowering begins in June and continues until August  The fruit develop from July to August and ripen in August and September	Walk slowly and systematically in grid fashion, pausing to scan for plants every 5 meters  Use a plant field guide to distinguish from similar species

<p><b>Butternut</b> <i>Juglans cinerea</i></p>	END	Species Protection and General Habitat Protection	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows	Flowers from April to June. Fruits reach maturity during the month of September or October	Walk slowly and systematically in grid fashion through suitable habitat pausing every 30 meters for a detailed scan of trees within sight. Areas with dense foliage or many saplings will require a more intensive survey to detect sapling butternut. Use Butternut Health Assessment Protocol if planning on removing trees.
<p><b>Hill's Pondweed</b> <i>Potamogeton hillii</i></p>	SC	N/A	Generally grows in clear, cold ponds and slow-moving streams where the water is alkaline	Flowers in Summer	Survey in appropriate aquatic habitat Use a plant field guide to distinguish from similar species
<b>Reptile</b>					
<p><b>Blanding's Turtle</b> <i>Emydoidea blandingii</i></p>	THR	Species Protection and General Habitat Protection	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.	Eggs are laid in June, with hatchlings emerging in late September and early October.	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol
<p><b>Butler's Gartersnake</b> <i>Thamnophis butleri</i></p>	END	Species Protection and General Habitat Protection	Generally prefers open habitats, such as dense grasslands and old fields, where there are small marshes and seasonal wet areas	Active: early April - mid-September Mating: early spring (April) Hatching: June and July	Contact MNR Guelph District Management Biologist to obtain a copy of the protocol

<p><b>Eastern Ribbonsnake</b> <i>Thamnophis sauritus</i></p>	<p>SC</p>	<p>N/A</p>	<p>Generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.</p>	<p>Hibernate: October - April Mating: Early Spring Hatching: Early Fall (September)</p>	<p>Contact MNRF Guelph District Management Biologist to obtain a copy of the protocol</p>
<p><b>Massasauga Rattlesnake</b> <i>Sistrurus catenatus</i></p>	<p>THR</p>	<p>Species Protection and General Habitat Protection</p>	<p>Generally occur in habitats ranging from tall grass prairie to cedar bogs to shorelines. All habitats require canopies that are not too open, but they also require access to spots where they can get warm enough to effectively digest their food and reproduce. Sufficient moisture is also required for them to survive the winter, so they are often associated with wetlands or small, wet depressions in the terrain.</p>	<p>Active: Late April - October</p>	<p>Survey for gestating females in appropriate gestation sites Comprehensive survey of habitat for individuals at least 3 days during the active season Survey suitable hibernation sites in late Fall or early Spring during emergence</p>
<p><b>Snapping Turtle</b> <i>Chelydra serpentina</i></p>	<p>SC</p>	<p>N/A</p>	<p>Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.</p>	<p>Nesting: Late May and June Hibernate: October - April</p>	<p>Scan offshore rocks and logs for basking turtles (10am-2pm) Snorkel in desired aquatic habitat Nesting Season: Search known or preferred nesting habitat areas for females</p>

**Spotted Turtle**

*Clemmys guttata*

END

Species Protection  
and General Habitat  
Protection

Generally prefers the shallow, slow-moving and unpolluted water of ponds, bogs, marshes, ditches, vernal pools and sedge meadows. It can also be found in woodland streams and near the sheltered shores of shallow bays

Hibernate: September - April

Breed: May - Early June

Nesting: Mid - Late June

Stalk silently along shorelines and from vantage points scan emergent clumps of vegetation, logs, rocks and shorelines for basking turtles and watch for turtles in shallow ponds/pools  
Wade very slowly through wetland edges being extremely quiet and careful to ensure you see the turtle before it sees you  
Nesting season: search nesting habitat areas for females  
Wetlands can be scanned from a greater distance using a spotting scope  
High quality 10 power binoculars are essential  
Surveys should be done by looking for basking turtles in early Spring as they come out of hibernation  
Minimum of 2 days of surveys in appropriate weather (warm sunny spring days) at suitable sites

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APPENDIX 10  
Glossary of Terms and Impact Ratings



## **APPENDIX 12. Glossary of terms and Impact Ratings**

### Duration of Impact

ST – Short-term (define based on project)

LT- Long-term (define based on project)

### Reversibility

R- Reversible

P – Permanent

### Geographic Extent of Influence

SA– Subject Area (physical disturbance area)

AA- Assessment Area (120m zone of influence)

LA – Landscape Area (Area outside AA that may be affected)

### Frequency of Disturbance

O - Occurs once.

S - Occurs sporadically at irregular intervals.

R - Occurs on a regular basis and at regular intervals.

C – Continuous, ongoing and all the time.

### Existing Ecological Site Context

U - Undisturbed: Area relatively or not adversely affected by human activity.

PD – Past Disturbance: Area Adversely affected by human activity in recent past, but regeneration has occurred.

D -Disturbed: Area has been substantially previously disturbed by human development or human development is still present.

### Likelihood of impact occurring

If the Proposed activity occurs, the likelihood of the impact occurring is:

L: Low probability of occurrence.

M: Medium probability of occurrence.

H: High probability of occurrence.

### Cumulative Environmental Effects

Will the proposed activity interact with other impacts?

Y: Potential for environmental effect to interact with the environmental effects of other past, present or foreseeable future activities

N: Environmental effect will not or is not likely to interact with the environmental effects of other past, present or foreseeable future activities.

### Impact Rating

None: An event that, if it occurs, will cause no foreseeable impact.

Minor: An event that, if it occurs, will cause small, reversible and geographically localized impact that can be easily mitigated.

Moderate: Significant but reversible, OR irreversible and geographically localized, impact that requires significant mitigation.

Severe: Significant AND irreversible impact on the environment, impacts cannot be fully mitigated.

### Potential vs. Actual impact

<sup>1</sup> *Potential Impact* is a relative rating of the expected impact to occur in the absence of any mitigation measures.

<sup>2</sup> *Actual Impact* is the expected impact in consideration of implementation of mitigation measures or where potential impact may cause little to no actual impact.

- Urban Forestry
- Ecological Restoration
- Landscape Architecture
- Environmental Studies
- Expert Opinion

<b>Historical or Associative Value</b>	Has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community		
	Yields or has the potential to yield information that contributes to the understanding of a community or culture		
	Demonstrates or reflects the work or ideas of an architect, builder, artist, designer or theorist who is significant to a community		
<b>Contextual Value</b>	Is important in defining, maintaining or supporting the character of an area	✓	Supports the rural agricultural character of the area.
	Is physically, functionally, visually or historically linked to its surroundings		
	Is a landmark		

#### RESULTS OF HERITAGE ASSESSMENT

<b>CHVI Evaluation</b>	Has CHVI.
<b>Heritage Attributes</b>	Key heritage attributes include: one-and-half storey stone Ontario Cottage; rectangular plan; side gable roof; square window and door openings; long driveway flanked by mature trees; split rail fence.

#### REFERENCE MATERIALS

<b>Sources</b>	<p>Leslie, G., &amp; Wheelock, C. J. 1861 <i>Map of the County of Wellington, Canada West</i>. Accessed online at: <a href="http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html">http://maps.library.utoronto.ca/hgis/countymaps/wellington/index.html</a>.</p> <p>McGill University 2001 <i>Township of Erin</i>. Accessed online at: <a href="http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg">http://digital.library.mcgill.ca/countyatlas/Images/Maps/TownshipMaps/weli-m-erin.jpg</a>.</p> <p>Town of Erin 2006 <i>Heritage Inventory Index</i>.</p>
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