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ADDENDUM TO EXTEND ENVIRONMENTAL STUDY REPORT

Nanticoke Water Treatment Plant

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Executive Summary

In 1977 an interim treatment plant (ITP) was built, at the current Nanticoke WTP site by Haldimand County (the County), to supply local demand while a plan to supply an expanded service region was finalized. In 2002, the County initiated a Schedule C Municipal Class Environmental Assessment (MCEA), and the findings were documented in the Environmental Study Report in 2006 (2006 ESR).

Recent increased demands, locally and in the neighbouring Norfolk County and Six Nations communities, renewed interest in the construction of a new Water Treatment Plant at the existing site in accordance with the 2006 MCEA. Haldimand County retained J.L. Richards & Associates Ltd. (JLR) in June 2022 to complete an addendum to extend the period of validity for the 2006 ESR (ESR Addendum) since the 2002 MCEA has passed its 10-year “shelf life”.

Planning updates since the 2006 ESR include updates to the Provincial Policy Statement, and the Growth Plan for the Greater Golden Horseshoe (latest revision 2020). Since the 2006 ESR, a coal fired Ontario Power Generation (OPG) facility adjacent to the WTP site was decommissioned and replaced by a solar power facility.

As part of this ESR Addendum, new studies were completed to assess natural, cultural, and archaeological impacts not addressed, or substantive changes since the 2006 ESR was completed. Hutchinson Environmental Services Limited (HESL) prepared a Terrestrial and Aquatic Ecology Report, and an Environmental Liability screening. Archaeological Research Associates Ltd (ARA) prepared a Cultural Heritage Assessment Report, and a Stage 1 Archaeological Assessment. These reports recommended a Stage 2 Archaeological Assessment, and an Information Gathering Form be completed as part of the detailed design. They also recommended various strategies to limit impacts to wildlife during construction.

Analysis of the raw water from 2019 to 2022 found that the water quality remains within the design parameters of the 2006 ESR. The recommendations for treatment objectives made in the 2006 ESR meet or exceed current regulations and standards, therefore they remain applicable. The design flow of 100 MLD from the 2006 ESR adequately satisfies the anticipated demands of the service area projected by the County to 2041, and thus the proposed design concepts presented in the 2006 ESR also remain applicable.

Table E1 summarizes the anticipated WTP demands to 2041, as provided by the County in January 2023.

Table E1 – Anticipated demands on the Nanticoke WTP to 2041

Conceptual Design Basis	Existing Haldimand Service Area	Lake Erie Industrial Park and Nanticoke Community	Norfolk County[(1)]	Six Nations	Total (Rounded)
Rated Design Flow (m^3/d)	25,000	15,000	40,000	3,500	85,000
Initial Operating Flow (m^3/d)	15,000	5,000	10,000	1,500	35,000
Maximum Hydraulic Flow (m^3/d)	30,000	16,500	45,000	4,000	100,000

The preferred alternative, as outlined in the 2006 ESR, included the expansion of the Interim Treatment Plant through the construction of a 100 MLD (megaliter per day) water treatment facility expansion complete with flash mixing, flocculation, clarification, filtration, advanced oxidation, chlorine disinfection with post chlorination and chloroamination, and WTP residuals sludge thickening systems. The 2006 ESR also recommended that the ITP be repurposed for residuals management, if required. The ITP has been upgraded since 2006, however these changes do not impact the recommendations of the 2006 ESR.

The completed Addendum proposes no changes to the preferred water treatment plant expansion concept as identified in the 2006 ESR. As part of this report, studies of the area's archeology, cultural heritage, and ecology were undertaken. Mitigation measure have been updated based on the findings of these studies and current standards.

As part of the consultation process associated with this ESR Addendum a Notice of Commencement was issued August 25, 2022, and correspondence sent to a mailing list including the public and review agencies. Stakeholders consulted include the Grand River Conservation Authority (GRCA), Long Point Conservation Authority (LPCA), the Haudenosaunee Development Institute (HDI), the Mississaugas of the Credit First Nation (MCFN), and the Six Nations of the Grand River (SNGR).

Following the completion of the Nanticoke Water Treatment Plant Environmental Study Report Addendum, the Report is being placed on public record for a 30-day review period in accordance with the requirements of the Municipal Class EA. Interested persons may provide written comments to our project team by April 15, 2023. A request may be made to the Ministry of the Environment, Conservation and Parks for an order requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights.

1.0 Introduction

In 1973, the Nanticoke Water Supply Complex was planned to treat water from Lake Erie to supply potable water as far inland as Kitchener and Waterloo; a water treatment plant concept to fulfill this goal was included. An Interim Treatment Plant (ITP) was built in 1977 to provide water locally within Haldimand County while the regional plan was finalized. In 2002, the County initiated a Schedule C Municipal Class Environmental Assessment (MCEA) and engaged consulting engineers, Earth Tech, to evaluate build-out options and identify the preferred water supply scenarios.

The 2002 Schedule C MCEA identified multiple Water Treatment Plant (WTP) build-out scenarios based on different demand and servicing requirements. The Schedule C MCEA proposed the following preferred options for water supply and service area, which were documented in the Environmental Study Report in 2006 (2006 ESR):

- A preferred water supply solution of “WTP expansion to accommodate growth and expanded service area”
- Preferred growth and service areas of “Current service area plus expanded service area, Caledonia, Cayuga, and York including First Nations” and “New WTP serving Haldimand County, Norfolk County, Regional Municipality of Waterloo and Cities of Brantford and Guelph” were proposed.

In the years following the MCEA, Genivar Inc. conducted a feasibility study for a new “Nanticoke Grand Valley Area Water Supply Project” that expanded on the 2006 MCEA and evaluated a large water supply scheme (Genivar, 2009). Neither the MCEA preferred options nor Genivar’s recommendations were implemented, however, the County retained J.L. Richards and Associates Ltd. (JLR) in 2016 to complete a design to upgrade the ITP to include Actiflo high-rate clarifiers and replacement filters.

Figure 1 provides a timeline of activities and studies completed for the Nanticoke WTP.

In recent years, a new water treatment plant (WTP) at the current site has been identified by the County as a potential option for meeting new demands in the neighbouring areas of Norfolk County and the Six Nations community. These demands have renewed interest in the construction of a new WTP at the existing Nanticoke site in accordance with the 2006 MCEA. Replacing the ITP with a new WTP will also accommodate new potable water service connections to the Caledonia, Cayuga, and York corridor and other areas in and surrounding the County not currently serviced by the WTP, which will enable the County to become potable water self-sufficient.

J.L. Richards & Associates Ltd. (JLR) was retained by Haldimand County in June 2022 to complete an addendum to the 2006 ESR (ESR Addendum). Since the 2002 Schedule C MCEA has passed its 10-year “shelf life”, the conclusions and recommendations must be validated by taking into consideration changes in information and context since 2006, changes in regulatory framework from the original MCEA, and other changes due to the lapse in time from the previous study.

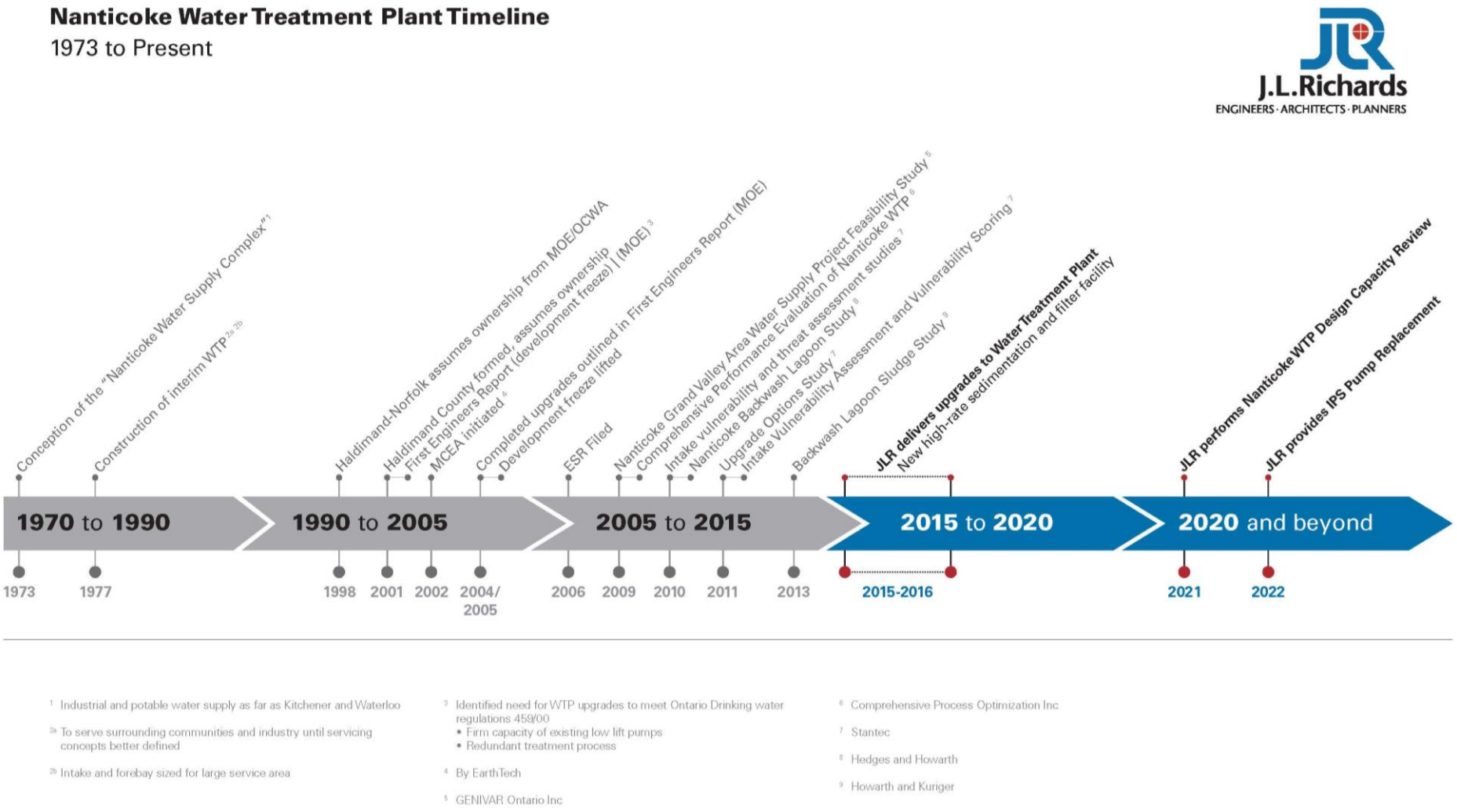

Figure 1 - History of the Nanticoke Water Treatment Plant

1.1 Objectives

The objectives of this ESR Addendum are to:

- Review the 2006 ESR in the context of the current environmental, social, and economic environment.
- Compare the current conditions to those described in the 2006 ESR.
- Verify that the preferred options and recommended mitigation measures outlined in the 2006 ESR remain valid.

1.2 The MCEA Process

The MCEA process is a project-specific environmental assessment process established by the Municipal Engineers Association (MEA) for common types of projects to streamline the consultation process, while ensuring that the project meets the requirements of the *Environmental Assessment Act* (1990, amended 2021) The MCEA process involves site-specific information gathering and studies, as well as consultation with the public and stakeholder agencies. The main elements of the process are incorporated in the following five phases:

- Phase 1: Problem/Opportunity Statement.
- Phase 2: Development of Alternative Solutions.
- Phase 3: Identification and Evaluation of Design Concepts.
- Phase 4: Environmental Study Report.
- Phase 5: Implementation.

The MCEA process requires:

- Consultation with the public, review agencies and any other stakeholders that are potentially affected by the proposed project.
- Consideration of a reasonable range of alternatives.
- A systematic evaluation of alternatives to determine their advantages and disadvantages, and their net environmental effects.
- Documentation of the planning process followed to allow “traceability” of the decision-making process and consultation activities.

Since projects can vary in terms of scope, complexity, and environmental impact, the MCEA process identifies three levels of planning activities through separate schedules:

- Schedule A/A+
  - Generally includes normal or emergency operation and maintenance activities.
  - The environmental effects of these activities are usually minimal and, therefore, these projects are pre-approved and can proceed directly to implementation.
  - As part of the 2007 amendments to the MCEA process, Schedule A+ was introduced, where Schedule A+ projects are pre-approved and can proceed to implementation (similar to Schedule A projects). However, the public affected by the project is to be advised prior to implementation of a Schedule A+ undertaking.

- Schedule B
  - Generally includes improvements and minor expansions to existing facilities.
  - There is potential for some adverse environmental impacts and therefore the proponent is required to proceed through a screening process, including consultation with those who may be affected.

- Schedule C
  - Generally includes construction of new facilities and major expansions to existing facilities.
  - These projects proceed through the full environmental assessment planning process in the MCEA.

Upgrading and expanding the existing Nanticoke WTP is considered a Schedule C undertaking, and, as a result, must satisfy the full MCEA planning process. This requirement was addressed through the 2006 ESR completed by Earth Tech. A copy of the 2006 ESR is included in Appendix A for reference.

1.3 Summary of 2006 ESR

1.3.1 Phase 1: Problem/Opportunity Statement

The 2006 MCEA defined the problem statement for the Nanticoke WTP Expansions as follows:

> *"A 2001 Engineers Report identified the need for some WTP upgrades to meet new Ontario Drinking Water Regulation 459/00. WTP upgrades will allow the current development limitations to be lifted. As a component of the WTP upgrade, County Council is using this as an opportunity to review current and future WTP service areas and further one of the goals of the 2001 County Strategic Plan, which is self sufficiency in its water supply.*
>
> *Therefore, the scope of the study will also include the feasibility of how to best expand the Nanticoke WTP to service LEIP ultimate build out as well as areas within Haldimand County, such as Caledonia, Cayuga and York.*
>
> *Based on interest, the Study Area may also include service areas outside the County such as Norfolk County, City of Brantford, Six Nations of the Grand River, Mississaugas of the New Credit, Regional Municipality of Waterloo, City of Guelph and Brant County.*
>
> *Ontario Drinking Water Standards as well as future water quality issues will be addressed in order that WTP expansion will meet or be capable of addressing potential water quality issues.*
>
> *A review of applicable drinking water quality standards in other jurisdictions will be assessed to determine the potential impact if adopted by Ontario in the future".*

1.3.2 Phase 2: Development of Alternative Solutions

The 2002 MCEA considered two different drivers for the expansion of the Nanticoke WTP as summarized in Table 1 and Table 2 below.

Table 1 – 2006 MCEA Alternative Water Supply Solutions

Alternative	Description
Alternative 1: Do Nothing	No improvements or changes would be undertaken to address present and future WTP requirements. Existing WTP could be potentially de-rated. The "Do Nothing" alternative represents what would likely occur if none of the alternative solutions were implemented.
Alternative 2: Water Conservation	By implementing water conservation measures such as encouraging the use of low flush toilets in existing and new developments, leak detection and undertaking rehabilitation activities.
Alternative 3: Plant Expansion to Accommodate Growth and Provide Service Area Without Lake Erie Industrial Park (LEIP) Potable Demand	By constructing a new WTP and reusing the existing infrastructure for WTP residue management, and expanding the existing Low Lift and High Lift Pumping Station at the existing site.
Alternative 4: Plant Expansion for Growth and Expanded Service Area with LEIP Potable Demand	Same as Alternative No. 3, but a larger expansion.
Alternative 5: New WTP at New Location	By siting and constructing a new WTP along the Lake Erie shoreline to service an expanded service area and the LEIP.
Alternative 6: Combination of Haldimand & Hamilton Supply	In which current water supply from the City of Hamilton would be extended to selected Haldimand County Service Areas. Since the Hamilton agreement has a maximum taking of 13,800m^3/day, the question was asked of the City to provide a nominal capacity of 50ML/d with an estimated cost of $30M for infrastructure inside the City of Hamilton. This would not service the LEIP potable water demand.
Alternative 7: Limit Growth	Which considers maintaining the existing water supply demands by limiting the ultimate extent and/or location of future development.

Alternative 4 (Plant Expansion to Accommodate Growth and Expanded Service Area with LEIP Potable Demand) was identified in the 2006 ESR as the preferred water supply solution as it best addressed the needs outlined in the problem statement.

Table 2 - Growth and Servicing Area Options

Alternative Growth And Service Area Options	Descriptions
Option 1: Hamilton Supply to current Service Area (with existing demands Lake Erie Industrial Park, Ontario Power Generation, Hagersville, Jarvis, Townsend plus Caledonia)	• Entire Caledonia to Lake Erie supplied from Hamilton except for LEIP • Hamilton System Upgrades (all works in Hamilton) • New Transmission Main • Haldimand Transmission Improvements (all works in Haldimand) • WTP for LEIP demands

Alternative Growth And Service Area Options	Descriptions
Option 2: New Haldimand WTP to current Service Area plus Caledonia, Cayuga and York including First Nations with and without major LEIP potable requirements	• Service Area Scheme 1 (current service area (Lake Erie Industrial Park, Hagersville, Jarvis, Townsend) • Service Area Scheme 2 (current service area plus Caledonia, Cayuga and York including Six Nations and Mississaugas of the New Credit) • WTP Capacity Improvements • New Transmission Mains • Caledonia Reservoir and Booster Station Common to both
Option 3: New WTP servicing Haldimand County, Norfolk County, Regional Municipality of Waterloo (RMOW) and Cities of Brantford, Guelph, Brant County, Six Nations, Mississaugas of the New Credit	• Area Scheme means Haldimand County, Norfolk County, Six Nations, Mississaugas of the New Credit, RMOW, Guelph, Brantford, and Brant County

Option 2 (New Haldimand WTP to current Service Area plus Caledonia, Cayuga and York including First Nations with and without major LEIP potable requirements) was identified in the 2006 ESR as the preferred Growth and Servicing Area Option as it best addressed the needs outlined in the problem statement. Option 3 (New WTP servicing Haldimand County, Norfolk County, Regional Municipality of Waterloo and Cities of Brantford, Guelph, Brant County, Six Nations, Mississaugas of the New Credit) was not selected based on the large capital and operating costs, but the ESR noted that should these costs be offset by participating area scheme municipalities and stakeholders it could become the preferred option in the future.

1.3.3 Phase 3: Identification and Evaluation of Design Concepts

The preferred water supply solution requires the expansion of the existing WTP. Figure 2 (Figure 8-1 of the 2006 ESR) presents the proposed WTP footprint based on servicing Haldimand County ("Haldimand Only") (current Service Area plus Caledonia, Cayuga and York including First Nations). The 2006 ESR also included and expansion concept for the long-term area wide scheme which is illustrated in Figure 3 (Figure 8-2 of the 2006 ESR) and was based on servicing Haldimand County, Norfolk County, Six Nations, Mississaugas of the New Credit, RMOW, Guelph, Brantford, and Brant County.

1.3.4 Phase 4: Environmental Study Report

A Notice of Completion was filed and the ESR was available for public review for 30 days from June 7th, 2006, to July 7th, 2006.

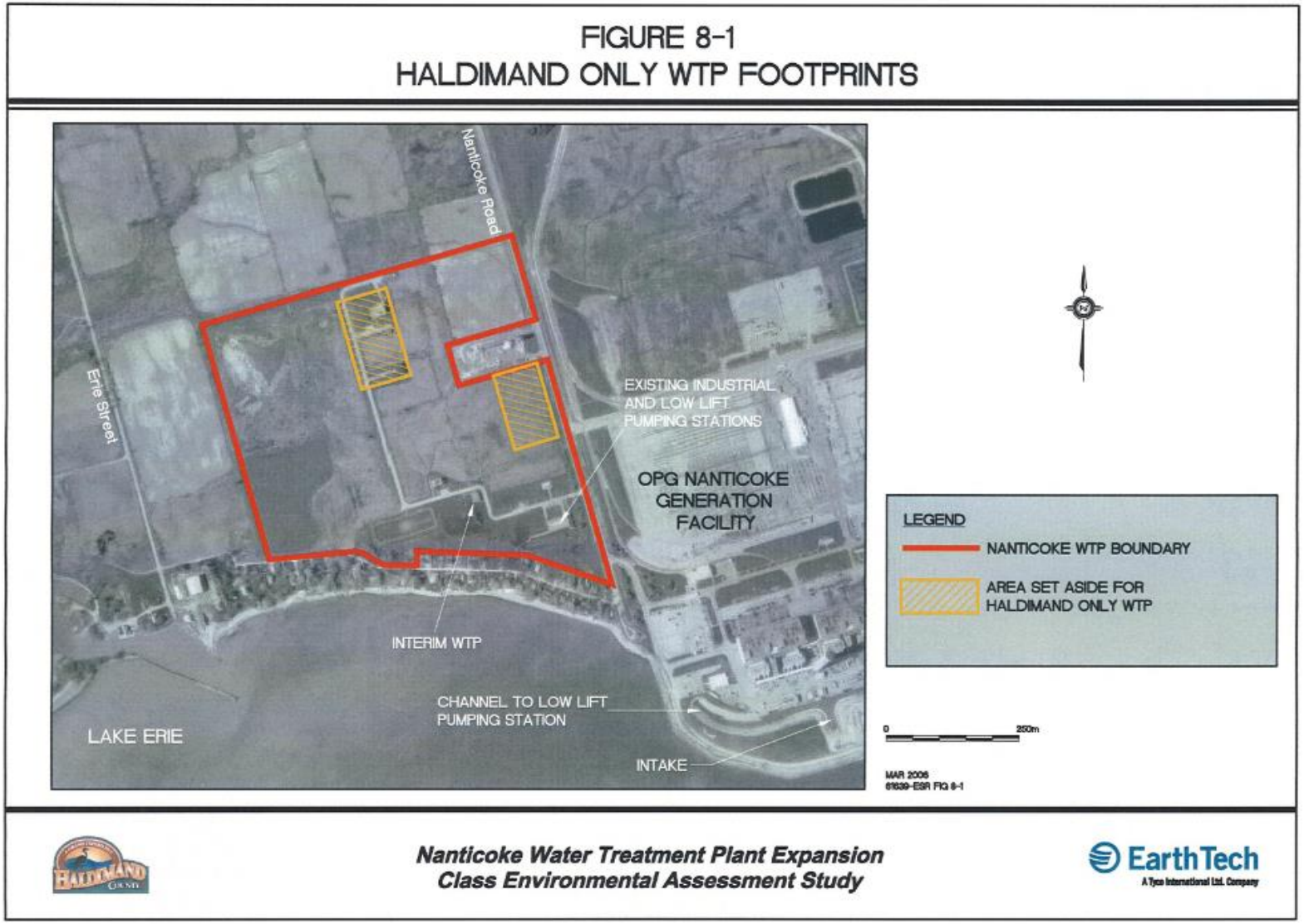

Figure 2 - Proposed WTP Expansion for Haldimand Only (Earth Tech, 2006)

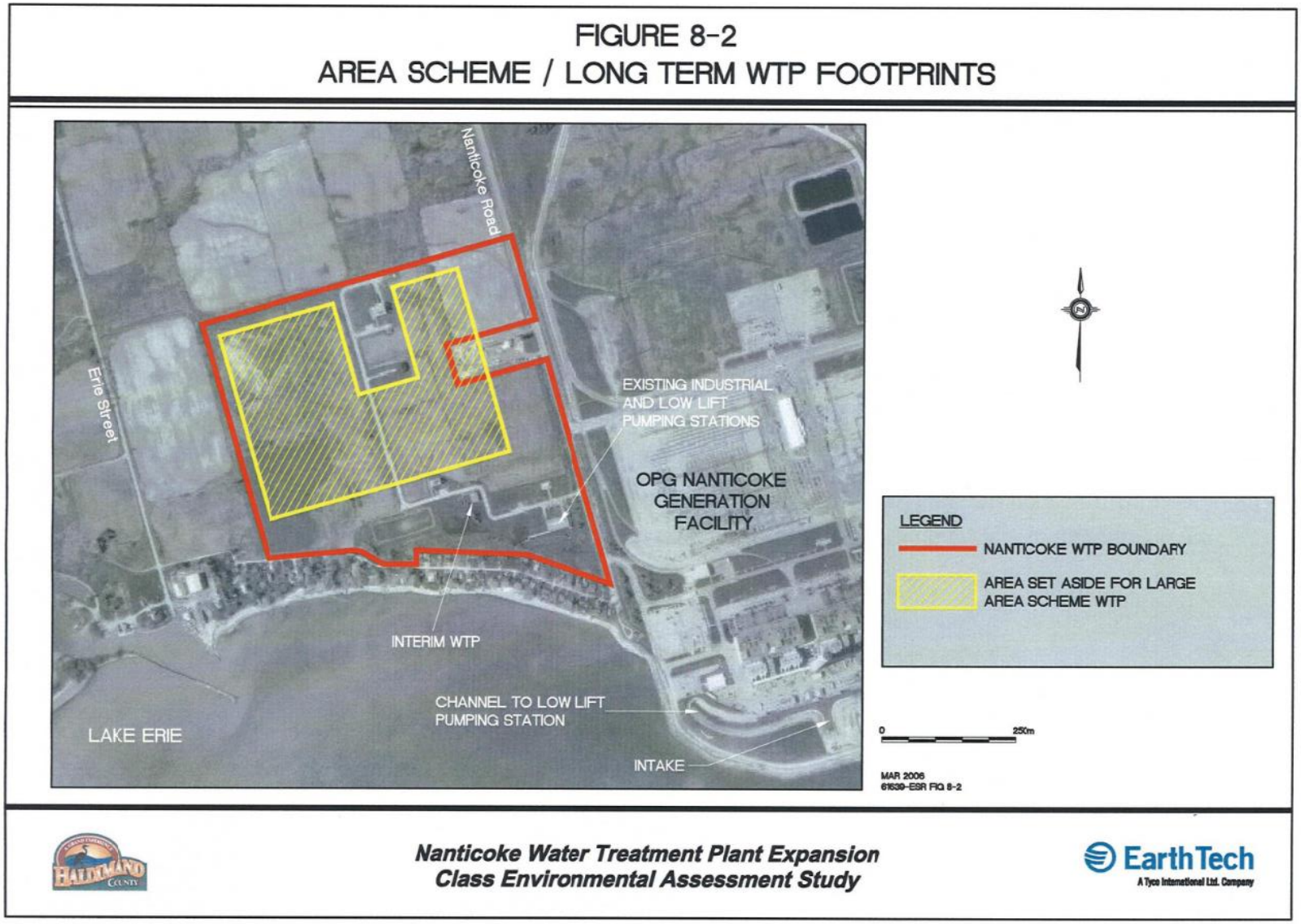

Figure 3 - Proposed WTP Expansion for Long Term (Earth Tech, 2006)

1.4 Addendum Process

The MCEA process requires the preparation of an Addendum to the ESR should a 10-year period occur between filing of the ESR and commencement of construction, and/or should any significant modification to the project be proposed or a change in environmental setting be encountered.

The mandates under the MCEA process for an ESR Addendum due to lapse of time, are to review the planning and design process and the current environmental setting to ensure that the project and the mitigation measures remain valid given the current planning context. The Addendum shall also discuss any significant modifications to the project, describe the circumstances necessitating the change, the environmental implications of that change, and propose mitigation measures to address potential negative impacts.

Once completed, the Addendum shall be filed with the original ESR on the public record and a Notice of Filing of Addendum is to be published to advise potentially affected members of the public and review agencies. In addition, a copy of the Notice of Filing of Addendum is to be sent to those who were notified while preparing the original ESR. It is important to clearly indicate to the review agencies and the public that, when an Addendum to an ESR is issued, only the items in the addendum (i.e., the changes) are open for review, i.e., only the proposed changes to the recommended undertaking presented in the original ESR are open for review.

A 30-calendar day review period is provided following the issuance of the Notice of Filing of Addendum for the public and review agencies to provide comments on the proposed changes to the original ESR. The public has right to request a Part II order during the 30-day Addendum review period. If no request is received by the Minister or delegate, the proponent can proceed with implementation and construction.

2.0 Identification of Preferred Design

The proposed work outlined in the 2006 ESR included the following:

- Expanding the Interim Treatment Plant (ITP) as required up to future rating of up to 100 MLD.
- Preferred conceptual WTP design:
    - Flash Mixing.
    - Flocculation.
    - Clarification (ActiFlo® Clarifiers or lamella/tube separators).
    - Filtration (membrane or granular).
    - Advanced oxidation (Ultraviolet paired with peroxide).
    - Disinfection with post chlorination and chloroamination.
    - Sludge thickening.
- Using the current ITP for residuals management.

The scope of work is unchanged from the 2006 ESR.The ITP has changed since 2006, however these changes do not impact the recommendations of the 2006 ESR. Therefore, no design modifications were made as part of this Addendum process. This addendum will only address changes in conditions within the study area since the 2006 ESR.

3.0 Changes in Environmental Setting (2006-2023)

3.1 Planning and Land Use

The study area is located within Walpole Township Concession 1 Part of Lot 6, Part Road Allowance Plan 18072, Part Block E Walpole 33 Haldimand Road 55. The southern part of the study area contains the ITP, the Industrial Pump Station (IPS), residuals lagoon, High Lift Pump Building and reservoir, and Control Building

Based on information from the Haldimand County Planning Department, the lands are zoned Agricultural in the City of Nanticoke Zoning By-law. A water treatment facility is amongst the uses which are permitted in all zones.

3.1.1 Provincial Policy Statement

Since the 2006 ESR, there have been two updates to the Provincial Policy Statement. The 2020 Provincial Policy Statement (PPS) provides general policy guidance on matters of provincial interest related to land use planning and development. The 2020 PPS also provides policy direction for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural environment.

All local planning matters must be consistent with the 2020 PPS, which is issued under Section 3 of the Planning Act. Policies related to infrastructure, servicing (sewer and water), climate change, natural heritage wetlands and water, and Indigenous interests may have implications at the Class EA level and are revised in subsequent sections.

3.1.2 Growth Plan for the Greater Golden Horseshoe

The study area is not subject to the Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, Greenbelt Plan, and Lake Simcoe Protection Plan.

The study area is subject to the Growth Plan for the Greater Golden Horseshoe (GGH). The current Growth Plan for the GGH came into effect on May 16, 2019, and was amended on August 28, 2020. All decisions in respect of the exercise of any authority that affects a planning matter will conform with the current plan, subject to any legislative or regulatory provisions providing otherwise.

3.1.3 Haldimand County Official Plan

Haldimand County adopted its Official Plan in 2006. It was approved by the Province of Ontario in 2009 and was last amended in 2019. It is currently undergoing an update to conform to Provincial legislation and to appropriately manage municipal needs. The updated Official Plan will guide growth and development to 2046. Policies related to the Nanticoke WTP are listed in Section 9 C of the Official Plan. The study area is zoned for use as a water treatment plant, with room for expansion.

3.1.4 Adjacent Property Uses

According to the 2006 report, existing land uses within the study area were primarily industrial with agricultural/open space and single family residential. Industrial land uses included the Ontario

Power Generation (OPG) Plant, Lake Erie Steel Company (Stelco), and Imperial Oil (ESSO) Refinery. Located directly south of and bordering the Nanticoke WTP were several year-round and seasonal single-family residential units fronting along Lake Erie's shoreline. Agricultural uses included greenhouses, tobacco, soya, grain, cornfields, and various cash crops.

Since the 2006 ESR, the OPG coal-fired facility adjacent to the WTP site has been decommissioned and replaced by a solar power facility. We understand from the County that other surrounding land uses remain relatively unchanged.

3.1.5 Other Considerations

Treated water demands have increased in the years following the 2006 ESR due to forecasted local growth attributed to local development proposals, as well as new demands in the neighbouring areas of Norfolk County and the Six Nations community. The Simcoe-Townsend Water Supply System Municipal Class Environmental Assessment is underway to secure supply for Norfolk County from the Nanticoke Water Treatment Plant. Additionally, there is a proposal being presented by a private developer to develop 4200 acres of land in the Lake Erie Industrial Park. These proposals, in combination with growth in Haldimand, have renewed interest in the construction of a new WTP at the existing site in accordance with the 2006 MCEA.

3.2 Natural Environment

The 2006 ESR listed natural environmental features within the project study area. They included the Lake Erie shoreline, Nanticoke Creek and the following environmentally sensitive areas:

- Salem Rocford Rockland.
- Shoups Farm Quarry.
- Sandusk Creek Floodplain Woods.
- Nanticoke Hemlock Slough Forest.
- Sandusk Falls.
- Sandusk Creek Fossil Beds.
- Sandusk Creek Woods.
- Sandusk/Spring Creek.
- Varency Woods.
- Marburg Swamp.
- Nanticoke Heronry Woods.
- Dogs Nest Slough Forest.

The ESR concluded that the above natural features are situated well away from the Nanticoke WTP site and therefore would not be impacted by the proposed WTP expansion.

The site is located inland of the shores of Lake Erie and is less than a kilometer east of Nanticoke Creek. As part of the ESR Addendum, Hutchinson Environmental Services Limited (HESL) conducted a background review and corresponded with regulators prior to conducting field surveys in the spring and summer of 2022 to prepare a Terrestrial and Aquatic Ecology Report (Appendix B). The report characterized natural heritage features and functions on the proposed

WTP expansion site, indicated potential impacts of the proposed WTP expansion on these areas, and recommended measures to mitigate the impacts.

The HESL study concluded that:

- No watercourses or waterbodies were identified in the study area; therefore, no aquatic habitat surveys were completed.
- No provincially significant wetlands, woodlands or ANSIs were identified in the study area.
- The WTP site contained potential habitat for species at risk, and the field surveys further identified candidate significant wildlife habitats and the presence of Species at Risk Act (SARA) listed species.
- Given that the proposed works are within existing disturbed sites, if the mitigation measures recommended in the report are implemented there is a low likelihood adjacent significant natural heritage features and functions in the study area will be negatively affected.

3.2.1 Vegetation Communities and Significant Wildlife Habitat

HESL identified nine vegetation communities and 115 vascular plant species in field surveys. No species of significance were recorded, and several communities were dominated by invasive plant species. There was low vegetative diversity and most habitats had low to medium ecological value.

The communities identified in the study area represent a suitable habitat for eight species at risk and could represent Special Concern and Rare Wildlife Species Habitat.

The footprint of the long term WTP expansion (Figure 3 of this ESR Addendum) covers most of the vegetation communities in the study area. The smaller, Haldimand only WTP footprint (Figure 2 of this ESR Addendum) covers only developed area and meadow lands, specifically the Dry-Fresh mixed meadow and the Common Reed Graminoid Mineral meadow.

3.2.2 Breeding Amphibians and Birds

HESL detected calls from two amphibian species during survey events. No amphibious species at risk were recorded.

HESL identified 36 bird species on the property during field surveys. Two were species at risk, Barn Swallow (threatened federally) and Bobolink (threatened federally and in Ontario). Three area-sensitive species were the Hairy Woodpecker, Savannah Sparrow, and Bobolink, all of which require large areas of more than four hectares for continuous breeding habitat.

3.2.3 Species at Risk and Species of Conservation Concern

HESL identified the site of the proposed WTP expansion as suitable habitat for eight species at risk (in Ontario and within SARA) in the study area through the desktop study. Only Barn Swallow and Bobolink were observed in field surveys.

3.2.4 Mitigation Measures

The mitigation measures recommended in the study report include:

- Scheduling construction timing to minimize wildlife disturbance.
- Installing and inspecting exclusion fencing.

- Minimizing lay down area.
- Minimizing overnight light usage.
- Managing the site to prevent attracting wildlife to the area.
- Conducting routine wildlife inspections during construction in accordance with MECP requirements.
- Iimplementing an erosion and sediment control plan.
- Implementing a plan to manage introduction of additional invasive vegetation species.

Upon reviewing the report, the MECP requested an Information Gathering Form (IGF) be completed to determine if the WTP expansion will contravene the Endangered Species Act, and whether an overall benefit permit is needed to proceed. The IGF is currently in progress with an expected completion in early 2023.

3.2.5 Environmental Liability

Hutchinson Environmental Services Limited (HESL) completed an Environmental Liability screening including a site visit on July 4, 2022. The associated report is attached in Appendix C. HESL did not identify any environmental concerns on the site property related to its current use for water treatment. HESL did identify historical and current activities on industrial properties adjacent to the site that may pose environmental risks to the site.

Current activities on adjacent sites include Wilkinson Construction and Erosion Control, and the Nanticoke Solar Facility. Historical activities include the Beaver Gas and Oil Company, and a coal-fired generating station.

HESL found that these off-site activities had potential to contaminate the groundwater and soil on the site by petroleum compounds, metals, polycyclic aromatic hydrocarbons, and polychlorinated biphenyls.

Recommendations to address these potential contaminants includes taking samples from the north and east proposed expansion areas.

The following sampling methods were recommended to monitor possible impacts related to petroleum constituents and OReg 153/04 metals from the Wilkinson and Beaver facilities:

- three environmental boreholes and three groundwater monitoring wells at the east proposed expansion area at the north property boundary for three surface soil samples, three vadose zone soil samples, and three groundwater samples.
- two environmental boreholes and two groundwater monitoring wells at the north proposed expansion area at the east property boundary for two surface soil samples, two vadose zone soil samples, and two groundwater samples.

The following sampling methods were recommended to monitor impacts related to petroleum constituents, OReg 153/04 metals, and PCBs from the Solar Generating Facility:

- three environmental boreholes and three groundwater monitoring wells at the east proposed expansion area at the east property boundary for three surface soil samples, three vadose zone soil samples, and three groundwater samples.
- surface soil grab samples at excavations at the east and north proposed expansion areas

3.3 Ground and Surface Water

3.3.1 Source Water Protection

Ontario's Clean Water Act provides the mandate for a provincial drinking water source protection program in Ontario. Its focus is on the protection of water sources for municipal drinking water systems, with additional attention to surface water and groundwater sources on the broader landscape.

The Long Point Region Conservation Authority (LPRCA) updated the Long Point Region Source Protection Plan (SPP) in May 2020 and amended it in March 2022. The Long Point Region Assessment Report provides the technical basis for the SPP and was published in May 2020.

Intake protection zones (IPZ) were established for both the East Surface Water Intake Protection Zone and the West Surface Water Intake Protection Zone. These are illustrated in Figure 4 and Figure 5 (from Map 6-2 and 6-3 of the Assessment Report). A third IPZ was established for the Ontario Power Generation (OPG) facility's forebay. This is illustrated in Figure 6, from Map 6-4 of the LPRCA Assessment Report.

The 2006 ESR did not propose modification to the raw water intake as part of implementation of the preferred alternative. If no changes to the intake are proposed, no update is required to the Source Water Protection Plan.

Map 6-2: Nanticoke Water Treatment Plant East Surface Intake Protection Zone

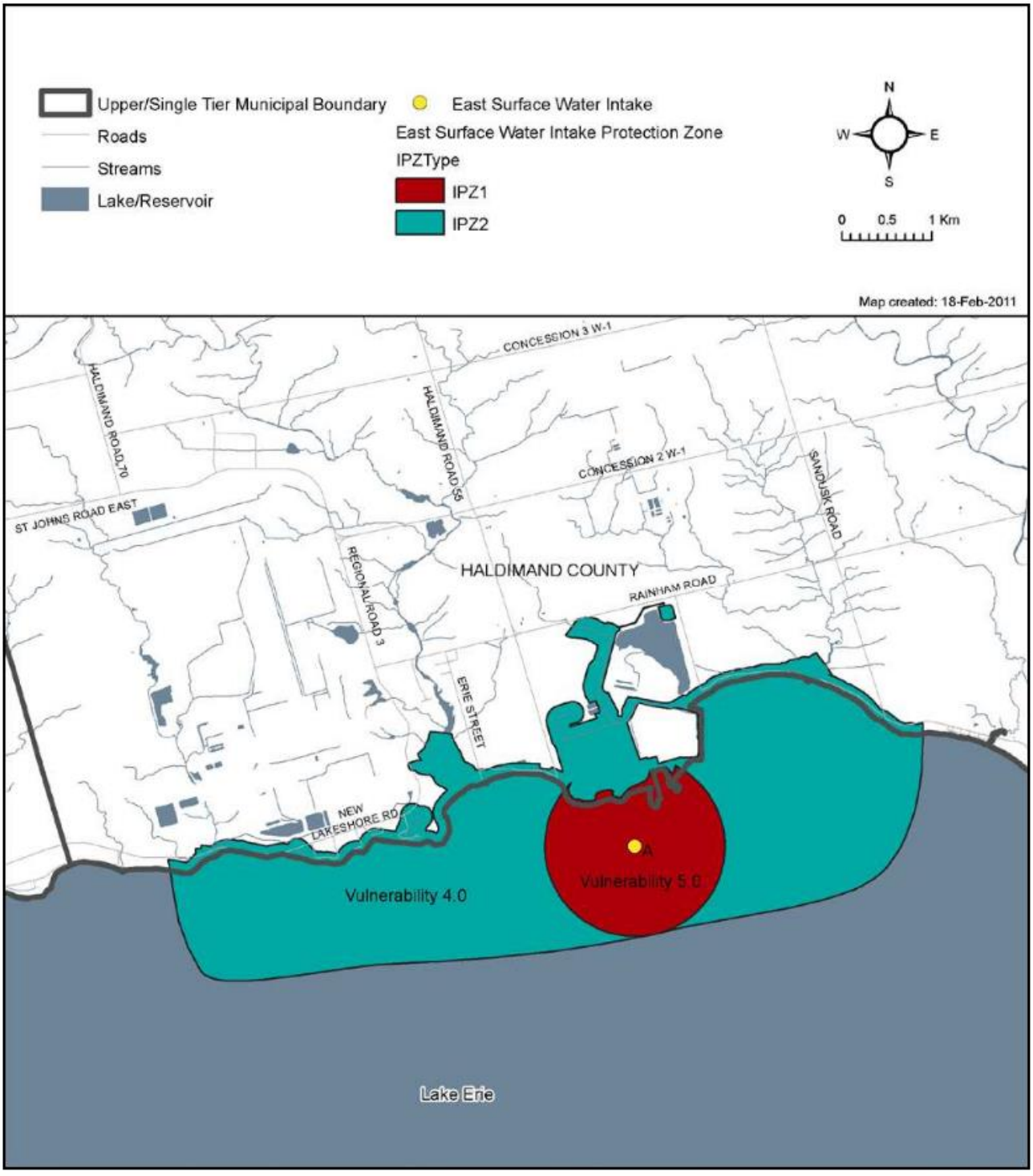

Figure 4 - Nanticoke WTP East Surface Intake Protection Zone

Map 6-3: Nanticoke Water Treatment Plant West Surface Intake Protection Zone

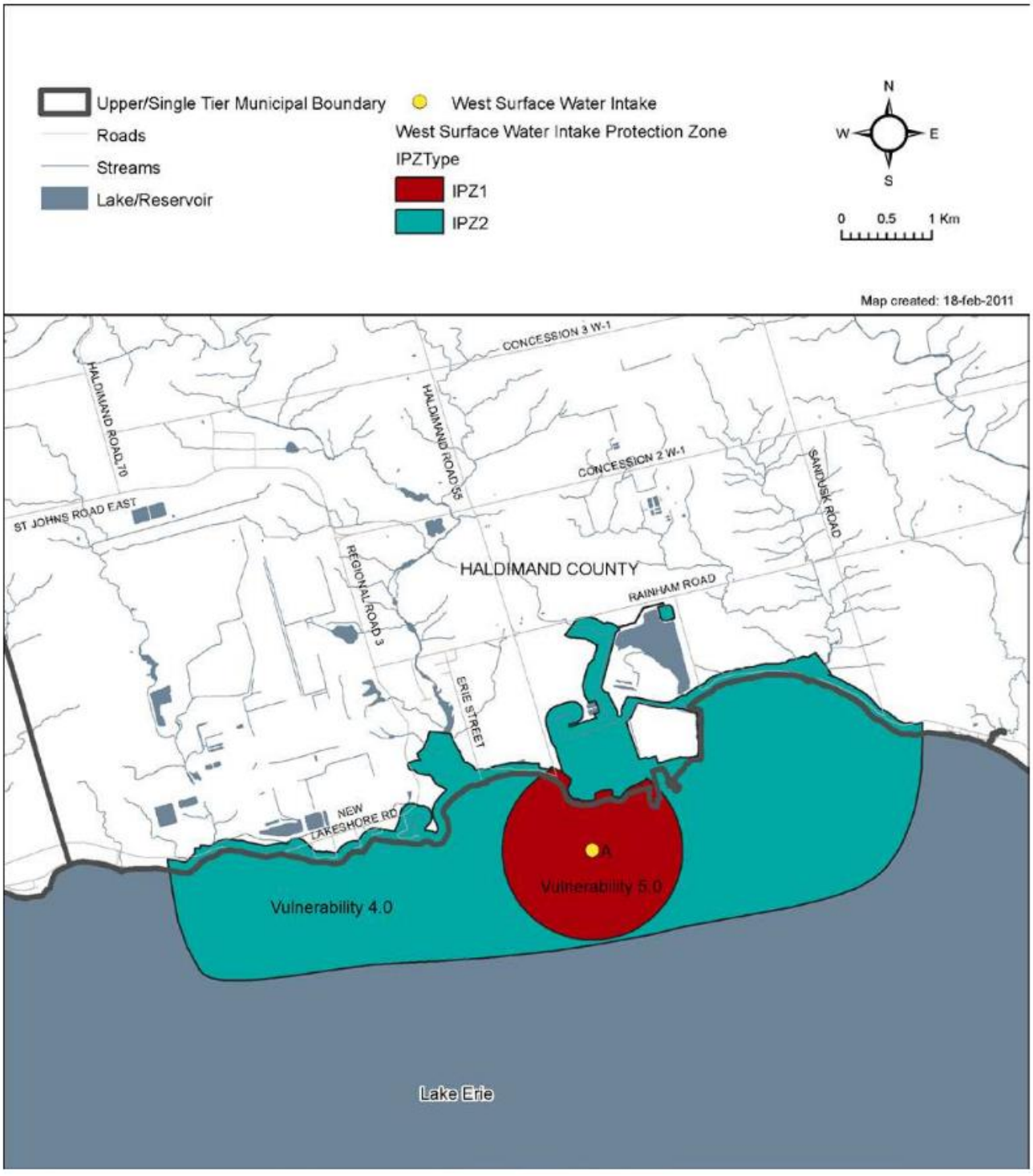

Figure 5 - Nanticoke WTP West Surface Intake Protection Zone

Map 6-4: Nanticoke Industrial Pumping Station Intake Protection Zone

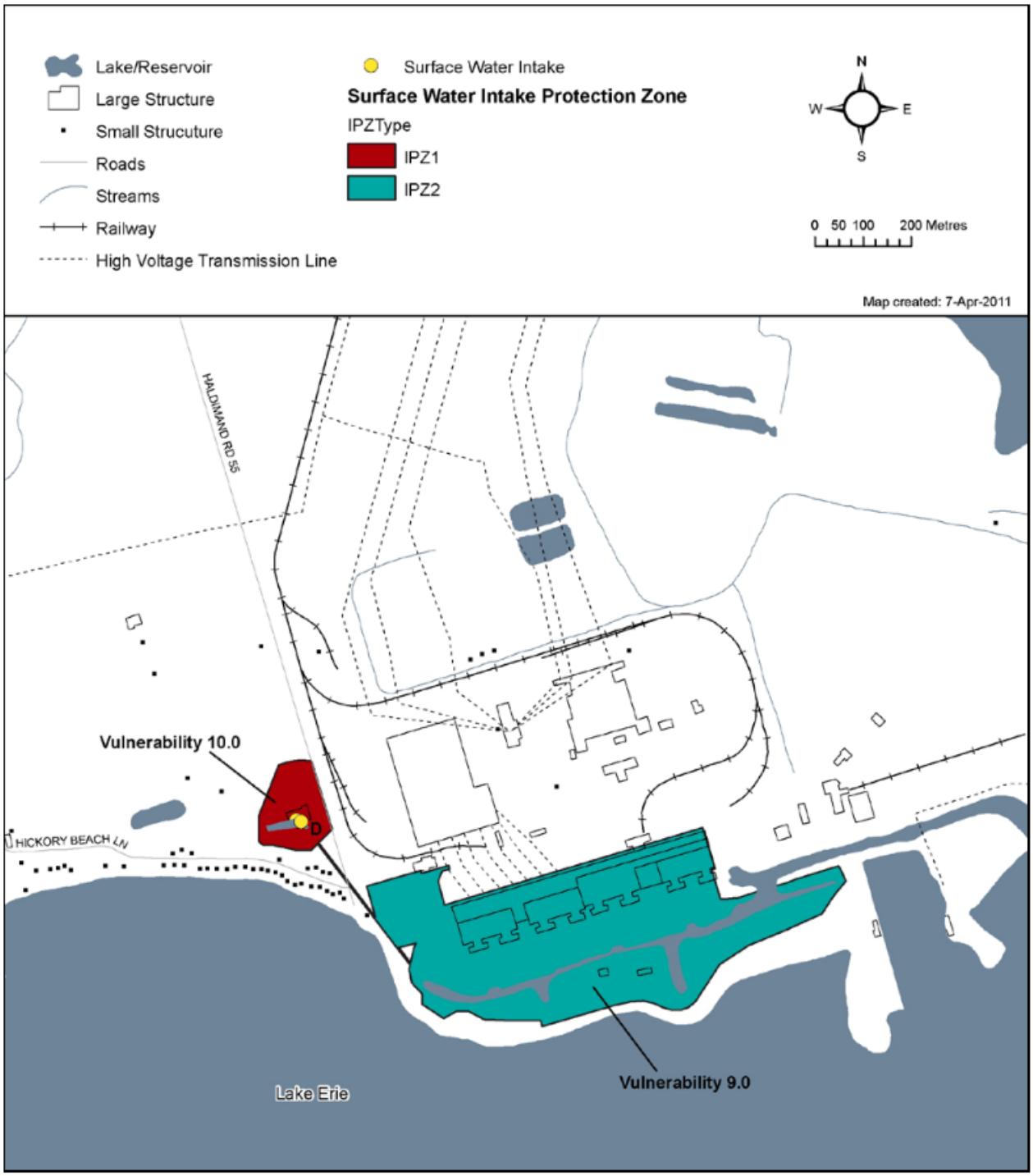

Figure 6 - Nanticoke Industrial Pumping Station Intake Protection Zone

3.3.2 Surface Water

At the time of the 2006 ESR, the Nanticoke WTP Permit to Take Water was 1,818,000,000 L/day. That permit expired on May 31, 2011. Permit No. 1723-8GSN66 was issued in May 2012 and expired on May 31, 2022.

It was replaced by Permit No. P-300-1216014316 issued on October 26, 2022. This permit authorizes up to 437,000,000 L/day of water to be taken from Lake Erie. It expires on October 25, 2032. The permit notes that any transfer of water outside of the Lake Erie Basin may require an amendment to the permit. A transfer of this kind may be subject to additional requirements under the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement, 2005, outlined in Article 201 (Exceptions to the Prohibition of Diversions).

Ontario Power Generation holds the adjacent Permit to Take Water No. 1705-9E8MD6. The permit expires on August 31, 2024. It authorizes the taking of up to 14,000,000,000 L/day from Lake Erie.

3.3.3 Groundwater

There are no groundwater permits to take water within the vicinity of the study area. A Permit to Take Water will be required from the MECP if dewatering exceeding 50,000 L/day takes place during construction. A geotechnical investigation will be required prior to construction.

3.4 Cultural Heritage

The original ESR completed in 2006 did not consider the existing cultural environment. A study was completed by Archaeological Research Associates Ltd (ARA) for this ESR Addendum.

ARA's Cultural Heritage Assessment Report is included in Appendix D. No heritage related concerns were identified in federal, provincial, and municipal consultations. A field survey was conducted by ARA in September 2022 and identified one potential Cultural Heritage Landscape (CHL) adjacent to the WTP site.

The cottages on Hickory Beach Lane, located south of the site, are physically linked to the lakefront and define the character of the area. The report determined the potential CHL would not experience direct or indirect impacts from the proposed development. No recommendations were made, however if the proposed location or design of the WTP as identified in the 2006 ESR are altered, an addendum would be required.

3.5 Archaeological Resources

The 2006 ESR did not consider the existing archaeological resources. Stage 1 Assessments were completed in 2010 and 2014 for other projects with overlapping study areas. A Stage 1 Archaeological Assessment was completed by Archaeological Research Associates Ltd (ARA) in September 2022 for this ESR Addendum and is included in Appendix E.

Twenty-four registered and two unregistered archaeological sites were identified within 0.3 to 1 km of the study area based on desktop analysis. The ARA survey identified several features of archaeological potential near the study area including three primary water sources, two secondary water sources, several historical roadways, and several historical structures such as houses.

The report also determined that the study area had some undisturbed areas with archaeological potential. These areas are pictured in Figure 7. ARA recommended these areas be subject to a Stage 2 property assessment.

Survey methods recommended include:

- The pedestrian survey method for former agricultural fields and other plough-accessible areas.
- The test pit survey method for grassed overgrown and treed areas.

Map 8: Potential Modelling and Recommendations
(Produced under licence using ArcGIS® software by Esri, © Esri)

Figure 7 - Areas of Archaeological Potential

4.0 Review of Design Basis

4.1 Raw Water Quality

The intake for the ITP extends 610 m into Lake Erie. Table 3 compares the raw water quality from the 1975 design assumptions and the 2006 preferred design to raw water data collected over a three-year period from 2019 to 2022.

Table 3 – Comparison of Original Design Assumptions and Current Raw Water Quality

Parameter	1975 Design Assumption[1]	2006 ESR Preferred Design	2019-22 Average Quality[1]	2019-22 Data Range[2]
Colour (TCU)	15[3]	5 – 25 (Peak 40)	1.5	**0 – 26**
Temperature (^oC)	1.6 – 23.8		11.6	**0.9 – 25.6**
Turbidity (NTU)	4 (values > 2000 were reported)[4]	5 to 50 (Peak 200)	2.37[5]	**0.1 – 24.5[5]**
Hardness (mg/L $CaCO_3$)	142			
Alkalinity (mg/L $CaCO_3$)	89 – 105		108.6	94 – 125.2
Phenols	> 2 µg/L[6]			
e. coli (cfu/100 mL)	N/A		10	0 – 330
Total Coliforms (cfu/100 mL)	N/A		187	0 – 3200
pH	N/A		7.98	5.99 – 8.41
DO (mg/L)	N/A		10.8	4.6 – 15.4
TOC (mg/L)	N/A		2.7	0.6 – 12.8

[1] As outlined in the 2006 ESR.
[2] From Haldimand County raw water data analysis
[3] Colour was reported in HCU a unit that is not currently reported, with no standard conversion to TCU.
[4] Turbidity was measured in JTU a unit that has not been used since 1998, no standard conversion to NTU is available.
[5] Reported data contained two instances of turbidity reported at 1052 and 1695 NTU, these were assumed to be transcription errors and removed from the analysis as they are 28 standard deviations from the mean and all other values fell within 0.5 standard deviations.
[6] Phenol concentrations due to algal blooms

The 1975 design assumption and 2006 preferred design align with the 2019-2022 raw water analysis. The average colour measured in the raw water between 2019 and 2022 was 1.5 TCU, which is below the treated water quality objective of the WTP (92% of the colour measurements were below the objective of 5 TCU). There was one incidence over the three years of sampling where the influent colour was measured above preferred design range (0-25 TCU). This maximum was measured at 26 TCU, which falls within the peak influent colour range of 40 TCU.

The turbidity was measured at lower values than the design parameters outlined in the 2006 ESR (except for two monitoring events that were deemed outliers – refer to Table 3 Note 5).

The alkalinity in the raw water has increased but is not expected to adversely affect the proposed treatment options. The 2006 ESR outlined a requirement to pilot test coagulants and polymers; this will still be required to ensure correct concentrations are maintained at the current alkalinity range.

Based on the raw water characterization from 2019 to 2022, the water remains within the preferred design parameters of the 2006 ESR and there is no need to revisit the design parameters of the WTP expansion.

4.2 Treated Water Quality

The 2006 ESR stated that the Nanticoke WTP had always met the Ontario Drinking Water Regulations (ODWR) and objectives for treated water turbidity of 1.0 NTU and Total Trihalomethane (TTHM) of 100 ug/l (0.1mg/l).

Table 4 compares the 2006 drinking water quality standards to the treatment objective recommendations in the 2006 ESR. It also compares the 2006 ESR recommendations with the current standards in the Procedure for Disinfection of Drinking Water in Ontario under Ontario Regulation 170/03 (Drinking Water Systems) and Ontario Regulation 168/03 (Ontario Drinking Water Quality Standards) that fall under the Safe Drinking Water Act, 2002. The 2006 ESR made the following recommendation:

"Although the Current 4 log virus, 3 log Giardia, 2 log crypto standard will probably be the "norm" for a few years, it would be prudent to consider water treatment processes that can deal with higher removals of pathogens as well as aesthetic parameters such as reduction of taste and odour compounds [manifested by geosim and 1,2,methoisoborneol (MIB)]."

This recommendation remains prudent considering the potential future impacts of climate change on the source water from Lake Erie.

As demonstrated in Table 4, the treatment objective recommendations from the 2006 ESR meet or exceed the current Ontario regulations and standards, therefore the recommendations outlined in the 2006 ESR remain valid.

Currently, the Municipal Drinking Water License (MDWL) requires a filtered water turbidity less than or equal to 0.3 NTU in 95% of the measurements each month for each filter in order to meet log removal/inactivation credit assignment criteria. The County targets a turbidity requirement of 0.1 NTU. During the design of the WTP, consideration could be given to this more stringent target.

Table 4 – Comparison of Treated Water Quality Recommendations and Standards

Parameter	Standard at time of 2006 ESR[1]	Recommendation in 2006 ESR	Ontario Regulation	2006 ESR Recommendation Adequate
Turbidity (NTU)	Filtered water <0.2 95% of the time never to exceed 1 NTU	Filtered water <0.15 95% of the time never to exceed 1 NTU[6]	Never to exceed 1 NTU[5]	Yes
Trihalomethanes	RAA[2]:0.100 mg/L	LRAA[3]:0.080 mg/L	RAA[2]:0.100 mg/L[4]	Yes
Haloacetic Acids	N/A	LRAA[3]: 0.060 mg/L	RAA[2]: 0.08 mg/L[4]	Yes
Giardia Cyst	3 log removal or inactivation	4 log removal or inactivation	3 log removal or inactivation[5]	Yes
Cryptosporidium Oocysts	N/A	3 log removal or inactivation	2 log removal or inactivation[5]	Yes
Viruses	4 log removal or inactivation	4 log removal or inactivation	4 log removal or inactivation[5]	Yes
True Colour (TCU)	< 5	< 5	5[4]	Yes
Aluminum (mg/L)	< 0.1	< 0.1	0.1[4]	Yes
Threshold Odour Number	< 3	< 3	Inoffensive[4]	Yes

[1] Outlined in 2006 ESR
[2] Running Annual Average
[3] Locational Running Annual Average
[4] O. Reg. 169/03: Ontario Drinking Water Quality Standards
[5] O. Reg. 170/03: Drinking Water Systems
[6] The County targets an effluent turbidity of 0.1 NTU 95% of the time.

4.3 Plant Capacity

Table 5 summarizes the conceptual WTP design flows from the 2006 ESR for two different serviced areas.

Table 5– 2006 ESR Conceptual Design Flows

Conceptual Design Basis	Existing Haldimand Service Area with Caledonia York & Cayuga & First Nations	Existing Haldimand Service Area with Caledonia, York & Cayuga, First Nations and LEIP
Rated Design Flow (m^3/d)	35,000	100,000
Initial Operating Flow Range (m^3/d)	25,000	50,000
Maximum Hydraulic Flow (m^3/d) [1.]	60 – 70,000	125 – 150,000

Table Notes

(1) In the 2006 ESR, the design philosophy included "oversize fixed hydraulic components to realize future saving if treatment efficiency is better than predicted or if treated water quality requirements are replaced". The maximum hydraulic capacity represents the potential size of these oversized hydraulic components.

The 2006 ESR identified the potential for servicing surrounding communities. The County is still considering servicing these communities and others. Consultation is ongoing with potential inter-municipal servicing stakeholders.

The total required rated design capacity of 100 MLD is unchanged from the 2006 ESR. Table 6 summarizes the anticipated treated water demands to 2041 as provided by the County in January 2023, therefore, there have been no design modifications made as part of this ESR Addendum process.

Table 6 – Anticipated demands on the Nanticoke WTP to 2041

Conceptual Design Basis	Existing Haldimand Service Area	Lake Erie Industrial Park and Nanticoke Community	Norfolk County(1)	Six Nations	Total (Rounded)
Rated Design Flow (m^3/d)	25,000	15,000	40,000	3,500	85,000
Initial Operating Flow (m^3/d)	15,000	5,000	10,000	1,500	35,000
Maximum Hydraulic Flow (m^3/d)(2)	30,000	16,500	45,000	4,000	100,000

Table Notes:

(1) In the summer of 2022, Haldimand County Council approved Staff Report WWE-01-2022 to proceed with finalizing a Water Supply Agreement with Norfolk County to supply water to Norfolk from the Nanticoke WTP in three phases.

(2) In the 2006 ESR, the design philosophy included "oversize fixed hydraulic components to realize future saving if treatment efficiency is better than predicted or if treated water quality requirements are replaced". The maximum hydraulic capacity represents the potential size of these oversized hydraulic components.

5.0 Climate Change

The original ESR completed in 2006 did not directly consider the impacts of climate change. The MECP has since published the *Considering Climate Change in the Environmental Assessment Process Guide* (2017) which sets out the Ministry's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes.

5.1 Climate Change Mitigation

Climate change mitigation refers to measures to reduce the project's expected production of greenhouse gas (GHG) emissions and impacts on carbon sinks. The project's GHG emissions can be categorized as operating carbon (emitted during the operation phase) and embodied carbon (emitted during the manufacturing and construction phase). A WTP's operating carbon consists of direct emissions from combustion of fossil fuels on site (e.g., gas for space heating) and indirect emissions from consuming energy that was generated from off-site combustion of fossil fuels (e.g., electricity generated from gas power plants).

Direct emissions can be mitigated by reducing the heating demand on site through increased insulation, demand-controlled heating, solar thermal pre-heat for ventilation and heat recovery ventilators. Direct emissions can be eliminated on site by fuel switching to electricity-based heating using heat pumps. Deep lake water maintains a relatively consistent temperature year-round, the incoming water to the plant provides a stable temperature source for a water source heat pump. Heat from the incoming water could potentially be extracted by the heat pumps in winter to provide space heating to the plant and heat from the building can be rejected to the incoming water in the summer to provide efficient space cooling.

Indirect emissions can be mitigated by reducing the electricity consumption on site through energy efficiency measures such as selecting premium efficiency motors for the High-Lift pumps, utilizing variable speed drives on the high-lift pumps, dynamic modelling of the distribution system to utilize unused storage capacity, and decreasing backwashing frequency. Optimizing operations by reducing high-lift pump operation during filter backwash cycles can also be considered to reduce the peak energy demand of the WTP. Indirect emissions can be further mitigated through the generation of zero GHG emission clean electricity on site. The boundary for the Nanticoke WTP is significantly larger than area set aside for the large area scheme WTP, this provides a significant area for a ground-mount solar photovoltaic system that could power a portion of the WTP.

As the operating carbon of a facility is reduced through energy efficiency measures, fuel switching and on-site renewable energy generation, the embodied carbon becomes the vast majority of a facility's lifetime GHG emissions and has a greater impact on climate change as it is entirely emitted before the facility is operational. Concrete and steel are the largest contributors to a building's embodied carbon content, and this is especially true for WTPs. Small adjustments in specifications for these materials can have major reduction in a WTP's embodied carbon. For example, steel manufactured by electric arc furnaces on a low emissions power grid can have 50% less embodied carbon than traditional basic oxygen furnaces. Similarly, the embodied carbon content of concrete can be reduced by up to 50% by different mixing methods, recycled aggregate, reduced cement levels, controlled particle size distribution, and using concrete as a finishing material.

Impacts on carbon sinks are landscape changes that affects the removal or storage of carbon dioxide from the atmosphere. For example, expansion of the WTP could alter the landscape's ability to store carbon or remove carbon dioxide from the atmosphere. Mitigation measures to reduce the impact of this project on carbon sinks include preserving green space during construction and maximizing tree planting after the major construction is complete.

Incorporating climate change mitigation measures into a new WTP can increase the upfront capital cost of a project but typically reduces the lifetime operating cost. Fortunately, there are funding programs that reduce the burden of this upfront costs. The Federation of Canadian Municipalities' Green Municipal Fund provides funding to support the new construction of energy-efficient facilities including WTPs. The program will provide up to $175,000 to cover 50% of the cost for feasibility studies, and up to $10,000,000 in low-interest loans with a grant worth up to 15% of the loan value. Environment and Climate Change Canada's Low Carbon Economy Challenge – Champion Stream provides up to $25,000,000 in funding to municipal governments to cover 40% of the costs for GHG reducing projects. The current application period for this program has closed but another call for applications is expected before 2025.

5.2 Climate Change Adaptation

Climate change adaptation refers to the resilience or vulnerability of the WTP to changing climatic conditions. Impacts of climate change on municipal water and wastewater projects include property-specific concerns such as flooding and system-wide impacts on water demand and electricity consumption.

From the Assessment of the Impacts of Climate Change on the Great Lakes (Environmental Law and Policy Centre, 2019): "*In 2011, Lake Erie experienced the largest harmful algal bloom in its recorded history, with peak intensity more than three times greater than any previously observed blooms*".

Other changes because of climate change include:

- Lower oxygen levels in Lake Erie
- Increased nutrient loads due to runoff.
- Increased algal blooms (in part due to increased runoff)
    - Can cause low DO in influent water.
    - Can cause clogging of intakes.
    - Can impact settling operation.
    - Can affect coagulant demand.
    - Can affect chlorine requirements.
    - Can affect drinking water taste and odour due to algal decay, or by-products of algal respiration.
    - Can increase disinfection bi-product potential (e.g., THMs)
- More extreme source water level fluctuations.
- Warmer surface water temperatures and increasing rates of evaporation.
- Severe rainstorm events creating a risk of forebay and intake flooding.

There are three main risks to the WTP due to climate change: occurrences of algal blooms, the depth of the water in Lake Erie, and concerns around overland flooding affecting the intake and

forebay area. The 2006 ESR recommended the inclusion of advanced oxidation processes that will address the odour and taste concerns associated with the algal blooms.

Algal blooms occurred in 2014 during upgrades to the ITP. The ITP's large reservoir was able to supply the distribution system, but the plant was unable to treat the water.

The intake currently has chlorine injection into the forebay for zebra mussel control. This system should be evaluated as an additional mitigating measure for algal blooms. The destruction of the blooms at the intake will not eliminate all treatment concerns but will limit the extent of intake screen and filter clogging. Increased circulation in the forebay may decrease the risk of blooms forming in the forebay.

The water level of Lake Erie is not controlled by upstream or downstream structures. There is potential for extreme changes in water depth due to climate change. According to the 2006 ESR, the intake is currently located 610 m into Lake Erie at a depth of approximately 40 feet (12.2 m). Historical water depths in Lake Erie, as outlined by the US Army Corps of Engineers, averaged 174.2 m with a 100-year minimum depth of approximately 173 m and maximum depth of 175 m. This 2 m average fluctuation in lake depth will not affect the intake due to its depth of over 12 m allowing for 11 m of water remaining over the intake at the lowest historical lake levels. Therefore, the intake will likely not be affected by fluctuations in the lake water levels.

A future source water protection study update should review land use changes (e.g., new outfalls) and water quality changes, which may affect the vulnerability scores that are applied to the IPZs. A further study could also be conducted to identify any specific risks associated with the potential for increased runoff and flooding at the forebay and pump station. The flood mitigation can be achieved through engineering controls added to the design of upgrades at both locations.

6.0 Summary of Environmental Effects and Proposed Mitigation Measures

In the 2006 ESR, it was recognized that construction and operation of the proposed works may have potential negative impacts on the environment. Mitigative measures were identified for short-term construction related impacts, noise and vibration, archeology, contamination of soils though spills and leaks, and sediment deposition. These mitigation measures have been reviewed, modified, and supplemented as necessary based on the findings of the ESR Addendum.

Table 7 – Impact and Mitigation

Potential Impact	Construction Mitigation
Short-term Construction Related Impacts	A mitigation plan to mitigate adverse impacts within the study area during construction activities will be developed.
Noise and Vibration Control	A mitigation plan to incorporate noise and vibration control measures to mitigate adverse impacts within the study area during construction activities will be developed.
Contamination of Soils Through Spills and Leaks	The Environmental Liability Screening report recommended a total of eight environmental boreholes and eight groundwater monitoring wells be installed to facilitate the taking of soil and water samples (HESL, 2023a). These samples will identify potential contamination from activities on adjacent sites.
Sediment Deposition	An erosion and sediment plan will be implemented during construction.
Vegetation	Surveys conducted by HESL did not identify any species of significance. The footprint of the long-term expansion covers most of the vegetation communities in the study area while the smaller, Haldimand only footprint covers only developed area and some meadow lands. A plan to manage the introduction of additional invasive vegetation species will be implemented during construction.
Wetlands	No provincially significant wetlands were identified in the study area (HESL, 2023b).
Wildlife, including Migratory Birds	Amphibious and avian species were identified in field surveys (HESL, 2023b). The Terrestrial and Aquatic Ecology Report recommended timing construction to minimize wildlife disturbance, installing exclusion fencing, minimizing lay down area, minimizing overnight light usage, and conducting routine wildlife inspections during construction.
Natural Heritage Features	No natural heritage constraints were identified in the study area (HESL, 2023b).
Fish and Aquatic Habitat	No aquatic constraints were identified in the study area (HESL, 2023b).

Potential Impact	Construction Mitigation
Groundwater Resource Management	The Nanticoke WTP PTTW was issued on October 26, 2022 and authorizes up to 437,000,000 L/day of water to be taken from Lake Erie. Any transfer of water outside of the Lake Erie Basin may require an amendment and subject to additional requirements under the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement. A Permit to Take Water will be required from the MECP if dewatering exceeding 50,000 L/day takes place during construction.
Species at Risk	Field surveys identified two avian species at risk and an area sensitive species (HESL, 2023b). Habitat suitable for eight species of risk were identified through a desktop study. An Information Gathering Form (IGF) is in progress. It will determine if an overall benefit permit is needed to proceed.
Cultural Heritage	The Cultural Heritage Assessment Report identified one potential Cultural Heritage Landscape and determined it would not be impacted by the proposed development. If the proposed location or design are altered, an addendum to the Assessment would be required
Archeological Resources	The Stage 1 Archeological Assessment determined the study area had some undisturbed areas with archaeological potential. These areas will be subject to a Stage 2 property assessment (ARA, 2022)
Indigenous Interests	Refer to stakeholder consultation in Section 7.
Source Water Protection/Sensitive Surface Water Features	A source water protection study will be conducted to identify risks for increased runoff and flooding due to the WTP expansion.
Climate Change – Greenhouse Gas (GHG) Emissions	Expanding the existing WTP instead of constructing a new facility to accommodate growth will produce less GHG emissions. Methods to reduce GHG emissions through reducing energy consumption and other methods will be explored in detail during the design process.
Climate Change – Resiliency	The impacts of climate change on the raw water taken by the WTP, including algal blooms, water depth, and flooding, will be explored in detail during the design process.

7.0 Consultation on the Proposed Changes

7.1 Notices and Public Stakeholder Consultation

A Notice of Study Commencement, provided in Appendix F, was prepared by the consulting team, and posted on the County's website starting on August 25, 2022. This ESR Addendum will be filed with the 2006 ESR on the public record, and a Notice of Filing of Addendum will be published to advise the public and review agencies.

A project mailing list was developed identifying review agency stakeholders. A copy of the final agency mailing list is provided in Appendix G.

Table 8 below provides a summary of public consultation and comments received regarding this Class EA. Refer to Appendix H for written correspondence received from the public.

Table 8 – Public Stakeholder Comments and Consultation

Stakeholder	Comment	Action
No public comments as of present date.		

7.2 Review Agency and Developer Consultation

Table 9 provides a summary of agency and developer comments received regarding this Class EA. Refer to Appendix H for a copy of the Agency and Developer written correspondence received.

Table 9 – Review Agency and Developer Comments and Consultation

Stakeholder	Comment	Action
Ministry of the Environment, Conservation, and Parks (MECP)		Submitted for Comment
Grand River Conservation Authority (GRCA) and Long Point Conservation Authority (LPCA)	Comments from consultation meeting held on February 3, 2023 • Change in travel time for IPZ-2 could trigger a change to the Source Water Protection Plan, but no change is anticipated. • GRCA is completing a Section 36 Plan update for Fall 2023 to satisfy new technical rules implemented under the Clean Water Act in 2021. • JLR to note coordination with other ongoing programs is needed to update source water protection threats.	Dillon prepared *Nanticoke Intake Protection Zones (IPZs): Evaluation of Changes to IPZs as a result of Water Treatment Plant Capacity Upgrades* memo (Appendix I) confirming flows will not alter the time of travel. Conservation Authorities reviewed the memo and acknowledged that based on this assessment, there will not be any changes to the IPZ-2 as part of the section 36 Long Point Region Source Protection Plan Update.

7.3 Consultation with HDI, MCFN, and SNGR

Table 10 provides a summary of comments from the Haudenosaunee Development Institute (HDI), the Mississaugas of the Credit First Nation (MCFN), and the Six Nations of the Grand River (SNGR) regarding this Class EA. Refer to Appendix H for a copy of written correspondence received from these groups. Refer to Appendix J for a memo detailing the impacts of the WTP project on Treaty Rights.

Table 10 –HDI, MCFN, and SNGR Comments and Consultation

Stakeholder	Comments	Actions
Haudenosaunee Development Institute (HDI)	Comments from consultation meeting held on October 19, 2022. • Desire for Haudenosaunee culture to be represented in new buildings and project information. • Desire for project to support prosperity of the Haudenosaunee people. Request to consider servicing needs of the needs of the Haudenosaunee people. • Concerns regarding the cumulative effects of development and potential impacts to traditional places for hunting and treaty rights in the study area.	Applications for consideration and engagement submitted by County to HDI on August 18, 2022. Comments by HDI during consultation will be included in analysis. A presentation with an overview of the Nanticoke WTP ESR Addendum findings was circulated via email to HDI on January 23, 2023, for comment. No comments were received.
Mississaugas of the Credit First Nation (MCFN)	Conclusions from consultation meeting held on October 27, 2022. • Proponent to discuss impacts on First Nation Rights with MCFN. • JLR will review changes to the preferred alternative and mitigation measures based on the new social, economic, and natural environment and convey these to MCFN. Conclusions from consultation meeting held on January 17, 2023. • MCFN to be notified during ESR Addendum 30-day filing period and when the Stage 2 Archaeological assessment is scheduled. • MCFN had no concerns about the MCEA Addendum findings.	*Archaeological Review Agreement* between MCFN and Haldimand County signed on July 22, 2022. JLR added Species at Risk to the evaluation criteria under Natural and Cultural Environment. MCFN reviewed the ARA Stage 1 Archeological report in November 2022 and had no concerns.

Stakeholder	Comments	Actions
Six Nations of The Grand River (SNGR)		*Six Nations of the Grand River Elected Council Archaeological Monitoring Agreement* signed by Haldimand County on July 20, 2022. A presentation with an overview of the Nanticoke WTP ESR Addendum was circulated via email to SNGR on November 17, 2022, for comment. A presentation with an overview of the Nanticoke WTP ESR Addendum findings was circulated via email to SNGR on January 23, 2023, for comment. No comments were received.

8.0 Limitations

This report has been prepared by J.L. Richards & Associates Limited for Haldimand County's exclusive use. Its discussions and conclusions are summary in nature and cannot properly be used, interpreted, or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope, and limitations. This report is based on information, drawings, data, or reports provided by the named client, its agents, and certain other suppliers or third parties, as applicable, and relies upon the accuracy and completeness of such information. Any inaccuracy or omissions in information provided, or changes to applications, designs, or materials may have a significant impact on the accuracy, reliability, findings, or conclusions of this report.

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Archaeological Research Associates Ltd. *Stage 1 Archaeological Assessment*, December 2022.

Archaeological Research Associates Ltd. *Cultural Heritage Assessment Report*, 2023.

Dillon Consulting Limited. *Nanticoke Intake Protection Zones (IPZs): Evaluation of Changes to IPZs as a result of Water Treatment Plant Capacity Upgrades*, 2023.

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Environmental Law and Policy Centre. *Assessment of the Impacts of Climate Change on the Great Lakes*, 2019.

Genivar Ontario Inc. *Nanticoke Grand Valley Area Water Supply Project Feasibility Study*, July 2009.

Hutchinson Environmental Sciences Ltd. *Environmental Liability Screening*, February 2023a.

Hutchinson Environmental Sciences Ltd. *Terrestrial and Aquatic Ecology Report,* February 2023b.

Long Point Region Conservation Authority. *Assessment Report,* May 2020.

Appendix A

2006 Nanticoke WTP
Schedule C ESR Report
(Earth Tech)

Available from Haldimand County by request.

Appendix B

2023 Terrestrial and Aquatic Ecology Report (Hutchinson Environmental Sciences Ltd.)

Appendix C

2023 Environmental Liability Screening (Hutchinson Environmental Sciences Ltd.)

Appendix D

2023 Cultural Heritage Assessment Report Nanticoke Water Treatment Plant (Archaeological Research Associates Ltd.)

Appendix E

2022 Stage 1 Archaeological Assessment (Archaeological Research Associates Ltd.)

Appendix F

Notice of Study
Commencement

Appendix G

Agency Mailing List

Appendix H

Stakeholder Correspondence

Appendix I

2023 Nanticoke Intake Protection Zones (IPZs): Evaluation of Changes to IPZs as a result of Water Treatment Plant Capacity Upgrades (Dillon Consulting Limited)

Appendix J

2023 Impact on Rights (A.L.L. Professional Services)

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