Thorold Cogen L.P. (TCLP)

Project Description and Environmental Screening for Thorold Generating Station Gas-Fired Turbine Upgrade Project (Final)

July 2023

Project Description and Environmental Screening

Thorold Generating Station Gas-Fired Turbine Upgrade Project (Final)

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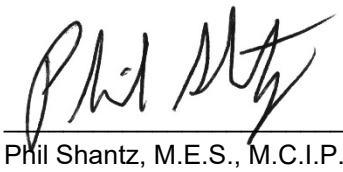

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This document is the Project Description and Environmental Screening for the proposed Thorold Generating Station (GS) Gas Fired Turbine Project (Proposed Project, the Undertaking). Thorold Cogen L.P. (TCLP) owns the facility, and it is operated and managed by Northland Power.

TCLP utilizes a General Electric (GE) gas turbine as its main combustion unit, and GE offers an upgrade package which allows the gas turbine to run more efficiently and increases its energy output. The gas turbine upgrade package involves exchanging many components (rotating vanes, burners and control software) within the engine package itself, but no other construction work is required at the site and no outdoor work is needed.

The assessment of the Proposed Project is being carried out to meet the requirements of the *Guide to Environmental Assessment Requirements for Electricity Projects* (MOE, 2011), under Ontario Regulation 116/01 (updated to 2021). The Proposed Undertaking is subject to the Environmental Screening as it is categorized Category B Project or "Significant Modification" because the facility's output will increase approximately 23 megawatts (MW), from a nominal 265 MW to 288 MW. Any natural gas-fired electrical generating facility increasing its output by more than 5 MW is subject to this Environmental Screening process. The existing facility is comprised of a nominal 165 MW gas turbine and a 100 MW steam turbine, which is not being altered by the Proposed Project. The existing facility was also previously subject to an Environmental Screening Process under Ontario Regulation 116/01 when it was first developed in 2006.

The Proposed Project has been reviewed according to the Screening Checklist. As the project only involves an upgrade of equipment, and no outdoor work is required there is no potential effect for the project on the majority of the components of the environment identified in the screening checklist. There are a few environmental components where a few mitigation measures are required and described.

TCLP has also reviewed the project to the Areas of Interest that were described in the Acknowledgement Letter from the Ministry of the Environment Conservation and Parks (MECP). In our opinion, the project is compatible with all the Areas of Interest identified.

A Notice of Commencement has been issued for the project and to date there have been no inquiries from Indigenous, public or government agency representatives.

Overall, the advantages of the Project include: an additional 23 MW of installed capacity to Ontario's grid system in response to a recent call by the province for more interim power; slight positive economic impact in the Niagara region and the upgraded engine will have slightly improved efficiency. There are no disadvantages to the project. An amendment to the current facility's Environmental Compliance Approval (ECA) for air and noise will be required following the completion of the Screening.

This Project Description and Environmental Screening has been reviewed by MECP. The only comment made by the MECP is to include the ECA number in the Report (which is Number 3700-BNFNU2).

1 General Information

1.1 General

1.1.1 Introduction

This document is the Project Description and Environmental Screening for the proposed Thorold Generating Station (GS) Gas Fired Turbine Project (Proposed Project, the Undertaking). Thorold Cogen L.P. (TCLP) owns the facility, and it is operated and managed by Northland Power.

The assessment of the Proposed Project is being carried out to meet the requirements of the *Guide to Environmental Assessment Requirements for Electricity Projects* (MOE, 2011), under Ontario Regulation 116/01 (updated to 2021). To our knowledge there is no more recent version of the Guide. The Proposed Undertaking is subject to the Environmental Screening as it is categorized Category B Project or "Significant Modification" because the facility's output will increase approximately 23 MW, from a nominal 265 MW to 288 MW. Any natural gas-fired electrical generating facility increasing its output by more than 5 MW is subject to this Environmental Screening process. The existing facility is comprised of a nominal 165 MW gas turbine and a 100 MW steam turbine, which is not being altered by the Proposed Project. The existing facility was also previously subject to an Environmental Screening Process under Ontario Regulation 116/01 when it was first developed in 2006.

This Proposed Undertaking has also received direction from the Ministry of the Environment Conservation and Parks (MECP) in the form of a response letter from the Ministry to the Notice of Commencement (Del Villar, 2023). That response letter has included the Areas of Interest as identified by the MECP.

> "The updated (August 2022) attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Environmental Screening Process. Please address all areas of interest in the Environmental Screening and Environmental Review at an appropriate level for the Environmental Screening Process. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. Further information is provided at the end of the Areas of Interest document relating to recent changes to the *Environmental Assessment Act* through Bill 197, *Covid-19 Economic Recovery Act* 2020." (p. 2)

Responses to those Areas of Interest are provided in Section 3 of this Report.

Currently and on a daily basis, TCLP responds to dispatch instructions it receives from the Independent Electricity System Operator (IESO), operating when directed to do so and selling its energy into the provincial electricity grid. The purpose of the Project is that the Independent Electricity System Operator (IESO) is looking to address forecast electricity supply shortages and the Proposed Undertaking is intended to help meet that need.

TCLP utilizes a General Electric (GE) gas turbine as its main combustion unit, and GE now offers an upgrade package which allows the gas turbine to run more efficiently and increases its energy output. The gas

turbine upgrade package involves exchanging many components (rotating vanes, burners and control software) within the engine package itself, but no other construction work is required at the site and no outdoor work is needed.

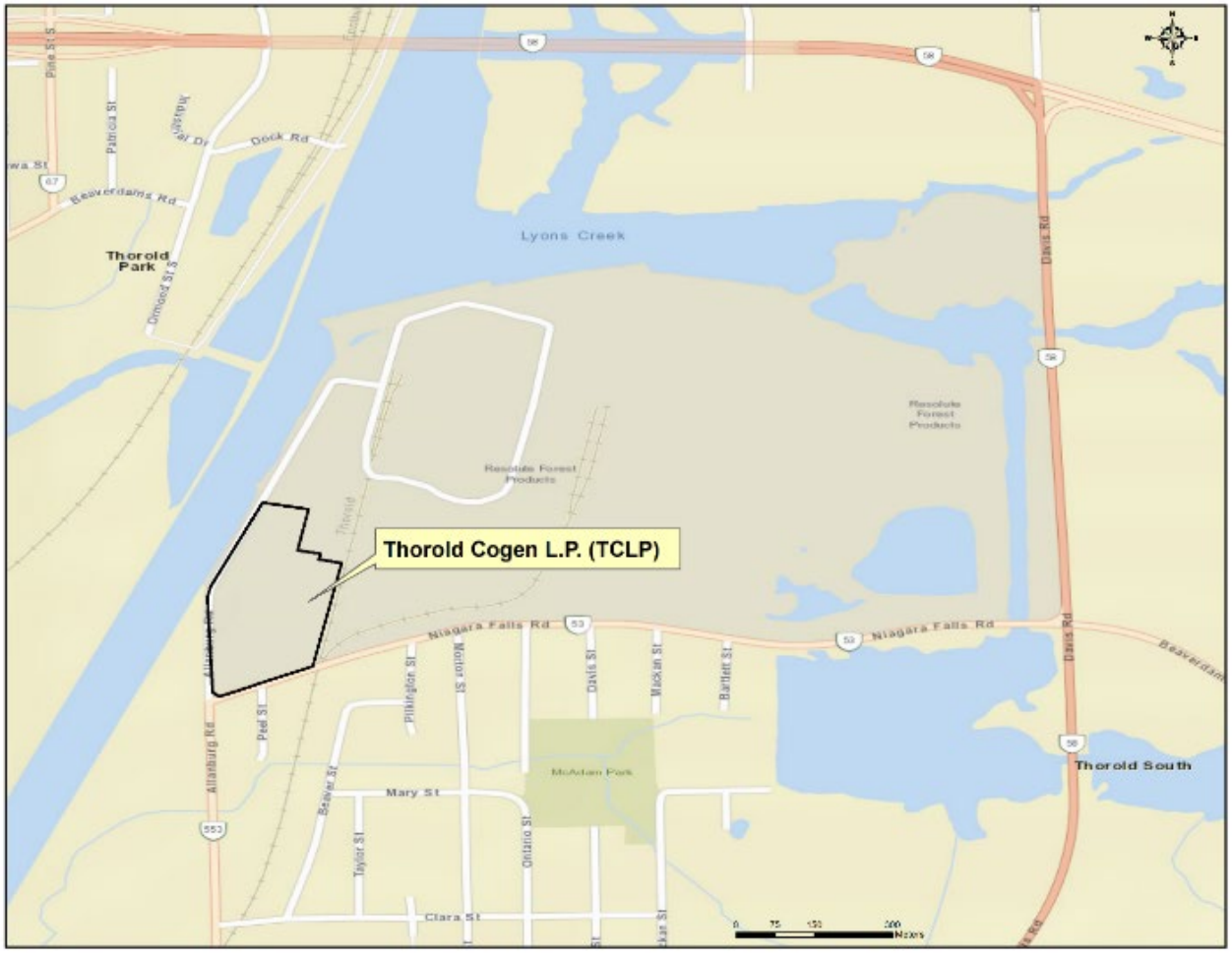
This Report provides a description of the existing facility, the Proposed Project, the requirements of the Guide and the Environmental Screening Process that is described in the Guide. General information on the Project setting and relevant background information on the Project.is also included.

Arcadis Canada Inc. has been retained by TCLP to assist with the Environmental Screening and other environmental approvals associated with the Project.

1.1.2 Location of the Project

Thorold GS is located within the boundary of the City of Thorold alongside the Welland Canal (see Figure 1-1).

Figure 1-1 Location of Thorold Cogen L.P.



1.1.3 Distribution

This document is being made available to identified Indigenous communities, government agencies, the general public that have indicated an interest and is also being made available on Northland Power's website to anyone who is interested.

A draft copy of this Project Description and Environmental Screening Report was sent directly to the MECP prior to the filing of the final report, allowing the Ministry's technical reviewers opportunity to provide comments. The only comment made by the MECP is to include the ECA number in the Report (which is Number 3700-BNFNU2). The Report has now been revised and it is being made it available on Northland Power's website for review by the public. E-mail notifications will go to the original list including:

- City of Thorold;
- Region of Niagara;
- Ministry of Natural Resources and Forestry, Guelph District, Vineland Work Centre;
- Niagara Peninsula Conservation Authority;
- St. Lawrence Seaway Management Corporation (Welland Canal);
- Mississaugas of the Credit;
- Six Nations (elected Council and the Haudenosaunee Confederacy Chiefs Council); and,
- Independent Electricity System Operator.

1.1.4 Reg. 116/01 and Guide for Electricity Projects

Northland Power and Arcadis had a preliminary consultation meeting with representatives of the MECP and deemed that the Project is subject to Section 4 of the Electricity Projects Ontario Regulation 116/01 (updated to 2021). Under that Regulation the MOE established *Guide to Environmental Assessment Requirements for Electricity Projects* (MOE, 2011).

According to the Guide and specifically **Chart 1: Electricity Project Classification**, any natural gas project greater than 5 MW is subject to a Category B Environmental Screening process. The Guide itself identifies how this project should be categorized (page 11):

> "Projects designated in section 4 of the Electricity Projects Regulation are subject to review under the Environmental Screening Process. These projects are referred to as Category B projects in this Guide. Changes and expansions to Category B project are also subject to the Environmental Screening Process. A change or expansion that is a "significant modification" as defined in the Regulation is subject to the full review process set out in the Environmental Screening Process. For most projects, a change or expansion that increases the capacity of a facility by equal to or greater than the threshold for that technology is defined as a "significant modification." For example, a 5 MW

> or greater increase in the capacity of a natural gas-fired generating station would require review under the Environmental Screening Process."

The Project itself is categorized as a "Significant Modification" because the facility's output will increase approximately 23 MW, from a nominal 265 MW to 288 MW. Any natural gas-fired electrical generating facility increasing its output by more than 5 MW is subject to this Environmental Screening process. The existing facility is comprised of a nominal 165 MW gas turbine and a 100 MW steam turbine, which is not being altered by the Proposed Project. The existing facility was also previously subject to an Environmental Screening, when being developed in 2006.

Part B of the Guide lays out the Environmental Screening Process. The Guide describes that process as follows:

> "Part B of the Guide consists of the Environmental Screening Process for electricity projects. As set out in the Electricity Projects Regulation, certain electricity projects are designated as subject to the *Environmental Assessment Act*, but are exempt on the condition that they fulfil the requirements of the Environmental Screening Process. The Environmental Screening Process contained in Part B of this Guide is referenced in the Electricity Projects Regulation and is given the force of law under the *Environmental Assessment Act* and that Regulation. Proponents relying on the screening exemption outlined in section 4 of the Electricity Projects Regulation are legally required to meet the requirements of the Environmental Screening Process."

The Guide indicates that the Environmental Screening Process is a proponent led process (page 17):

> "The Environmental Screening Process is a proponent driven, self-assessment process. The proponent is responsible for determining if the process applies to its project and for determining when to formally commence the process. Depending on the scale and nature of the project, proponents may wish to undertake preliminary consultation and issue scoping prior to formally commencing the screening process. The proponent also determines the time required to adequately conduct the screening process with sufficient agency and public consultation and when it is in a position to issue a Screening or Environmental Review Report for public and agency review."

The self-assessment nature of the process is explained further below (p. 18):

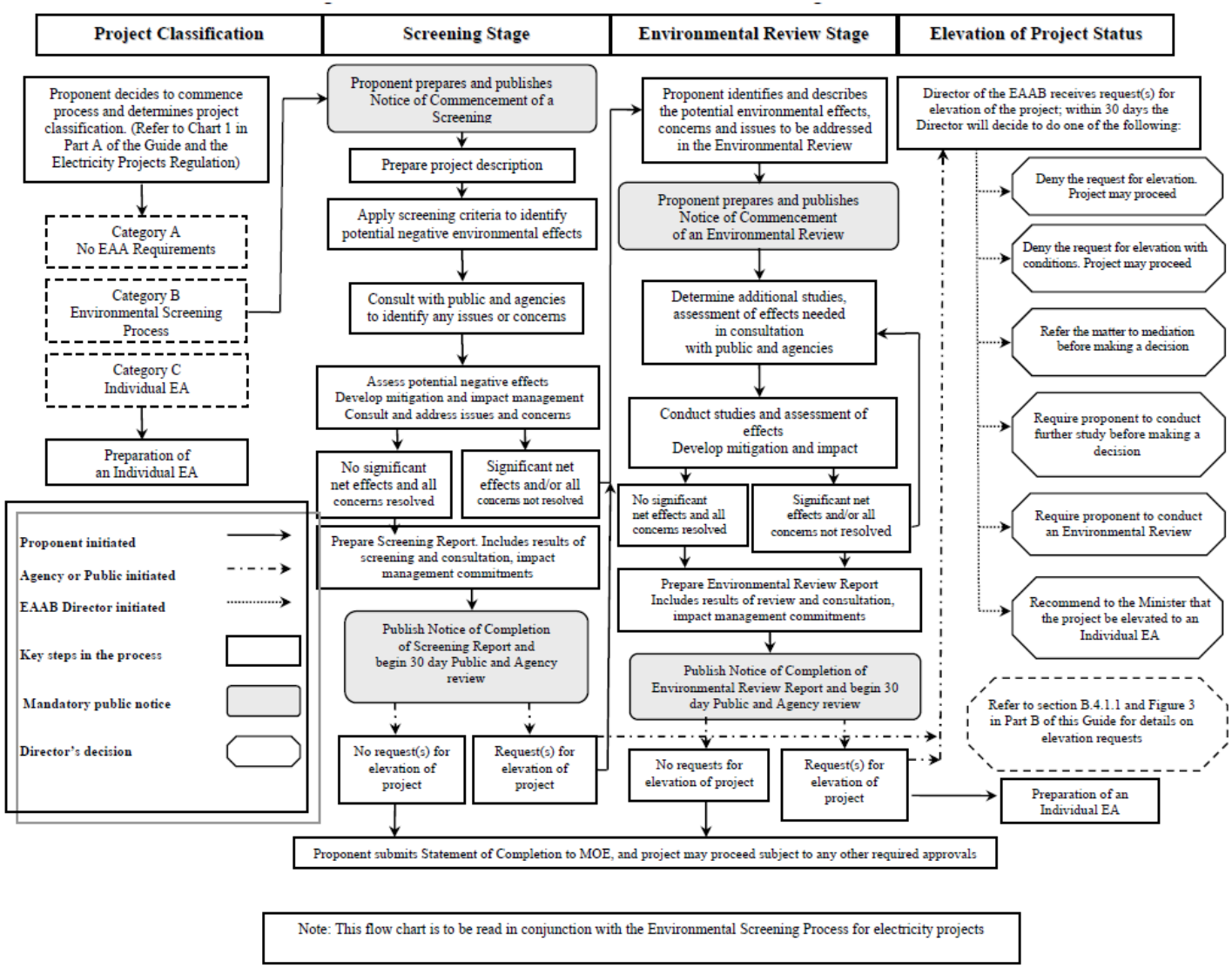
> "Because the Environmental Screening Process is a self-assessment process, reports that proponents prepare under the Environmental Screening Process are not approved by the MOE. However, where other approvals are required from the MOE or other issues generally dealt with by the MOE arise during the course of review under the Environmental Screening Process, the appropriate Regional Office of the MOE will be involved in the consultation process, just as any other affected agency would be. MOE, as an affected agency, may provide comments or advice to proponents to address the Ministry's concerns. MOE's review will be for the purposes of:
>
> - ensuring that proponents have adequately considered the Ministry's mandate based on the *Environmental Protection Act* and *Ontario Water Resources Act*; regulations under those acts; technical procedures and guidelines; and policy and program areas; and

- ensuring that the proponent meets the requirements of the Environmental Screening Process.

… If no elevation requests are received during the review period, the requirements of the Environmental Screening Process have been met. To complete the process, the proponent prepares a "Statement of Completion," retains a copy, and forwards a copy to the Director of the EAAB. Once the Statement of Completion has been filed, and subject to any other approval requirements, the proponent can proceed to construct the project, subject to any other required approvals. The project must be implemented in the manner described in the Screening Report or Environmental Review Report, and the proponent must fulfil any conditions that the Director or Minister apply in a decision not to elevate a project."

The following Figure is taken from page 21 of the Guide and illustrates the Environmental Screening Process.

Figure 1-2 Details of the Environmental Screening Process



1.1.4.1 Consultation Requirements under Reg. 116/01 and Guide for Electricity Projects

Public consultation requirements associated with the Environmental Screening Process are outlined on pages 22 – 23 of the Guide (bold is our emphasis):

"The applicant's public consultation program should:

- identify potentially affected stakeholders;
- describe how the project may affect the environment;
- provide appropriate notification to identified stakeholders as prescribed in the Environmental Screening Process;
- inform the public where, when and how they can be involved;
- identify public concerns and issues related to the project;
- address public concerns and issues raised during the program; and
- document how public input is taken into account in the screening process and in the project planning and development.

Public consultation should be commenced early in the screening process and continue throughout the process as necessary. The proponent is required to maintain a record and mailing list of all participants in the consultation process, a record of public concerns and issues, and a record of how any concerns and issues have been addressed during the Screening or Environmental Review stages.

While mandatory public notification requirements are specified in the Environmental Screening Process, other methods of public consultation used are at the discretion of the proponent. The proponent's public consultation program, including methods used to obtain public input and efforts to address or resolve public concerns and issues, may be considered by the Director of the EAAB in the event of a request to elevate the project."

The mandatory notification requirements are a Notice of Commencement at the beginning of the process and a Notice of Completion at the end of the process.

Agency consultation requirements are also clearly communicated (p. 23):

"It is the proponent's responsibility to identify and consult with the appropriate agencies. Relevant agencies must be provided with copies of the mandatory notices (see section A.6.2.4 below). For information purposes, a list of agencies that may have jurisdiction or an interest in the review and approval of electricity projects is provided in Appendix D."

Consultation with First Nations and other Aboriginal communities is also clearly communicated (p. 24):

> "In consulting on their projects, proponents should give particular consideration to the concerns of First Nations and other Aboriginal communities located in the vicinity of, or having a potential interest in, the project. First Nations and other Aboriginal communities are to be identified, notified, consulted, and involved in an appropriate manner. Proponents should identify First Nations and other Aboriginal interests that are relevant to the nature, location and effects of the Proposed Project. Effects on First Nations and other Aboriginal communities are included as one of the screening criteria in Appendix C."

In the 2023 direction to Arcadis and Northland Power from the MECP (Del Villiar, 2023) the following was noted about consultation:

> "The report must demonstrate how the consultation provisions of the Environmental Screening Process have been fulfilled, including documentation of all stakeholder consultation efforts undertaken during the planning process. This includes a discussion in the report that identifies concerns that were raised and describes how they have been addressed by the proponent throughout the planning process. The report should also include copies of comments submitted on the project by interested stakeholders, and the proponent's responses to these comments (as directed by the Guide to Environmental Assessment Requirements for Electricity Projects to include full documentation).
>
> Please include the full stakeholder distribution/consultation list in the documentation."

In general, the direction on public consultation provided in the 2023 letter is consistent or similar to the most recent version of the *Guide*.

1.2 Contacts

The TCLP contact is:

Jim Mulvale
Sr. Director, Environment
Northland Power Inc, as agent for
Thorold Cogen L.P.
30 St. Clair Ave. W, 12th Floor
Toronto, ON, M4V 3A1
E-mail: Jim.Mulvale@northlandpower.com
Cell: 416-662-1437

Arcadis Canada Inc. has been selected to be the environmental consultants for TCLP. The Project Manager for the Project is Phil Shantz.

Phil Shantz
National Discipline Leader – Environmental Assessment
121 Granton Drive, Suite 12
Richmond Hill, ON L4B 3N4
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1.3 Federal Involvement

A federal environmental assessment is not required for the Project.

1.4 Authorizations Required

1.4.1 Provincial Approvals and Permits

An amendment to the current facility's Environmental Compliance Approval (ECA) for air and noise will be required.

1.4.2 Federal Approvals and Permits

No federal approval or permit is required.

1.4.3 Other Approvals and Permits

No municipal permits or approval are anticipated.

2 Project Information

As previously indicated, TCLP utilizes a General Electric (GE) gas turbine as its main combustion unit, and GE offers an upgrade package which allows the gas turbine to run more efficiently and increases its energy output. The gas turbine upgrade package involves exchanging many components (rotating vanes, burners and control software) within the engine package itself, but no other construction work is required at the site and no outdoor work is needed.

2.1 Historical Development

The existing facility was constructed in 2007 and was also approved through the "Guide to Environmental Assessment Requirements for Electricity Projects" (March 2001). The Guide identified the proposed TCLP as being a Category B project.

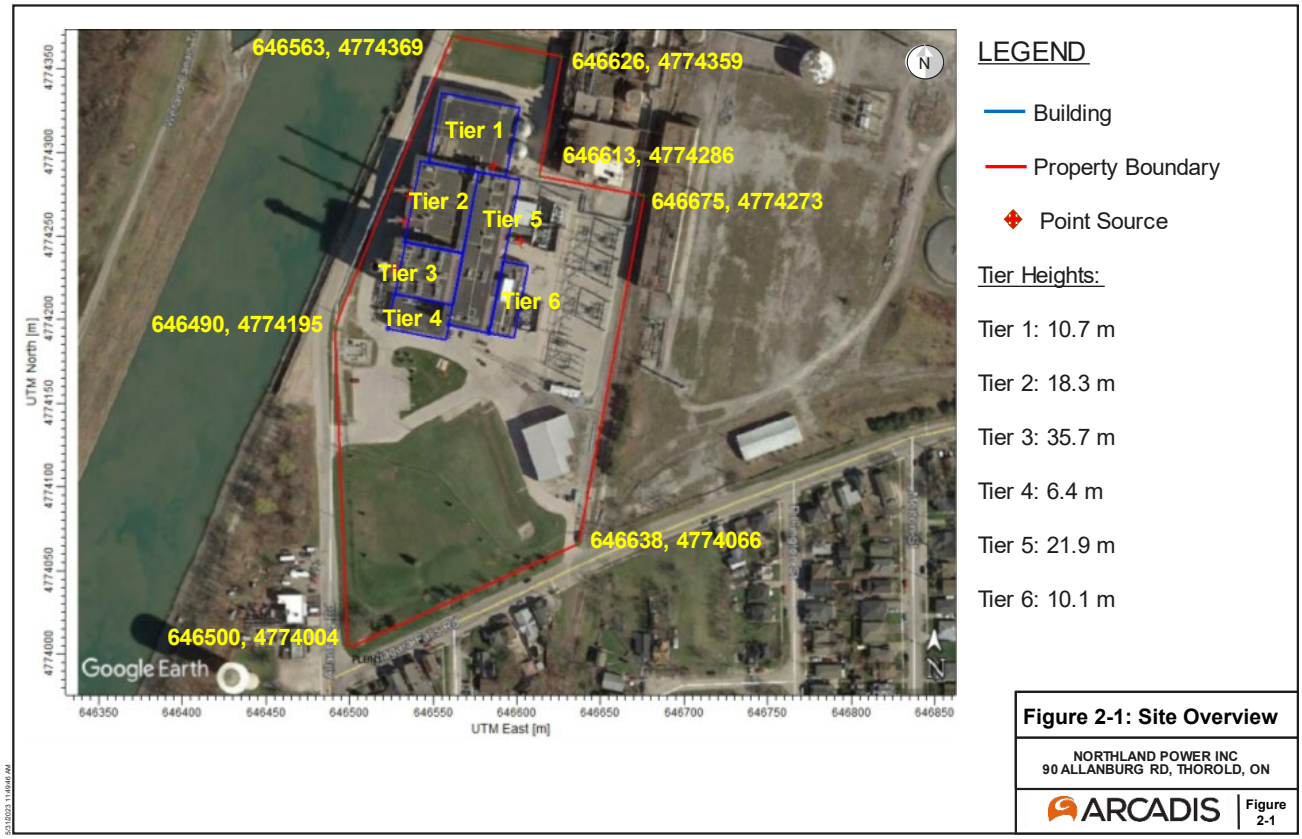
Based on the environmental assessment, it was concluded at that time that any potential negative effect of the proposed facility can be minimized or obviated by implementation of appropriate mitigative measures. Based on the implementation of the recommended mitigative and remedial measures, the construction and operation of the proposed facility was determined to have negligible, localized and/or short-tern effects.

Northland Power, together with participation from Resolute Forest Products Inc. (RFP) (formerly Abitibi-Consolidated Company of Canada), developed the Thorold GS, originally a combined heat and power (cogeneration) facility located at the RFP's Thorold paper mill site (Thorold Mill) in Thorold, Ontario. As originally configured, the Facility sold process steam and small amounts of electricity to the RFP Thorold Mill, with the main electricity supply sold to the provincial grid. Due to economic reasons, RFP has ceased operation of their Thorold Mill and is no longer receiving process steam and electricity for paper making. The Facility now works as an intermediate electricity supply plant (operating for longer durations than a peaking plant) and, depending on the province's electricity demand, may have daily start-ups.

2.2 Existing Station

The existing facility is a turbine-based, combined-cycle, generating station. The gas turbine generator (GTG) only uses natural gas. Figure 2-1 shows an air photo of the site at present.

Figure 2-1 Site Overview



The existing Facility configuration consists of a gas turbine based combined-cycle, plant comprised of the following:

- One (1) General Electric 7FA PG7241 DLN-2.6 gas turbine generator (GTG), nominally rated at 165 MW, using Dry Low NOx combustors.
- One (1) heat recovery steam generator (HRSG) to feed a steam turbine generator with duct firing capability (up to 100 MMBTU/hr), triple-pressure with reheat exhausting to the atmosphere through the GTG-HRSG stack having a diameter of 5.8 m and extending 60.9 m above grade.
- One (1) reheat/extraction/condensing steam turbine generator (STG), nominally rated at 95 MW.
- Two (2) 337.4 MMBTU/hr Auxiliary Boilers, with Low NOx burners (both boilers operate on natural gas (NG) exhausting to the atmosphere through each auxiliary boiler stack (AUXB-1 and AUXB-2) each having a diameter of 1.8 m and extending 60.9 m above grade).
- One (1) 1500 kW standby emergency diesel generator set (the unit is located at the site to provide power in case of an emergency and is tested weekly for ½ hour).

- One (1) Saturated steam Boiler nominally rated at 22.03 MMBTU/hr; and one (1) Superheater with a capacity of 2.11 MMBTU/hr, with both units exhausting through the same stack (B3).
- One (1) diesel storage tank, having a storage capacity of 11,360 L.
- Natural gas fired comfort heating equipment, having a maximum heat input capacity of about 7 GJ/hr.

As a consequence of the Thorold Mill closing, the existing Auxiliary Boilers are over-sized for the Facility's own utility steam needs and TCLP received approval to install a smaller boiler/superheated steam system (emission point B3) to better match the current needs. The smaller boiler/superheater system has not been installed at this time but has been proactively included in the Emission Summary and Dispersion Modelling (ESDM) evaluation. The Boiler and Superheater (B3) operate together to produce superheated steam for the Facility's use during periods of low electricity demand. With the proposed Gas Turbine Upgrade Project, the GTG designation becomes a GE 7FA AGP DLN2.6+ with Peak Firing Capability (AGP standing for advance gas path – the main internal engine upgrade).

The North American Industry Classification System (NAICS) code that applies to this Facility is "221112 – Fossil-Fuel Electric Power Generation".

2.3 Current Operation

Natural gas is combusted in the gas turbine (using low NOx combustors) which drives the 165 MW (if approved increasing by approximately 23 MW as part of the GTG Upgrade Project) nominal generator to produce electricity. The hot combustion exhaust gases from the gas turbine are used by a Heat Recovery Steam Generator (HRSG) to produce steam. The HRSG also has the capability of firing up to 100 MMBtu/hr of natural gas (NG) in its duct burners for supplemental steam production. The high-pressure steam from the HRSG is used in the 95 MW nominal STG to generate electricity.

As originally configured, the HRSG and the STG can supply intermediate pressure steam to the RFP Thorold Mill. If the HRSG and STG are not producing sufficient intermediate pressure steam for RFP's needs, the Auxiliary Boilers, with low NOx combustors, can produce up to 100% steam production using NG (approx. 337 MMBTU/hr). In addition, one of the Auxiliary Boilers (either AUXB-1 or AUXB-2) could burn up to 150 MMBTU/hr of Landfill Gas (LFG) instead of natural gas, however the LFG is no longer available.

With the ceased operation of RFP Thorold Mill, an integrated boiler/superheater (B3) system will be natural gas-fired and will provide smaller flows of intermediate steam which the Facility needs (such as sealing steam for the steam turbine and pulling vacuum in the condenser etc. for combined cycle start- up) for its own use and which cannot be economically supplied by the over-sized Auxiliary Boilers. Once the combined cycle is up and running, the auxiliary boiler is shutdown, as the combined cycle mode of operation is self-sufficient to provide the required steam from the HRSG circuit.

Heat being rejected from the steam turbine is cooled using once-through cooling water from the Welland Canal.

The Facility is able to operate in, and can transition between, basic modes:

1. Combined Cycle with Aux Boiler Mode: The GTG, HRSG, STG are operational. The new Boiler/Superheater (B3) system is not operational. Although unlikely to operate in this manner, this mode includes the operation of the auxiliary boilers. At this time the requirement to supply steam could be restored if the Thorold Mill were repurposed. The Independent Electricity System Operator (IESO) dictates how much electricity is to be produced and delivered to the provincial grid. Pending the approval of the Gas Turbine Upgrade Project, the IESO will be able to request an additional 23 MW of electrical output.
2. Backup Mode: The GTG, HRSG, STG are NOT operational. Process steam requirements are provided by the existing Auxiliary Boilers. The new Boiler/Superheater (B3) is not operational. This mode is highly unlikely but will be evaluated as long as the Aux Boilers may be called to operate.
3. Combined Cycle – Start-up Mode: The Facility will operate the GTG, HRSG and STG, if the provincial grid requires the Facility's electricity and dispatches the Facility to start-up. The Boiler/Superheater (B3) will operate at this time to provide utility steam (such as sealing steam, pulling vacuum in the condenser etc. for combined cycle start-up only) to the Facility, until the combined cycle operation starts to produce its own steam through the HRSG. For the ESDM evaluation, the Source B3 is included and the GTG emissions are estimated to at 50% load and a duration of ½ hour.

With the ceased operation of Thorold Mill, the Facility currently generates electricity in Combined Cycle mode. The IESO may dispatch the Facility multiple times a week, as such the Boiler/Superheater (B3) may operate to provide the necessary heat to keep the steam systems warm for a faster start-up once a dispatch order is received from the IESO. For design purposes, the GTG, HRSG and STG are capable of starting up and shutting down two to three times daily.

2.4 Proposed Upgrade

TCLP is proposing to increase the output of its GE 7FA gas turbine (GTG), by implementing an upgrade package offered by GE which allows the GTG to run more efficiently and increases its electrical output. The gas turbine upgrade package involves exchanging many components (rotating vanes, burners and control software) within the engine package itself, but no other construction work is required at the site and no outdoor work is needed. There are no proposed changes to the other approved Facility equipment as listed in the current ECA No. 3700-BNFNU2.

The Facility is located in a general industrial zone with urban residences located immediately south of the site. The original Certificate of Authorization (CofA) provided for the combustion of landfill gas in one of the existing auxiliary boilers, with a matching reduction in the use of natural gas. The landfill gas was supplied by a third-party, and this fuel is not available to the Facility any longer. As well, the Facility originally operated as a cogeneration plant, exporting steam to an adjacent paper mill. The paper mill is no longer in operation and the two auxiliary boilers that had provided back-up steam to the mill currently operate intermittently and only at very low load. It is anticipated that these will be shut down and laid-up when the permanent shutdown of the mill is confirmed in the steam sales agreement.

2.4.1 Modifications

The proposed Gas Turbine Upgrade Project requires the removal of numerous parts within the existing Gas Turbine casing and the re-installation of similar new parts, which have been manufactured to higher tolerances and/or with improved metallurgy allowing for increased efficiency and output from the Gas Turbine. External of the Gas Turbine casing, some small diameter natural gas piping will be relocated to allow increased fuel flow to the combustor section of the engine. New Gas Turbine controls software will be installed to manage the increased complexity of the combustion process.

GE refers to the changes as: Advanced Gas Path (AGP), Enhanced Compressor Package (ECP3), improved NOx control (DLN 2.6+), High-Output inlet vanes/compressor improvements (HO S0/R0 Upgrade) and with additional output ability (Peak Firing). Northland Power can provide additional technical information from GE as part of the Screening if it is required.

No changes to the Facility's physical footprint are required and there is no construction or other disturbances as part of this proposed Upgrade Project.

2.4.2 Operation

The Operations of the Facility will not change versus current. The Facility is manned 24/7, 365 days a year and follows the dispatch instructions issued by the electricity grid operator, the Independent Electricity System Operator (IESO). The IESO balances the production of electricity with the demand for electricity each day, by dispatching various electrical generators across the province. The usual dispatch duration may be in the order of many minutes (Peakers) or several hours (Intermediate plants) or for the full day (Baseload plant). The Facility is an Intermediate plant.

As the Facility's natural gas fuel is delivered by underground pipeline and the electricity production output is delivered on high voltage powerlines, the amount of visible activity on-site is minimal.

Once the Facility is dispatched by the IESO to run, the Gas Turbine is started, and it is slowly brought up to speed at timed increments (ramp-up rate). The objective is to get the Gas Turbine to about 60% fired rate quickly, where the combustion flames are fairly stable and low NOx levels can be achieved. Combustion heat from the gas turbine is used to heat the HRSG boiler at a controlled rate, to minimize expansion/ contraction damage and steam production commences. When the steam reaches superheated conditions (no water droplets present), then steam is directed to the steam turbine which drives its own electrical generator. At that point the Gas Turbine and Steam Turbine can be ramped-up to meet the IESO dispatch instructions. During the staged start-up, the Auxiliary Boiler will operate at very low load providing small amounts of steam needed during the start-up. The Auxiliary Boiler is shutdown once the HRSG is making sufficient steam.

2.4.3 Emergency Response

Emergency Response will remain the same as current and will not change as a result of the proposed Upgrade Project. The Facility's staff is trained to respond to anticipated emergencies, and they are able to isolate the natural gas supply and shutdown equipment as required. If the Facility's staff are unable to deal with an issue with our own resources, they will contact third party contractors or municipal agencies for assistance.

2.4.4 Schedule

The main outage to install the Upgraded Gas Turbine parts is tentatively scheduled for the month of November 2024. Part orders will be in place by August 2023, allowing a year for delivery of the longest lead time items. At the completion of the installation and modification work, there will be several days of start-up and commissioning tests to ensure the Gas Turbine is operating properly and meeting the efficiency and output expectations. The Gas Turbine will then be available for IESO dispatch instructions.

2.4.5 Permits and Approvals

An amendment to the facility's Environmental Compliance Approval (ECA) (Number 3700-BNFNU2) is also required.

3 Environmental Screening Report

3.1 Description of the Existing Environment

As previously indicated the Proposed Undertaking only involves an upgrade which allows the gas turbine to run more efficiently and increases its energy output. The gas turbine upgrade package involves exchanging many components (rotating vanes, burners and control software) within the engine package itself, but no other construction work is required at the site and no outdoor work is needed.

As such, the Proposed Project does not require any work out of doors and as such the only potential interaction with the natural environment will be with the atmospheric environment. As the Proposed Project will not interact with the aquatic or terrestrial environments only very limited descriptions are provided with respect to the existing environment.

3.1.1 Location

The existing facility is situated within the former newsprint mill property within the City of Thorold in the RM of Niagara (see Figure 1-1). The TCLP site is located approximately 2 km west of the City of Niagara Falls, 7.5 km north of the City of Welland, 7 km east of the Town of Pelham and 2.5 km south of the City of St. Catharines.

3.1.2 Air Quality

In accordance with the Ontario Environmental Protection Act (EPA) Section 9 requirements, the Facility operates under an Environmental Compliance Approval (ECA) – Air & Noise Permit (No. 3700-BNFNU2) complying with Ontario Regulation 419/05 (Air Pollution – Local Air Quality). From the perspective of air emissions, the existing Facility configuration consists of a gas turbine based combined-cycle, plant comprised of the following emitting sources:

- One (1) General Electric 7FA PG7241 DLN-2.6 gas turbine generator (GTG), nominally rated at 160 MW (160 MW nominally rated is used in this case because MECP assesses the MWs at one temperature; however, in other places of this Report, 165 MW is used because the IESO uses a different temperature/reference point for nominally rated), using Dry Low NOx combustors;
- One (1) heat recovery steam generator (HRSG) to feed a steam turbine generator with duct firing capability (up to 100 MMBTU/hr), triple-pressure with reheat exhausting to the atmosphere through the GTG-HRSG stack having a diameter of 5.8 m and extending 60.9 m above grade;
- One (1) reheat/extraction/condensing steam turbine generator (STG), nominally rated at 95 MW;
- Two (2) 337.4 MMBTU/hr Auxiliary Boilers, with Low NOx burners (both boilers operate on natural gas (NG) exhausting to the atmosphere through each auxiliary boiler stack (AUXB-1 and AUXB-2) each having a diameter of 1.8 m and extending 60.9 m above grade);
- One (1) 1500 kW standby emergency diesel generator set (the unit is located at the site to provide power in case of an emergency and is tested weekly for ½ hour);
- One (1) Saturated steam Boiler nominally rated at 22.03 MMBTU/hr; and one (1) Superheater with a capacity of 2.11 MMBTU/hr, with both units exhausting through the same stack (B3);

- One (1) diesel storage tank, having a storage capacity of 11,360 L; and,
- Natural gas fired comfort heating equipment, having a maximum heat input capacity of about 7 GJ/hr.

The emergency standby diesel generator meets the requirements for exemption under O.Reg.524/98. Emissions from natural gas-fired comfort heating equipment are considered negligible in accordance with s.8 of O.Reg. 419/05.

On the basis of these above-noted sources, the Facility is expected to emit products of combustion including Nitrogen Oxides (NOx), Sulphur Dioxide (SO_2) carbon monoxide (CO) and suspended particulate matter (SPM). Given the Facility is subject to s.20 of O.Reg.419/05, through the technical assessment using the U.S. EPA AERMOD model as ½-hour, 1-hour and 24-hour maximum point of impingement (POI) concentrations and compared, these contaminants were compared for compliance against the applicable limits listed in the Ministry document titled "Air Contaminants Benchmark (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations or air contaminants", dated April 2018 (ACB List). From the demonstration of assessment, the Facility is permitted and currently operating in compliance with O. Reg. 419/05.

3.1.3 Geology, Physiography and Soils

The Niagara Peninsula is underlain by Palaeozoic Basin sediments of the Western St. Lawrence Platform, part of a sequence of carbonate and clastic sediments, which covers most of southern Ontario. The bedrock in the majority of the Niagara Peninsula is of Silurian age. The Upper Silurian Salina Formation, which underlies most of the southern half of the Niagara Peninsula (Freeman, 1978), consists of dolostone, shaly dolostone to dolomitic shale and shale horizons with a total thickness of about 200 m (Johnson *et al.*, 1992).

The Niagara Peninsula is situated in the St. Lawrence Lowlands Physiographic Region (Bostock, 1971). This is an area that has been modified by Quaternary glaciation, which deposited a mantle of fairly deep sediments over most of the bedrock surface. The landscape is generally level to undulating, since the sedimentary bedrock is fairly flat-lying with a gentle dip. However, local topography varies, influenced mainly by Quaternary deposit thickness and type, as well as landform type. Ice-contact sediments deposited directly from glaciers during advance and retreat include various types of tills, and landforms such as drumlins, moraines and kames. Additionally, considerable amounts of meltwater from glaciers deposited outwash glaciofluvial and glaciolacustrine sediments. These are composed of silts, gravels and clays. Both types of deposits are widespread in the study area. A second type of surficial deposit, post-glacial Holocene sediments, are in the form of organic and peat deposits in low-lying wetlands throughout the study area and minor alluvium deposited by rivers and sediments from wind deposition (Chapman and Putnam, 1984a).

The Niagara Escarpment, located to the north and west of the proposed TCLP site, is a simple topographic break separating the two levels of the Niagara Peninsula. In general, the base is followed by the 105-m contour while the top of the cliff reaches the 190-m level.

The local study area is situated above the Niagara Escarpment, in a physiographic region known as the Haldimand Clay Plain (Chapman and Putnam, 1984a,b). Although this area was submerged by glacial Lake Warren, the till is not all buried by stratified clay. As a result, this physiographic region consists of a series

of glaciolacustrine clay belts interrupted by till moraines which create local ridges roughly parallel to the Niagara Escarpment.

At the property, overburden to bedrock is approximately 9- to 15-m thick (Jagger Hims Limited, 2004). The property itself is comprised of fill material consisting mainly of reworked silty granular fill, mixed with a variety of materials such as decomposed wood, brick, concrete and slag, overlies the native clay soils (Jagger Hims Limited, 2004). The fill material ranges in thickness from 1.2 to 2.4 m.

3.1.4 Vegetation and Environmentally Significant Areas

The study area is located within the Niagara Forest Section of the Deciduous Forest Region (Rowe, 1972). The forest communities of the Niagara Forest Section are dominated by broad-leaved trees.

With the exception of the Twelve Mile Creek area (Short Hills Provincial Park and St. Johns Valley) located about 7 km west of the proposed TCLP site, the regional area is intensively cropped or is developed.

The existing site has been highly developed over the last century and the existing facility is within the lands that were formerly part of the paper mill.

There is one provincially significant wetland (PSW) within the 2-km radius local study area: the Lake Gibson, Moodie Lake, Welland Canal PSW. This 62.6-ha wetland complex consists of more than 100 individual wetlands (Chipman and Yarosh, 1985). The nearest wetland is located approximately 200 m west of the proposed TCLP site on the opposite side of the Welland Canal. The complex consists of two wetland types (3% swamp and 97% marsh).

3.1.5 Aquatic Environment

The Niagara River is located about 11 km east of the proposed TCLP site joins Lake Erie to Lake Ontario across the Niagara cuesta.

The Welland River, located about 7 km south of the proposed TCLP site, drains part of the back slope of the Niagara cuesta east of Hamilton.

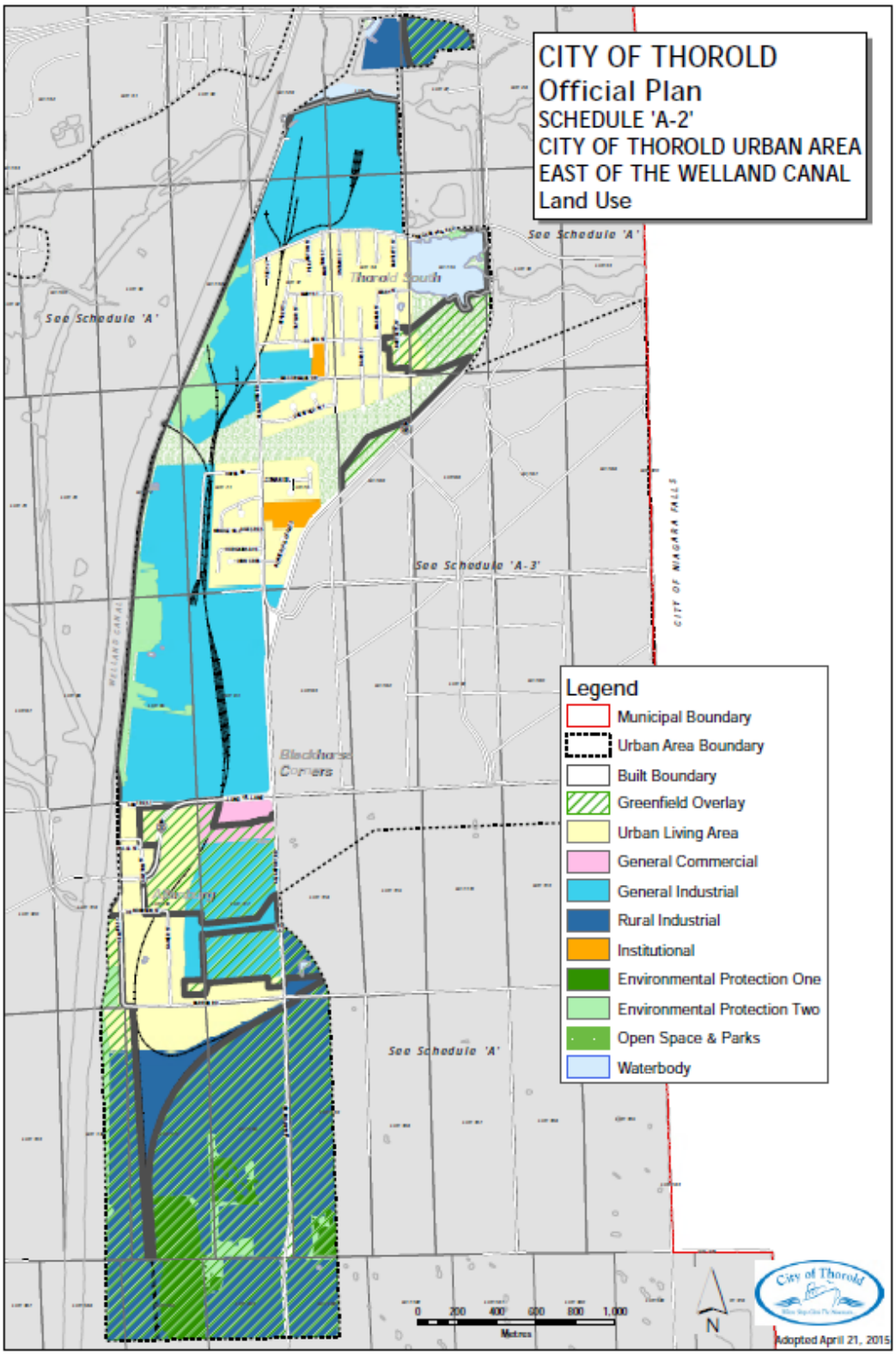
The Queenston-Chippawa Power Canal, located about 7 km east of the proposed TCLP site, diverts water from both the Niagara River and Welland River. The entrance to this canal is located on the Welland River about 6 km west of the natural outlet of the Welland River at Chippawa. The Power Canal supplies the Sir Adam Beck GS and the hydro reservoir south of Queenston.

The proposed TCLP site is located adjacent to the 43.5-km long Welland Canal, extending from Port Weller on Lake Ontario to Port Colborne on Lake Erie. This navigational canal overcomes a height difference of 99.4 m between the two lakes and bypasses the Niagara River and the Falls.

3.1.6 Land Uses

According to the Official Plan the lands are currently designated as General Industrial (see Figure 3-1 below). According to the Zoning By-law the lands are identified as M2 – General Industrial According to the Zoning By-law the lands are identified as M2 – General Industrial.

Figure 3-1 Official Plan



3.1.7 Indigenous Peoples

The MECP has identified two First Nations with potentially having an interest in the proposed undertaking. The two First Nations are: Mississaugas of the Credit and the Six Nations of the Grand River.

3.1.7.1 Mississaugas of the Credit

The Mississaugas of the Credit are located near Brantford and Hagersville Ontario on the Reserve that is officially identified as 40A. The registered population as of April 2023 was identified as 2,769 of which close to 1,000 live on the Reserve. There is a Chief and seven elected Councillors (CIRNAC, 2023).

Information on the Mississaugas of the Credit was available on the First Nations website (About – Mississaugas of the Credit First Nation (mncfn.ca).

The origin of the Mississaugas of the Credit is described as follows:

> "The Mississaugas of the Credit First Nation is part of the Ojibwe (Anishinaabe) Nation, one of the largest Aboriginal Nations in North America. George Copway, an Ojibwe Missionary, and Methodist Minister, notes that "those now called the Messasaugans, settled in Canada west, after the years 1634 and 1635."
>
> A word in the Anishinaabemowin language translates:
>
> "Missisakis" into "many river mouths." By the mid-nineteenth century, the Mississaugas believed they had obtained their name from the mouths of the Trent, Moira, Shannon, Napanee, Kingston, and Gananoque rivers. The term New Credit was in reference to the relocation of the Credit River Mississaugas in 1847. The Mississaugas traded goods with "English fur traders [who] would extend credit to the Mississaugas." The word "new" was dropped from the reference to the community by official council motion in December 2018.
>
> The Mississaugas earned a reputation as a trustworthy people who, when extended credit, would always pay back the fur traders the following spring.
>
> The term First Nation is derived from the fact that the Mississaugas are Indigenous (First) people of this continent and are a separate Nation which should be dealt with on a government-to-government basis."

The traditional territory of the Mississaugas of the Credit is described as the following:

> "The Mississauga of the Credit were the original owners of the territory embraced in the following description, namely commencing at Long Point on Lake Erie thence eastward along the shore of the Lake to the Niagara River. Then down the River to Lake Ontario, then northward along the shore of the Lake to the River Rouge east of Toronto, then up that river to the dividing ridges to the head waters of the River Thames, then southward to Long Point, the place of the beginning."

Most of Niagara Region including Thorold, along with Hamilton-Wentworth, Brant, Haldimand, Norfolk, Waterloo, Wellington and Oxford counties were covered by the Between the Lakes Treaty No. 3 of 1792 (Mississaugas of the Credit First Nation (mncfn.ca).

3.1.7.2 Six Nations of the Grand River

The Six Nations of the Grand River has a Reserve located near Brantford Ontario. The elected Council of the Six Nations of the Grand River includes a Chief and eight Councillors. Further information on the Six Nations of the Grand River was available on their website. A summary of the Haldimand Treaty of 1784 is described below:

> "The Six Nations of the Grand River are part of the Iroquois Confederacy that dates back hundreds of years. They lived by hunting, fishing and trading in extensive tracts of land throughout parts of Canada and the United States. During the American War of Independence, members of the Six Nations sided with the British Crown and fought as Allies alongside Great Britain. Due to their alliance with the British and the loss of their lands in the United States, Sir Frederick Haldimand, Captain General and Governor in Chief of the Provinces of Quebec and Territories, issued the Haldimand Treaty to Six Nations. The Haldimand Treaty unequivocally promised that a tract of land six miles deep on each side of the Grand River from the rivers' mouth to its source was to be enjoyed by Six Nations and their posterity forever."

A summary of the Six Nations of the Grand River today is provided below:

> "The Haldimand Treaty Lands consisted of approximately 950,000 acres, or 385,000 hectares. Since 1784, more than 900,000 acres of land have been lost. Today, Six Nations of the Grand River lands comprise of less than 5% of what was originally granted. Since 1974, Six Nations of the Grand River have researched of the loss of 95% of the land granted by the Haldimand Treaty. This archival research involves investigating the breaches of the Crown's Fiduciary Obligation to manage Six Nations' lands and resources in the best interest of Six Nations. Since 1980, there have been 29 land claims filed with the Office of Native Claims under the Specific Claims Policy, with one settlement reached. This is by no means is a complete list of lands rights issues for Six Nations; there many other potential claims that required additional research." (Six Nations of the Grand River, 2023).

The Haudenosaunee Confederacy is described on their own website as (Who We Are - Haudenosaunee Confederacy):

> "Called the Iroquois Confederacy by the French, and the League of Five Nations by the English, the confederacy is properly called the Haudenosaunee Confederacy meaning People of the long house. The confederacy was founded by the prophet known as the Peacemaker with the help of Aionwatha, more commonly known as Hiawatha. The exact date of the joining of the nations is unknown and said to be time immemorial making it one of the first and longest lasting participatory democracies in the world.
>
> The confederacy, made up of the Mohawks, Oneidas, Onondagas, Cayugas, and Senecas was intended as a way to unite the nations and create a peaceful means of decision making. Through the confederacy, each of the nations of the Haudenosaunee are united by a common goal to live

> in harmony. Each nation maintains its own council with Chiefs chosen by the Clan Mother and deals with its own internal affairs but allows the Grand Council to deal with issues affecting the nations within the confederacy.
>
> The Haudenosaunee symbol of the long house, provided by the Peacemaker, is recognized in traditional geographic locations. Upon confederation each nation took on a role within the metaphorical longhouse with the Onondaga being the Keepers of the Fire. The Mohawk, Seneca and Onondaga acted as the Elder Brothers of the confederacy while the Cayuga and Oneida were the Younger Brothers within Grand Council. The main meeting place was and still exists today on Onondaga territory.
>
> Often described as the oldest, participatory democracy on Earth, the Haudenosaunee Confederacy's constitution is believed to be a model for the American Constitution. What makes it stand out as unique to other systems around the world is its blending of law and values. For the Haudenosaunee, law, society and nature are equal partners and each plays an important role."

The Confederacy is represented by the Haudenosaunne Development Institute (HDI) with respect to land matters (Haudenosaunee Development Institute - Haudenosaunee Confederacy):

> "The Haudenosaunee Confederacy Chiefs Council ('HCCC') has legislated the Haudenosaunee Development Institute ('HDI') to represent HCCC interests in the development of lands within areas of Haudenosaunee jurisdiction, including but not limited to the land prescribed by the Haldimand Proclamation and the 1701 Treaty Area."

3.2 Screening Checklist

The screening criteria below are to be applied to every project being reviewed under the Environmental Screening Process. The proponent must provide responses to each of the following questions, based on current knowledge or preliminary investigations, by placing a checkmark in the appropriate box. If the proponent is uncertain of the response to a question, it is the proponent's responsibility to conduct further studies or consultation to accurately answer the question. This screening must focus on the potential for negative environmental effects resulting from the project (see glossary for a description of negative environmental effects). For the purpose of completing this checklist, mitigation or impact management measures are not to be considered. They are considered at the subsequent step when determining net effects.

Each criterion is based on a question which is prefaced with the phrase: **Will the project…**

If a response to a question indicates "Yes," there is potential for negative environmental effects, the proponent must provide additional information and analysis in the Screening Report to describe those effects, identify mitigation or impact management measures to prevent or reduce the effects, and assess the significance of any remaining net effects.

Table 3-1 Screening Checklist

Criterion	Yes	No	Additional information
1. Surface and Ground Water			
1.1 have negative effects on surface water quality, quantities or flow?		X	The Proposed Project does not involve outdoor work and therefore will not interact with the surface water quality, quantities or flow.
1.2 have negative effects on ground water quality, quantity or movement?		X	The existing and Proposed facility does not utilize any groundwater. The proposed upgrade is indoor work and involves no soil excavations.
1.3 cause significant sedimentation, soil erosion or shoreline or riverbank erosion on or off site?		X	The proposed undertaking does not involve any outdoor construction work and therefore would not result in any sedimentation, soil erosion or shoreline or riverbank erosion on or off-site.
1.4 cause potential negative effects on surface or ground water from accidental spills or releases to the environment?		X	The proposed undertaking does not involve any outdoor construction work and therefore would not result in any outdoor spills or releases to the environment. The proposed undertaking involves the upgrade of the facility's gas turbine upgrade package which involves exchanging many components (rotating vanes, burners and control software) within the engine package itself but does not involve using any chemicals or lubricants in the installation process.
2. Land			
2.1 have negative effects on residential, commercial or institutional land uses within 500 metres of the site?		X	No. The proposed undertaking does not alter the current use of the land and/or facility and therefore there are no negative effects on residential, commercial or institutional land uses.
2.2 be inconsistent with the Provincial Policy Statement, provincial land use or resource management plans?		X	No. The proposed undertaking does not change the land use intent (Official Plan and Zoning) of the current parcel of land and does not result in any new negative effects beyond the site that would be inconsistent with provincial land use or resource management plans.
2.3 be inconsistent with municipal land use policies, plans and zoning by- laws?		X	No. The proposed undertaking does not change the land use intent (Official Plan and Zoning) of the current parcel of land.
2.4 use hazard lands or unstable lands subject to erosion?		X	No. The proposed undertaking does not involve any outdoor construction and therefore does not use any hazard or unstable lands for the project.
2.5 have potential negative effects related to the remediation of contaminated land ?		X	No. The proposed undertaking does not involve any outdoor construction or excavation and therefore there are no potential effects related to remediation of contaminated lands.

Criterion	Yes	No	Additional information
3. Air and Noise			
3.1 have negative effects on air quality due to emissions of nitrogen dioxide, sulphur dioxide, suspended particulates, or other pollutants?		X	While the project will use more fuel, the upgraded facility and associated equipment will be more efficient and therefore the expected emissions of pollutants will be slightly lower. The facility will remain in compliance with the Ontario Regulation 419-05. An ESDM Report will be submitted to the MECP to demonstrate compliance following the completion of this Screening process.
3.2 cause negative effects from the emission of greenhouse gases (CO_2, methane)?		X	The project is also expected to have lower greenhouse gas emissions, because the upgraded equipment is more efficient. Please see further discussion in Section 3.3.3 below.
3.3 cause negative effects from the emission of dust or odour?		X	No odour is expected with the project. As previously indicated the upgrade project will be done inside the facility and the equipment is intended to be installed very cleanly. A few deliveries are required for project but the incremental effect with respect to dust would be negligible.
3.4 cause negative effects from the emission of noise?		X	For noise, incremental noise is not measurable as per General Electric specifications.
4. Natural Environment			
4.1 cause negative effects on rare, threatened or endangered species of flora or fauna or their habitat?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on any rare, threatened or endangered species of flora or fauna or their habitat.
4.2 cause negative effects on protected natural areas such as areas of natural and scientific interest (ANSIs, (environmentally significant areas) ESAs or other significant natural areas?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on ANSIs, ESAs or other significant natural areas.
4.3 cause negative effects on wetlands?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on wetlands.
4.4 have negative effects on wildlife habitat, populations, corridors or movement?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on wildlife habitat, populations, corridors or movement.
4.5 have negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g., water		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on fish or their habitat, spawning, movement or environmental conditions (e.g., water temperature, turbidity, etc.).

Criterion	Yes	No	Additional information
temperature, turbidity, etc.)?			
4.6 have negative effects on migratory birds, including effects on their habitat or staging areas?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on migratory birds, including effects on their habitat or staging areas.
4.7 have negative effects on locally important or valued ecosystems or vegetation?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on locally important or valued ecosystems or vegetation.
5. Resources			
5.1 result in inefficient (below 40%) use of a non-renewable resource (efficiency is defined as the ratio of output energy to input energy, where output energy includes electricity produced plus useful heat captured)?		X	No. The combined-cycle design (use of a gas turbine and heat recovery steam driven turbine) of the existing facility is above 40% efficient and the Proposed Project will further increase the efficiency of the operations.
5.2 have negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands.
5.3 have negative effects on existing agricultural production?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on existing agricultural production.
5.4 have negative effects on the availability of mineral, aggregate or petroleum resources?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on mineral, aggregate or petroleum resources.
5.5 have negative effects on the availability of forest resources?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on forest resources.
5.6 have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas?		X	No. The proposed undertaking does not involve any outside work and therefore there will be no effect on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas.
6. Socio-economic			
6.1 have negative effects on neighbourhood or community character?		X	No. The proposed undertaking does not change the nature of the facility nor its permitted land use. The upgrade will occur inside the existing facility and therefore there will be no negative effects on local neighbourhoods or community character.

Criterion	Yes	No	Additional information
6.2 have negative effects on local businesses, institutions or public facilities?		X	No. The proposed undertaking will not have any negative effect on local businesses, institutions or public facilities. The equipment for the upgrade will be transported to the site and then installed indoors. The project may have a slight positive economic effect in the local economy.
6.3 have negative effects on recreation, cottaging or tourism?		X	No. The proposed undertaking will not have any negative effects on recreation, cottaging or tourism as the upgrade of the facility will occur indoors and the operation of the facility will be no different than present.
6.4 have negative effects related to increases in the demands on community services and infrastructure?		X	No. The proposed undertaking will not have any negative effect related to increases in the demands on community services and infrastructure as the upgrade of the facility will occur indoors and the operation of the facility will be no different than present.
6.5 have negative effects on the economic base of a municipality or community?		X	No. The proposed undertaking will not have any negative effects on the economic base of the municipality as the upgrade of the facility or community as there would be no negative effects on other economic uses.
6.6 have negative effects on local employment and labour supply?		X	No. The proposed undertaking will not have any negative effects on local employment and labour supply. The project is a relatively small upgrade where work will be undertaken by GE, Northland Power and a few select suppliers. It will have a minor positive regional economic impact.
6.7 have negative effects related to traffic?		X	No. The proposed undertaking will involve a small amount of equipment that can be brought in with a few truckloads and small number of dedicated workers. The traffic impact will be negligible.
6.8 cause public concerns related to public health and safety?		X	No. The proposed upgrade merely continues the same use of the existing facility with slightly higher efficiency. The proposed upgrade occurs over a short period of time and therefore there would be no public health or safety concerns.
7. Heritage and Culture			
7.1 have negative effects on heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes?		X	No. The proposed upgrade does not alter any heritage buildings, sites or structures. As no outside work is involved it does not have any negative effect on archaeological resources or cultural heritage landscapes.
7.2 have negative effects on scenic or aesthetically pleasing landscapes or views?		X	No. The proposed upgrade is all work inside of the existing structure.

Criterion	Yes	No	Additional information
8. Aboriginal			
8.1 cause negative effects on First Nations or other Aboriginal communities?		X	No. The proposed upgrade will not have any negative effect on First Nations or Aboriginal communities. The proposed upgrade is all to occur within the existing facility. No outside work is proposed on any lands where Indigenous traditional use would occur. Therefore no negative effects would occur on traditional use activities.
9. Other			
9.1 result in the creation of waste materials requiring disposal?	X		Yes. A small amount of waste will be generated during the upgrade process. Northland Power plans to segregate the waste for recycling. Most of the waste will be high value, scrap metal engine components (proprietary technology) recycled in conjunction with GE. A very small amount of residual sanitary (non-hazardous) waste would likely be generated by the upgrade and would be deposited in the facility's existing collection bins.
9.2 cause any other negative environmental effects not covered by the criteria outlined above?		X	No. TCLP is not aware of any other potential negative effects.

3.3 Areas of Interest

The MECP provided to Northland Power and Arcadis a letter regarding, Thorold Cogen L.P. Proposed Natural Gas-Fired Turbine Upgrade Project Electricity Projects Regulation, O. Reg. 116/01 - Significant Modification Acknowledgement of Notice of Commencement, dated April 27, 2023 (Del Villar, 2023). That letter indicated the following:

> "The updated (August 2022) attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Environmental Screening Process. Please address all areas of interest in the Environmental Screening and Environmental Review at an appropriate level for the Environmental Screening Process. Proponents who address all the applicable areas of interest can minimize potential delays to the project schedule. Further information is provided at the end of the Areas of Interest document relating to recent changes to the *Environmental Assessment Act* through Bill 197, *Covid-19 Economic Recovery Act* 2020." (p. 2)

While the Areas of Interest generally overlap with the Screening Checklist they are more detailed. In order to be comprehensive, TCLP and Arcadis have responded to these Areas of Interest as described in the sub sections below.

3.3.1 Planning and Policy

This Area of Interest requires proponents to note that applicable plans and policies should be identified in the report, and the proponent should describe how the Proposed Project adheres to the relevant policies in the identified policies and plans.

It should be noted that the project is not located within the regulated areas of several of the plans mentioned in the Areas of Interest section, specifically: Oak Ridges Moraine Conservation Plan, Lake Simcoe Protection Plan, nor Growth Plan for Northern Ontario.

While the current facility is located in relatively close proximity to the Niagara Escarpment, the subject lands are not located within the regulated area of the Niagara Escarpment Plan. The subject lands are also in close proximity to the Greenbelt but is situated in a Settlement Area Outside of the Greenbelt.

The subject lands fall within areas where consideration is required of the Provincial Policy Statement (PPS) and A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020).

The PPS contains specific language that supports energy generation facilities within communities. Section 1.6.11 indicates:

> "Planning authorities should provide opportunities for the development of energy supply including electricity generation facilities and transmission and distribution systems, district energy, and renewable energy systems and alternative energy systems, to accommodate current and projected needs."

The Region of Niagara is located within the Greater Golden Horseshoe and the area is therefore covered in, A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020). This Plan focuses on growth in the Greater Golden Horseshoe area, specifically:

> "A Place to Grow is the Ontario government's initiative to plan for growth and development in a way that supports economic prosperity, protects the environment, and helps communities achieve a high quality of life. The *Places to Grow Act*, 2005 enables the development of regional growth plans that guide government investments and land use planning policies." (p. 3)

Energy generation facilities are not specifically discussed in the A Place to Grow: Growth Plan for the Greater Golden Horseshoe Area.

As previously indicated, the Proposed Project only requires an upgrading to the already existing facility and as such only indoor work is required. There is no proposed change to the existing land use and zoning for the property. Therefore, Northland Power and Arcadis contend that the existing use of the site is consistent with both the PPS and the Growth Plan for the Greater Horseshoe. A discussion on the existing land uses for the subject lands can be found in section 3.1.6.

Northland Power and Arcadis are not aware of any specific federal policy interests applicable to this undertaking but would note that the subject lands are adjacent to the Welland Canal which is part of the

Great Lakes St. Lawrence Seaway System. The St. Lawrence Seaway Management Corporation (SLSMC) is a not-for-profit corporation responsible for the safe and efficient movement of marine traffic through the Canadian Seaway facilities, which consists of 13 of the 15 locks between Montreal and Lake Erie, including the Welland Canal. TCLP has an on-going relationship with the SLSMC, as TCLP leases land along the canal for intake and discharge structures and possesses a license allowing water taking from the canal. TCLP and Northland Power are not aware of any other interests.

3.3.2 Source Water Protection

Source water protection is defined as one Area of Interest. Source water protection involves the protection of sources of drinking water. This is defined as the following in the Areas of Interest document (Del Villar, 2023):

> "The *Clean Water Act*, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas have been delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs) and surface water Intake Protection Zones (IPZs). Other vulnerable areas that have been delineated under the CWA include Highly Vulnerable Aquifers (HVAs), Significant Groundwater Recharge Areas (SGRAs), Event-based modelling areas (EBAs), and Issues Contributing Areas (ICAs). Source protection plans have been developed that include policies to address existing and future risks to sources of municipal drinking water within these vulnerable areas."

As previously indicated, the Proposed Project only requires an upgrading to the already existing facility and as such only indoor work is required as such the project poses no risk to drinking water supplies.

3.3.3 Climate Change

Climate change is defined as another Area of Interest. Two specific aspects of climate change require consideration in the environmental assessment process in Ontario and specifically in the assessment of alternative solutions and designs. These are:

- the Project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
- resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).

The Government of Ontario realizes that the upcoming planned maintenance overhauls and permanent shutdowns of various nuclear reactors in the province will result in a prolonged shortfall of electricity on the grid. The shortfall threatens grid stability and will restrict the planned transition to the "electric economy", converting transportation and many other sectors to electricity. The Minister of Energy has instructed the IESO to procure adequate supplies of electricity from renewable and non-renewable sources to alleviate the

shortages. The Proposed Project is expected to have lower greenhouse gas emissions intensity following the upgrade, because the upgraded equipment is more efficient.

The project will not have any negative effects on carbon sinks.

With respect to the resilience or vulnerability of the undertaking to changing climatic conditions, the Proposed Project is already an existing facility and as such does not result in any change to the purposes of the facility. The proposed upgrade will add some new components to the facility and as such may slightly enhance the existing resilience of the facility. Moreover, this facility similar to other natural gas electricity generating facilities provide electricity on demand when other facilities such as wind, solar or hydro may not be able to produce for environmental factors. As such, the facility slightly increases the overall resilience of the province's electricity grid and any infrastructure relying on electricity (i.e., electric vehicles, hospitals etc.).

3.3.4 Air Quality, Dust and Noise

As already indicated TCLP will be providing a new Emission Summary and Dispersion Modelling (ESDM) Report for the proposed upgraded facility. This Report has already been substantively completed. This will be done to support an application for Amendment to Environmental Compliance Approval (ECA) No. 3700-BNFNU2. This Report will be prepared following the MECP guidance publication, "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2018.

The Facility originally operated as a cogeneration plant, exporting steam to an adjacent paper mill. The paper mill is no longer in operation and the two auxiliary boilers that had provided back-up steam to the mill currently operate intermittently and only at very low load. It is anticipated that these will be shut down and laid-up when the permanent shutdown of the mill is confirmed in the steam sales agreement. Despite these units being largely idle, they have been modelled in the ESDM evaluation until they are permanently shutdown and mothballed.

The Facility is subject to s.20 of O.Reg.419/05. Therefore, the modelled impact of contaminant emissions has been assessed using the U.S. EPA AERMOD model as ½-hour, 1-hour and 24-hour maximum point of impingement (POI) concentrations and compared with the applicable limits listed in the Ministry document titled "Air Contaminants Benchmark (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations or air contaminants", dated April 2018 (ACB List).

The Facility is expected to emit products of combustion "including nitrogen oxides (NOx), sulphur dioxide (SO_2) carbon monoxide (CO) and suspended particulate matter (SPM).

The maximum POI concentrations were expected to be in compliance estimated based on the operating conditions where all significant sources are operating simultaneously at their individual maximum rates of production. The maximum emission rates for each significant source were calculated in accordance with s. 11 of O. Reg. 419/05 and the data quality assessed following the process outlined in the requirements of the ESDM Procedure Document.

A POI concentration for each significant contaminant emitted from the Facility was estimated for each operating scenario based on the calculated emission rates and the output from the approved dispersion model. The results will be presented in the Emission Summary Table, Table ES.1, of the forthcoming ESDM Report (ECA application amendment) in accordance with s.26 of O. Reg.419/05, following completion of the Environmental Screening process.

The POI concentrations for all contaminants listed in the Emission Summary Table were compared against the criteria listed in the MECP's Air Contaminants Benchmark (ACB) List. Of the four (4) contaminants listed in the Emission Summary Table that have a limit in the ACB List, the predicted POI concentrations are below the corresponding benchmark limits. The highest POI concentration predicted for the Facility is 39.3 µg/m^3 of NOx, which is 10% of the 1-hour standard of 400 µg/m^3, and 13.8 µg/m^3 which is 7% of the 24-hour standard of 200 µg/m^3.

This ESDM Report demonstrates that the Facility can operate in compliance with O. Reg. 419/05.

With respect to the construction phase of the project as the proposed undertaking involves only indoor work there are negligible air quality, dust and noise effects associated with the delivery of the equipment and its installation. The parts would be delivered during the day by regular delivery.

3.3.5 Ecosystem Protection and Restoration

The Proposed Project is not expected to have any negative effect on the protection and restoration of ecosystems as no outdoor work is contemplated with the Proposed Project and the delivery of equipment will occur to an already established parking area and industrial site.

3.3.6 Species at Risk

The Proposed Project is not expected to have any negative effect on species at risk as no outdoor work is contemplated with the Proposed Project and the delivery of equipment will occur to an already established parking area and industrial site.

3.3.7 Surface Water

The Proposed Project is not expected to have any negative effect on surface waters as no outdoor work is contemplated with the Proposed Project and the delivery of equipment will occur to an already established parking area and industrial site.

3.3.8 Groundwater

The Proposed Project is not expected to have any negative effect on the groundwater as no outdoor work is contemplated with the Proposed Project and the delivery of equipment will occur to an already established parking area and industrial site. Furthermore, groundwater will not need to be separately drawn for the project.

3.3.9 Excess Materials Management

No excess soil will be generated as part of the project as no excavation is required.

The Proposed Project will not generate much in the way of excess materials. Some materials will be generated from the upgrading of the existing facility as some existing components and materials will be replaced. Most of the waste will be high value, scrap metal engine components (proprietary technology) recycled in conjunction with GE. As well, packaging materials will also be generated. TCLP will either ask the supplier(s) to take excess materials back or these materials will be place into the facility's waste management and recycling system with materials going to already existing facilities.

3.3.10 Contaminated Sites

The Proposed Project is not expected to interact with contaminated sites as all of the work is proposed for indoors and involves no excavations.

3.3.11 Servicing, Utilities and Facilities

No negative effects are anticipated on servicing, utilities and/or facilities as no excavations or outside work is required.

The additional load proposed with the upgrade to the facility can be easily handled by the existing transmission network.

3.3.12 Mitigation and Monitoring

Any mitigation and monitoring measures proposed in this Report or through the consultation associated with the Environmental Screening Process will be documented and distributed to any contractors undertaking work on the project where relevant.

3.3.13 Consultation

A description of Indigenous Consultation undertaken can be found in Section 3.4.

A description of Public and Agency Consultation undertaken can be found in Section 3.5.

3.3.14 Environmental Screening Process

The requirements of the Environmental Screening Process are documented throughout this entire document.

3.4 Indigenous Consultation

The MECP provided direction on Indigenous consultation that is required as part of the Environmental Screening Process.

> "The proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to the proposed project, the MECP is delegating the procedural aspects of rights-based consultation to the proponent through this letter. The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.
>
> Based on information provided to date and the Crown's preliminary assessment the proponent is required to consult with the following communities who have been identified as potentially affected by the Proposed Project:
>
> - Mississaugas of the Credit
> - Six Nations of the Grand River
>   - Both the elected council and Haudenosaunee Confederacy Chiefs Council
>
> Steps that the proponent may need to take in relation to Aboriginal consultation for the Proposed Project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process". Additional information related to Ontario's *Environmental Assessment Act* is available online at: www.ontario.ca/environmentalassessments." (Del Villar).

Following the receipt of this letter Northland Power provided letters and the Notice of Commencement the Mississaugas of the Credit, the elected council of the Six Nations of the Grand River and the Haudenosaunee Confederacy Chiefs Council. Those letters were sent out in mid-May 2023.

Following the MECP review of this draft Report, TCLP provided the Report to the three organizations in early July 2023 via e-mail with another offer to engage on the Proposed Project. A follow-up e-mail was provided approximately one week later. An e-mail was received from the Mississaugas of Credit First Nation, Department of Consultation and Accommodation on July 26, 2023, that they had no comments or concerns but did want to be notified if the project changed. TCLP will circulate the Notice of Completion to the three organizations.

3.5 Public and Agency Consultation

3.5.1 Notice of Commencement

A Notice of Commencement was prepared as per the specifications outlined in the Environmental Screening Process and appears in Appendix A. The notice was e-mailed or mailed directly to a large number of stakeholders and rights holders, which are described below:

- The Notice was e-mailed to a number of government agencies, the two First Nations, the IESO and St. Lawrence Seaway Management Corporation.
- The Notice was e-mailed to approximately twenty tenants that currently utilize the former Resolute Forest Products mill office/buildings and associated lands.
- The Notice was directly mailed to 408 residents and businesses adjacent to and immediately south of the facility.
- The Notice was distributed to approximately 4,000 homes, businesses and post office boxes in this area of Thorold via Canada Post's Neighbourhood Mail service.

The MECP provided an acknowledgement letter. The Notices were sent out the week of April 24, 2023.

The same Notice was also placed in the Thorold Today on-line newspaper starting April 26, 2023 and was available for 60 days.

To the end of July 2023, there have been no inquiries from the public.

3.5.2 Notice of Completion

Barring any major concern raised, TCLP intends to issue a Notice of Completion by the end of July 2023.

3.5.3 Agency Consultation

MECP undertook a review of this Report in late June and early July 2023. Their only comment was to include the ECA number in the Report.

3.6 Description of Other Approvals Required

An amendment to the current facility's ECA (Number 3700-BNFNU2) for air and noise will be required.

3.7 Advantages and Disadvantages of the Project

3.7.1 Advantages of the Project

The Advantages of the Project include the following:

- Will provide an additional 23 MW of installed capacity to Ontario's grid system in response to a recent call by the Province for more interim power.
- Will have a slight positive economic impact in the Niagara region.
- Will upgrade the existing facility and the Upgraded engine will have slightly improved efficiency.

3.7.2 Disadvantages of the Project

No major disadvantages are identified with the Proposed Project.

3.8 Summary of Mitigation, Impact Management and Monitoring Commitments

3.8.1 Waste

A small amount of waste will be generated during the upgrade process. Northland Power plans to segregate the waste for recycling. Most of the waste will be high value, scrap metal engine components (proprietary technology) recycled in conjunction with GE. As well, packaging materials will also be generated. TCLP will either ask the supplier(s) to take excess materials back or these materials will be place into the facility's waste management and recycling system with materials going to already existing facilities. A very small amount of residual sanitary (non-hazardous) waste would likely be generated by the upgrade and would be deposited in the facility's existing collection bins.

4 Summary and Conclusions

The Proposed Project has been reviewed according to the Screening Checklist. The project only involves an upgrade of equipment, and no outdoor work is required there is no potential effect for the project on the majority of the components of the environment identified in the screening checklist. There are a few environmental components where a few mitigation measures are required and described.

TCLP has also reviewed the Proposed Project to the Areas of Interest that were described in the Acknowledgement letter from the MECP. In our opinion, the Proposed Project is compatible with all the Areas of Interest identified.

A Notice of Commencement has been issued for the project and to date there have been no inquiries from Indigenous, public or government agency representatives.

The MECP reviewed this Report with the only comment that the Report should include the ECA number of the facility.

Overall, the Advantages of the Proposed Project include: an additional 23 MW of installed capacity to Ontario's grid system in response to a recent call by the Province for more interim power; slight positive economic impact in the Niagara region and the upgraded engine will have slightly improved efficiency. There are no disadvantages to the Proposed Project.

An amendment to the current facility's ECA (Number 3700-BNFNU2) for air and noise will be required following the completion of the Screening.

5 References

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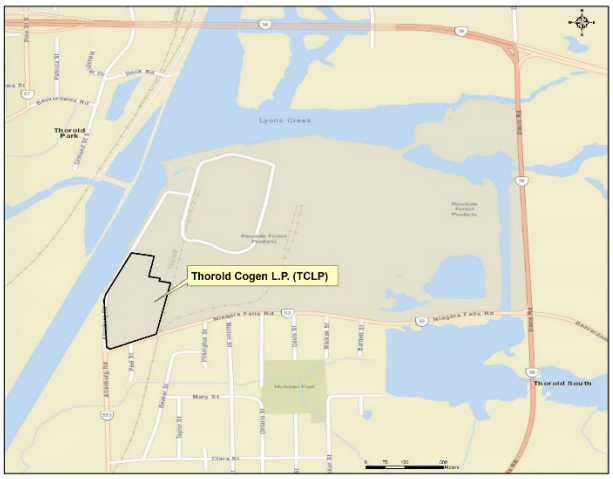
Appendix A

Notice of Commencement

NOTICE OF COMMENCEMENT OF A SCREENING OF THE PROPOSED NATURAL GAS-FIRED TURBINE UPGRADE PROJECT

Thorold Cogen L.P. (TCLP) is proposing to modify its existing natural gas-fired electrical generating station (the Proposed Undertaking) in Thorold, Ontario. The existing facility is located alongside the Welland Canal at 90 Allanburg Road in Thorold, Ontario (see map).



Under Ontario Regulation 116/01 (also referred to as the "Electricity Projects Regulation"), made under the *Environmental Assessment Act*, certain electricity projects must be reviewed in accordance with the Environmental Screening Process. The Proposed Undertaking will be reviewed according to the Ontario Ministry of the Environment (now the Ministry of Environment, Conservation and Parks) *Guide to Environmental Assessment for Electricity Projects* (January 2011), Category B Environmental Screening Process.

The Proposed Undertaking is subject to the Environmental Screening as it is categorized as a "Significant Modification" because the facility's output will increase approximately 23 megawatts (MW), from a nominal 265 MW to 288 MW. Any natural gas-fired electrical generating facility increasing its output by more than 5 MW is subject to this Environmental Screening Process.

The existing facility was previously subject to an Environmental Screening Process under Ontario Regulation 116/01 in 2006. On a daily basis, TCLP responds to dispatch instructions it receives from the Independent Electricity System Operator (IESO), operating when directed to do so and selling its energy into the provincial electricity grid. The IESO is looking to address forecasted electricity supply shortages and the Proposed Undertaking is intended to help meet that need. TCLP utilizes a General Electric (GE) gas turbine as its main combustion unit, and GE offers an upgrade package which allows the gas turbine to run more efficiently and increases its energy output. The gas turbine upgrade package involves exchanging many components (rotating vanes, burners and control software) within the engine package itself, but no other construction work is required at the site and no outdoor work is needed.

An amendment to the facility's Environmental Compliance Approval (ECA) is also required.

Through the Environmental Screening Process, TCLP is committed to consulting with the respective Indigenous peoples, the public, government agencies, and other interested stakeholders about the Proposed Undertaking. Input and comments will be considered and included in the preparation of the Environmental Screening Report.

TCLP, and Northland Power Inc. as facility Manager and Operator, have retained Arcadis Canada Inc. to undertake the Environmental Screening. For more information on the TCLP Natural Gas-Fired Turbine Upgrade Project or to be put on our mailing/contact list please contact:

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More information about the project can be obtained from the project website: Thorold - Northland Power.

The personal information that you provide to us will be used for the purpose of communicating and consulting with you about Environmental Screening Process for the Proposed Undertaking and will be used to create a public record as required by the *Environmental Assessment Act*, and as permitted under the *Freedom of Information and Protection of Privacy Act*. The public record, including your personal information, will be available to the general public unless you request that your personal information remain confidential.

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