Centre Village Renewables Integration and Grid Security Synchronous Condensing/Generation Facility Project - Initial Project Description and Environmental Impact Assessment Registration

July 4, 2025

Prepared for:
Impact Assessment Agency of Canada

Prepared by:
PROENERGY Holding Company, Inc. “PROENERGY”

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Acronyms / Abbreviations

%HA	percent highly annoyed
AC CDC	Atlantic Canada Conservation Data Centre
AQMS	Air Quality Management System
CAAQS	Canadian Ambient Air Quality Standards
CCME	Canadian Council of Ministers of the Environment
CEMS	continuous emission monitoring system
CEPA, 1999	*Canadian Environmental Protection Act, 1999*
CH_4	methane
CIP	Clean-in-Place
CO	carbon monoxide
CO_2	carbon dioxide
COR	carbon monoxide reducing
COSEWIC	Committee on the Status of Endangered Wildlife
CTG	combustion turbine generator
CWS	Canadian Wildlife Service
dBA	A-weighted decibels
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
EDI	electrodeionization
ESA	Environmentally Significant Area
FWAL	Freshwater Aquatic Life
g/L	grams per litre
GCDWQ	Guidelines for Canadian Drinking Water Quality
GHG	greenhouse gas
GJ	gigajoule
GLC	Ground-Level Concentration
GSU	generator step-up
GWP	global warming potential
ha	hectare
HADD	harmful alteration, disruption, or destruction
HHV	Higher Heating Values
IAAC	Impact Assessment Agency of Canada
IPD	Initial Project Description

km	kilometre
kV	kilovolt
kW	kilowatt
L/min	litres per minute
m	metre
M&NP	Maritimes and Northeast Pipeline
masl	metres above sea level
MBBA	Maritimes Breeding Bird Atlas
MJ/m3	megajoules per cubic metre
Mt	million tonnes
MTI	Mi'gmawe'l Tplu'taqnn Incorporated
MVA	megavolt-amperes
MW	megawatt
N_2O	nitrous oxide
NB OWLS	New Brunswick Online Well System
NB Power	New Brunswick Power Corporation
NB SARA	New Brunswick *Species at Risk Act*
NBDELG	New Brunswick Department of Environment and Local Government
NBDIA	New Brunswick Department of Indigenous Affairs
NBDNRED	New Brunswick Department of Natural Resources and Energy Development
NBDTHC	New Brunswick Department of Tourism, Heritage, and Culture
NBDTI	New Brunswick Department of Transportation and Infrastructure
NBHC	New Brunswick Heath Council
NH_3	ammonia
NIR	National Inventory Report
NOx	nitrogen oxides
NSMTC	North Shore Mi’kmaq Tribal Council
O_2	oxygen
PID	Property Identification Number
PM	particulate matter
$PM_{2.5}$	particulate matter of 2.5 microns in diameter or smaller
PPA	power purchase agreement
PROENERGY	PROENERGY Holding Company, Inc.
REOI	Request for Expressions of Interest
RIGS	Renewables Integration and Grid Security
RO	reverse osmosis

RoW	right-of-way
SACC	Strategic Assessment of Climate Change
SAR	Species at Risk
SARA	*Species at Risk Act*
SCR	selective catalytic reduction
SO2	sulphur dioxide
SOCC	Species of Conservation Concern
t	tonne
the Project	Centre Village Renewables Integration and Grid Security Synchronous Condensing/Generation Facility Project
t/y	tonnes per year
TSP	total suspended particulate matter
ULSD	ultra-low sulphur diesel
usgpm	US gallons per minute
V	volt
Wattbridge	WattBridge Energy IPP Holdings, LLC
WNNB	Wolastoqey Nation in New Brunswick
WSSA	Water Supply Source Assessment

Part A: General Information

PROENERGY together with its subsidiary WattBridge Energy IPP Holdings LLC (WattBridge) (the Proponent) is pleased to submit this Initial Project Description (IPD) and Environmental Impact Assessment (EIA) Registration for the Centre Village Renewables Integration and Grid Security Synchronous Condensing/Generation Facility Project (the Project) in accordance with the *Impact Assessment Act* and the New Brunswick *Clean Environment Act*, respectively. This IPD has been prepared following the Impact Assessment Agency of Canada (IAAC) *Guide to Preparing an Initial Project Description and a Detailed Project Description* (IAAC 2024), and Schedule 1 of the *Information and Management of Time Limits Regulations,* including the organization of sections. Additional information has been added to conform to the requirements for a provincial EIA Registration, although it is understood that additional information will be filed with the New Brunswick Department of Environment and Local Government (NBDELG) in Q3 of 2025 as an addendum to this document.

1 Project Name, Sector and Location

Project Name:	Centre Village Renewables Integration and Grid Security Synchronous Condensing/Generation Facility Project (the Project)
Sector:	Energy
Location:	Centre Village, New Brunswick

New Brunswick Power Corporation (NB Power) has identified the need to secure an additional 500 megawatt (MW) of in-province power generating capacity by Q3 2028. WattBridge, together with the North Shore Mi'kmaq Tribal Council (NSMTC) as a minority equity holder, is proposing a 25-year tolling power purchase agreement (PPA) for a proposed 500 MW power generating station located off Route 940 in Centre Village, New Brunswick, which would begin operation in Q3 2028. The Project would play an essential role in enabling the renewables integration strategy for the Province of New Brunswick and more broadly the Atlantic region.

The Project is generally referred to as Renewables Integration and Grid Security (RIGS) for the material system benefits of both increased grid resiliency/system reliability while also adding a fast-acting dispatchable generation to address renewable intermittency and step-change in load growth. The new assets associated with the Project will address new generating capacity requirements and grid support to maintain system reliability, avoid extended or frequent loss of load events (i.e., blackouts), and provide flexible back-up power to a growing number of weather-driven, variable renewable energy resources.

The Project is strategically located in Westmorland County (Figure 1.1), addressing significant load growth in the Moncton area and capitalizing on availability of existing natural gas supply and power transmission infrastructure, and addressing a lack of generation capacity located in southeast New Brunswick. This location will enable capacity sharing within the existing interties in the Atlantic region with both Prince Edward Island and Nova Scotia, directly and indirectly enabling clean energy strategies in both Nova Scotia and Prince Edward Island. The Project site within Westmoreland County was selected due to its proximity to an existing 138 kilovolt (kV) transmission line owned and operated by NB Power and the Maritimes and Northeast Pipeline (M&NP) 30” natural gas pipeline.

Figure No.

1.1

Title

Project Location

Client/Project 121418452

WattBridge Energy LLC

RIGS-Centre Village

Project Location Prepared by NW on 2025-01-14

Centre Village, NB Revised by AC on 2025-06-26

N

0 5 10 km

(At original document size of 8.5x11)

1:400,000

Legend

- Project Location
- Transmission Line
- Highway
- Collector
- Local Road
- Resource Road; Gravel Road
- Watercourse
- Waterbody
- Wetland
- Forested Area
- Non-Forested Area
- Protected Conserved Area
- Provincial Boundary

Notes

1. Coordinate System: NAD 1983 CSRS New Brunswick Stereographic

2. Data Sources: Client; Service NB; Canadian Wildlife Service, Altlantic Region

3. Background: Esri, USGS; GeoNB; NB ELG; NB NRED; NS ECC; NS NRR; NRCan CanVec; Service NB

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2 Proponent Name and Contact Information

WattBridge is a global independent power producer specializing in providing innovative solutions for energy management and optimization. WattBridge leverages highly reliable aeroderivative gas-turbine technology to deliver large-scale, reduced-emission, peaking-power generation in support of renewable reliability and energy security. For this Project, WattBridge, together with the North Shore Mi'kmaq Tribal Council (NSMTC) as a minority equity holder, is entering into a power purchase tolling agreement with NB Power. NB Power owns the land and will lease the development footprint where the Project is to be built, operated and owned by WattBridge. NB Power will build, own and operate transmission infrastructure related to the Project and participate in engagement and consultation activities regarding the Project when requested in support of WattBridge.

The Proponent's contact information for the proposed undertaking is as follows:

Proponent Contact Information	
Proponent:	WattBridge c/o PROENERGY
Address:	2001 PROENERGY Blvd Sedalia, MO 65301
Contact Name:	Cliff Oliver
Official Title:	Vice President Development
Telephone Number:	(404) 314-5220
E-Mail Address:	coliver@wattbridge.info

July 4, 2025

Cliff Oliver, Vice President Development

Date

3 Engagement with Government Agencies, the Public or Other Participants

3.1 Engagement with Government Agencies

3.1.1 Summary of Engagement Activities to Date and Key Issues Raised

NB Power and WattBridge have held preliminary discussions with representatives of IAAC and NBDELG on November 22, 2024, May 30, 2025, and June 18, 2025. The initial meeting in 2024 was held between NB Power, NBDELG and IAAC to understand the impact assessment process and permitting requirements for the proposed Project. The May 2025 meeting followed up on the November 2024 dialogues but was tailored to provide a formalized introduction of WattBridge as the Proponent for the file, thereby setting the process in motion for the regulatory applications. During the June 2025 meeting, additional discussion was held on regulatory process and it was proposed by IAAC and NBDELG that WattBridge prepare a single document (i.e., this document) to fulfill requirements to initiate the federal and provincial impact assessment processes.

Key issues identified to date during these regulatory meetings and how they are being addressed are summarized in Table 3.1.

Table 3.1 Key Issues and Comments Raised During Regulatory Engagement (as of June 2025)

Issue/Concern	Response
Potential greenhouse gas emissions and effects on air quality	Refer to Sections 19.1 and 23 of this document. An air dispersion modelling study was completed and is included as Appendix C.
Sustainability of the groundwater resource	Refer to Section 19.3 of this document. A Water Supply Source Assessment (WSSA) is planned for Q3 of 2025. The initial application is provided as Appendix B.
Potential impacts to wetlands and aquatic habitat	Refer to Sections 19.4 and 19.5 of this document.
Archaeological resources	Refer to Sections 19.8 and 21 of this document.
The need for meaningful consultation and engagement	Refer to Sections 3.2 and 4 of this document for a description of engagement conducted to date and planned future engagement.

3.1.2 Plan for Future Engagement

WattBridge will continue to meet with government agencies as required during all phases of the Project to address questions or key issues raised and work through the required regulatory approval processes.

3.2 Engagement with Public and Other Stakeholders

3.2.1 Summary of Engagement Activities to Date and Key Issues Raised

No formal Project-specific public engagement has been conducted to date by either NB Power or WattBridge other than discussions with specific landowners regarding land access.

3.2.2 Plan for Future Engagement

WattBridge is committed to sharing information with stakeholders and the public throughout the life of the Project and will develop a consultation and engagement plan that will be inclusive and adaptive for stakeholder groups and the general public to receive information, provide input and express concerns. Mechanisms for ongoing consultation and engagement will include, but are not limited, to the following:

- Information sessions and open houses
- Development of a Project website, with ongoing updates on the status of the Project
- Publication and notification of a Project email for asking questions and voicing concerns
- Additional virtual and/or in-person meetings

Public engagement on the Project is planned to begin in summer 2025. WattBridge will continue to work with stakeholders and the general public to address any comments or concerns that may arise during the Project.

4 Engagement with Indigenous Groups

New Brunswick is home to 15 First Nations communities, nine of which are Mi’kmaq and six are Wolastoqey. There is also the Peskotomuhkati Nation at Skutik (formerly known as the Passamaquoddy Nation) that held territory in the southwestern corner of what is now New Brunswick at the border with Maine; however, it is not an officially recognized First Nation in Canada at this time. The Peskotomuhkati Recognition Group is presently in the process of becoming recognized by the Government of Canada and the Province of New Brunswick as a community that must be consulted as rights holders. Figure 4.1 shows the location of Indigenous communities relative to the Project location.

WattBridge engaged the North Shore Mi’gmaq Tribal Council (NSMTC) during the NB Power procurement process for the Project extending an invite for collaboration. The NSMTC provides advisory and technical assistance with respect to water and waste management, housing and infrastructure, post-secondary education funding, training and employment, community development, clean energy opportunities, environmental stewardship, and health service coordination to its Member Nation communities and other First Nation communities across Atlantic Canada. NSMTC Member Nation communities include: Ugpi'ganjig (Eel River Bar) First Nation, Oinpegitjoig (Pabineau) First Nation, Natoaganeg (Eel Ground) First Nation, Metepenagiag (Red Bank) Mi'kmaq Nation, L'nui Menikuk (Indian Island) First Nation, Tjipõgtõtjg (Buctouche) First Nation, and Amlamgog (Fort Folly) First Nation (NSMTC 2025a).

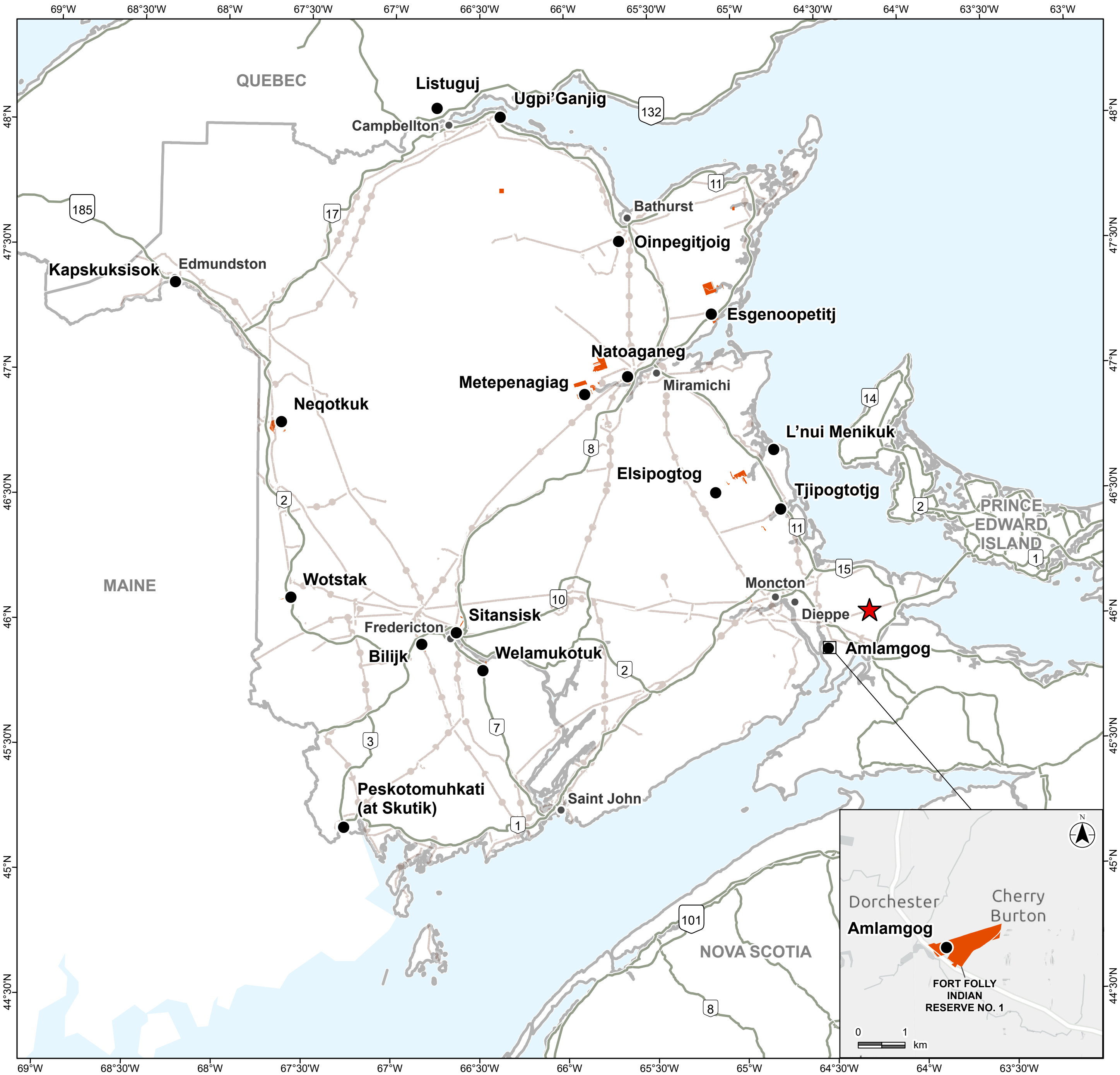

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Figure No.
4.1

Title
Indigenous Communities in New Brunswick

Client/Project 121418452
WattBridge Energy LLC
RIGS-Centre Village

Project Location
New Brunswick, Canada

Prepared by NW on 2024-11-20
Revised by AC on 2025-06-05

N

0 25 50 km
(At original document size of 8.5x11)
1:2,600,000

Legend

- Project Site
- First Nation
- Indigenous Lands

Other Features

- Populated Centre
- Transmission Line (Existing)
- Major Road

Notes
1. Coordinate System: NAD 1983 CSRS New Brunswick Stereographic
2. Data Sources: Government of New Brunswick; Natural Resources Canada; Client
3. Background: ESRI; Government of New Brunswick

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4.1 Summary of Engagement Activities to Date and Key Issues Raised

As part of early Project planning, between July 2024 and May 2025, NB Power conducted Indigenous engagement on the Project and engaged the following Indigenous groups:

- Mi'gmawe'l Tplu'taqnn Incorporated (MTI) is the consultative body representing eight of the nine Mi'kmaq communities located along the eastern coastal regions of New Brunswick: Ugpi'ganjig (Eel River Bar), Oinpegitjoig (Pabineau), L'nui Menikuk (Indian Island), Tjipõgtõtjg (Bouctouche), Esgenoôpetitj (Burnt Church), Metepenagiag Mi'gmaq Nation (Red Bank), Amlamgog (Fort Folly) and Natoaganeg (Eel Ground)
- Wolastoqey Nation in New Brunswick (WNNB), a technical advisory body for the six Wolastoqey communities of Matawaskiye (Madawaska), Neqotkuk (Tobique), Wotstak (Woodstock), Bilijk (Kingsclear), Sitansisk (St. Mary's) and Welamukotuk (Oromocto) First Nations
- Kopit Lodge, a Mi'kmaq organization representing Elsipogtog First Nation on resource development issues
- Peskotomuhkati Nation at Skutik are Indigenous people that live in the southwestern part of New Brunswick inclusive of Passamaquoddy Bay and Skutik River and are self-represented in matters requiring consultation

A detailed engagement log for NB Power-led engagement is provided in Appendix A. Early engagement focused on the need for, and purpose of, a RIGS project with two potential locations identified (Scoudouc and Centre Village). As Project planning advanced, NB Power provided project updates including notification of field studies undertaken, site selection process, introduction of a preferred partner (WattBridge) and the anticipated federal and provincial regulatory process.

Table 4.1 summarizes key questions/issues raised during Indigenous engagement and NB Power's response.

Table 4.1 Key Issues and Comments Raised During Indigenous Engagement Led by NB Power (as of May 30, 2025)

Indigenous Group	Date of Engagement	Question/Comment	Response
MTI	2024/12/05	Have consultations been done with communities to date? What is the plan for engagement?	No formal consultations have been conducted as the Project is still in early conception whereby, we are working through understanding the Regulatory framework required to permit, and details surrounding the style of technology will be dependent on the proponent chosen to lead the file. The Proponent will carry the requirement to conduct consultation and permit the respective project

Table 4.1 Key Issues and Comments Raised During Indigenous Engagement Led by NB Power (as of May 30, 2025)

Indigenous Group	Date of Engagement	Question/Comment	Response
MTI	2024/12/05	Has MTI been engaged as well as North Shore Mi'kmaq Tribal Council?	Following the due diligence process and formal selection and onboarding of a proponent for this work, NB Power will be supporting the Proponent in consultation and engagement efforts as they navigate the regulatory process to permit the Project. NB Power will continue to provide regular updates on this Project during reoccurring monthly meetings as the Project is further refined and becomes available with the understanding that they will provide updates to you and your communities, as required. MTI has been engaged, per the previous correspondence. As for North Shore the potential proponent has been in contact with NSMTC, but NB Power has not. Discussions are preliminary and we will update as more information becomes available.
MTI	2024/12/05	What is the closest community?	NB Power verified with MTI that engagement on the Project will continue through monthly meetings unless otherwise stated. We believe the closest community for both locations would be Fort Folly First Nations.
MTI	2024/12/05	Will this require more gas and where will the gas come from?	Yes, the Project will require gas. Siting took into consideration proximity to the M&NP pipeline for ease of natural gas distribution tie lines into the facility. Particulars are yet to be determined based of technological needs. Natural gas in the M&NP Pipeline contains non-domestic sources outside of New Brunswick.
Peskotomuhkati	2024/07/10	Is the land in Scoudouc owned by NB Power? Please provide a copy of the Request for Expressions of Interest (REOI) that was issued.	NB Power advised there are potential alternative sites for consideration for the RIGS Project and that they were in the process of obtaining ownership for sites in Scoudouc and Centre Village. A copy of the REOI was provided.

Additionally, as noted above, WattBridge has engaged NSMTC as a partner on the Project. In August 2024 NSMTC signed a Letter of Intent stating their intent to participate as a partner with WattBridge on the Project and committing to provide support in Indigenous relations, access to low-cost financing, and technical support. WattBridge engaged NSMTC in the site selection process with NB Power, including review of environmental constraints mapping. NSMTC was supportive of the site selection approach and identified Centre Village as the preferred location, having fewer environmental impacts from a rights-holder perspective. NSMTC also reviewed and provided comment on the draft IPD/EIA Registration in June 2025. Key topics raised during their review included questions about combustion emissions and effluent discharges, incorporating Indigenous knowledge in Project planning, outstanding field surveys, post-construction monitoring, mitigation planning for invasive species, habitat offsetting, loss of carbon sinks, and potential employment opportunities. WattBridge continues to engage NSMTC leadership in Project planning.

4.2 Plan for Future Engagement

With the identification of WattBridge as the Proponent, NB Power is now transitioning to a supporting role in future Indigenous engagement efforts on the Project. WattBridge is in the process of developing an Indigenous engagement plan for the Project which will include engaging MTI and Amlamgog (Fort Folly) First Nation. WattBridge will also continue to engage NSMTC as a minor equity partner in the Project.

5 Regional Assessments and Relevant Environmental Studies

Regional assessments are conducted in accordance with sections 92-94 and 96-103 of the *Impact Assessment Act* in areas of existing or anticipated development to help inform planning and management of cumulative effects and inform future project impact assessments. No regional assessments, as referenced in section 92-94 and 96-103 of the *Impact Assessment Act*, have been carried out that are relevant to the Project or to this IPD/EIA.

6 Strategic Assessments

No strategic assessments, as referenced in section 95 of the *Impact Assessment Act*, have been carried out that are relevant to the Project or to this IPD. However, the *Strategic Assessment of Climate Change* (SACC) (ECCC 2021) applies to designated projects under the *Impact Assessment Act*. It is relevant to the assessment of greenhouse gas (GHG) emissions and potential effects on climate change. The quantification of Project-related GHG emissions as per the SACC is presented in Section 23 of this document.

Part B: Project Information

7 Project Purpose and Need

7.1 Purpose of the Project

The purpose of the Project is to improve generating capacity and provide grid support to maintain system reliability while accommodating the increasing supply of variable renewable energy sources to the power grid. The Project will also serve as a contingency (by providing additional energy) for the situation where load grows faster than expected, or aging units become less reliable or fail.

7.2 Need for the Project

The Province of New Brunswick is experiencing unprecedented electricity load growth, driven by a growing population and economy. In 2022, New Brunswick's electricity demand peaked at its greatest level since 2004, and in 2023, an all-time system peak was experienced due to a growing population and economy. While NB Power's 2023 Integrated Resource Plan (NB Power 2023) forecasted additional generation capacity needed in the early 2030s, the most recent load forecast shows that with the accelerating pace of electrification and population growth, NB Power may face an energy capacity deficit as early as the winter 2028 heating season.

In response, NB Power has identified the need to secure an additional 500 MW of in-province capacity by the winter of 2028. New Brunswick needs new generating capacity and grid support to maintain system reliability, avoid extended or frequent loss of load events (rolling blackouts) and provide flexible back-up to a growing number of weather-driven, variable renewable energy resources.

Renewables are a key element of NB Power's future energy mix. However, they offer two important disadvantages that must be addressed. First is the intermittent nature of renewable energy, where New Brunswickers cannot count on renewables to fill the gap during extreme weather events. The province's relatively small geography offers little geodiversity in placement of renewables. Second, renewable generation sources lack the necessary inertia that stabilizes voltage in the grid, and in the absence of mitigating technologies, may increase risk of energy blackouts. These circumstances demonstrate that NB Power needs to be more self-sufficient in managing extreme weather events while also mitigating the grid instability brought on by deeper penetration of renewables.

To make variable renewable generation sources more viable, they are best paired with dispatchable sources, demand side management programs, or energy storage to meet demand. The total amounts of this type of generation need to be studied regularly to ensure system stability and reliability. On the coldest days of winter, New Brunswick experiences periods of peak demand as New Brunswickers turn to electric heating systems to keep their homes and businesses comfortable. During periods of high load, there is a need for dispatchable generation sources that can inject energy onto the grid for relatively long periods of time (i.e. multiple days). This can become a significant challenge after 2035 when meeting the obligations under provincial and federal net-zero energy regulations. In addition, the system needs ancillary services that balance the system and allow intermittent supply sources to be integrated. NB Power requires some amount of dispatchable generation sources to be online at all times to provide synchronous reserves such as load following and regulation services. This requires generation units with flexible output that can balance load changes or variable renewable resources.

Studies have shown that using a dispatchable capacity resource, such as thermal generation fueled by natural gas (and/or low sulfur diesel) is a low-cost way to manage the impacts of this increased need for electricity (peaks in electrical load). With turbine units reaching full power within 10 minutes, the Project provides an ideal solution in fast response to the variability of renewable generation.

In addition, a dispatchable resource can be run infrequently to support peak demand, while complementing the intermittent availability of variable renewable energy resources like wind and solar. Combustion turbine technology, currently used in the province, and widely used for this application in other jurisdictions, is the best cost-effective approach to address this issue. This technology also allows for the resource to be connected to the grid as a synchronous condenser in times when the reactive support is required, and the energy is not.

Combustion turbine technology has become the utility industry's interim solution on the path to net zero and is recognized in the Government of Canada's new *Clean Electricity Regulations* which limit carbon dioxide emissions from electricity generation units that use fossil fuels while providing flexibility to grid operators to meet rising electricity demands and ensure grid reliability.

The Project represents a cost-effective, safe and reliable solution to enable renewable energy growth and advance sustainability goals while meeting growing electricity demands in the province. Project technology, which features natural gas-powered turbines and emission reduction systems, represents a critical intermediate step toward decarbonization, and displacing coal power. According to NB Power, the Project is expected to result in a net system reduction of CO_2 emissions of up to 250,000 tonnes/year, including 150,000 tonnes/year that would otherwise be generated by burning coal before it is phased out by 2030.

8 Physical Activities Regulations

The Project is a designated project in accordance with section 30 of the *Physical Activities Regulations* which list "the construction, operation, decommissioning and abandonment of a new fossil fuel-fired power generating facility with a production capacity of 200 MW or more".

The Project will involve the construction, operation and decommissioning of a gas turbine generation facility which would have a capacity of approximately 500 MW and would be operated as needed to maintain system reliability and provide back-up energy generation.

The Project is not a component of a larger project that is not listed in the *Physical Activities Regulations*.

9 Project Infrastructure and Activities

9.1 Project Overview

The Project consists of a 500 MW power generating station comprising ten dual-fueled combustion turbine generators (CTGs) in a simple-cycle arrangement. For illustration purposes, Figure 9.1 shows an existing installation similar to what is being proposed as the Project.

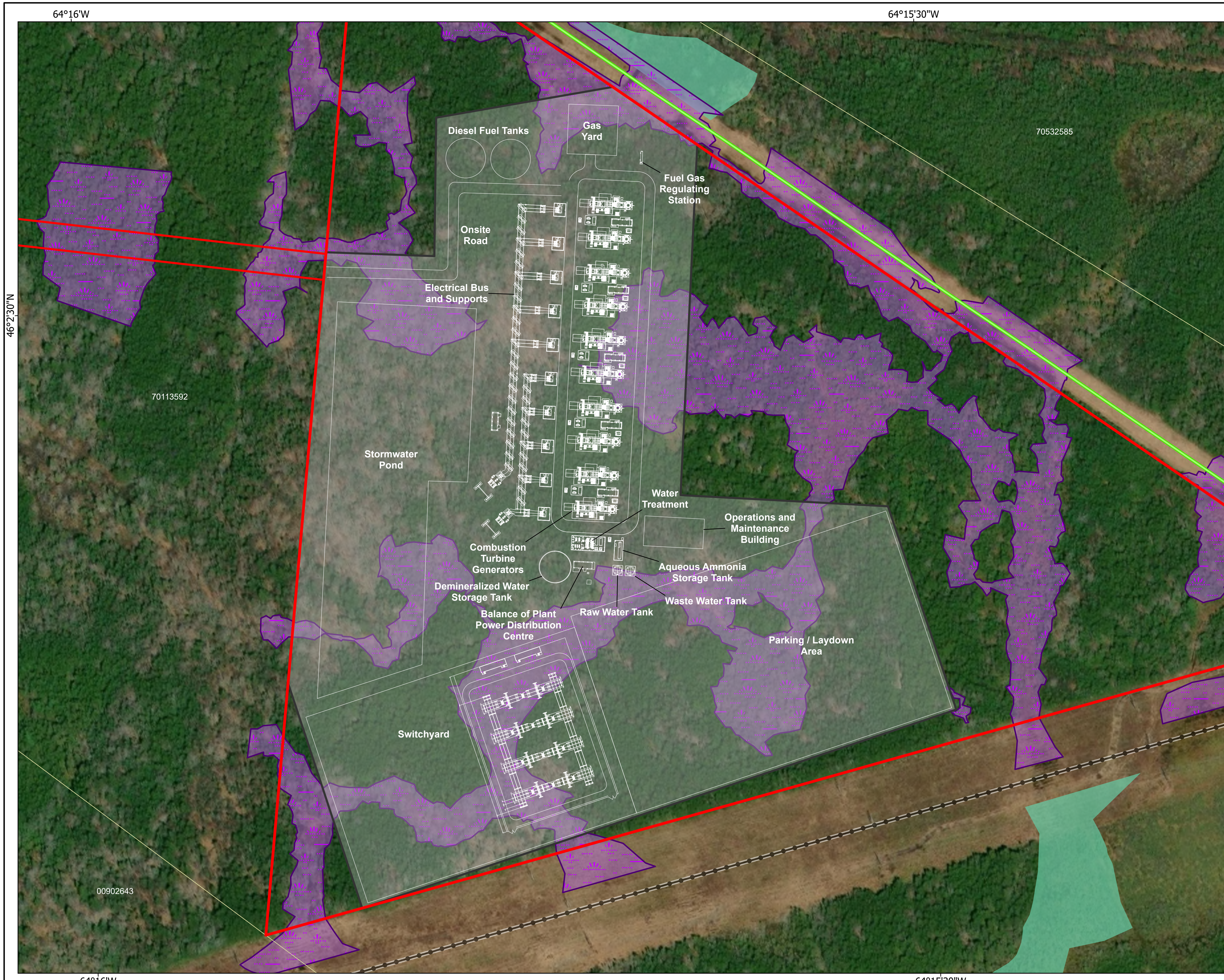
Figure 9.1 Brotman Generating Station (384 MW) in Rosharon, Texas with Similar Components and Layout as Proposed for the Project

The Project will connect with a 138 kV line on NB Power's existing transmission network adjacent to the generating station and will generate fast-start power to fill renewable supply gaps when needed; absorb or generate energy as needed to maintain stable voltage levels through synchronous condensing; and support emergency conditions with the ability to restart a power system after a blackout or outage (i.e., black start capability) and provide back-up diesel operation.

Located near Centre Village in southeastern New Brunswick, the Project will be constructed on lands leased from NB Power where there is a convergence of an existing transmission line and natural gas pipeline. The CTGs will have the capability to use both natural gas and ultra-low sulfur diesel (ULSD) to generate electricity. The primary fuel will be natural gas which will be delivered to the site via pipeline by a third party. ULSD, which will be delivered to the site by truck via a third party and stored in an onsite fuel storage tank, will be used as a back-up fuel supply if needed.

Pending regulatory approvals, construction is planned to commence in Q1 2026, with a target commercial operation date of Q3 2028. The operational lifetime is expected to be a minimum of 25 years. Prior to the end of its planned operational life, a decision will be made in consultation with NB Power whether to perform equipment upgrades to repower the Project and extend its operational lifetime or proceed with decommissioning. This decision will be informed by an updated integrated resource plan prepared by NB Power.

Figure 9.2 presents a preliminary site plan layout. Additional information on Project components and activities is provided below.



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Legend

- Site Features
- Development Footprint (Approximate)
- Project Area

Built Infrastructure

- Transmission Line (Existing)
- Pipeline (Existing)

Land Use

- Property Boundary

Wetlands and Waterways

- Wetland (NBELG)
- Wetland (Stantec)

N

0 20 40 60 80 100 m

(At original document size of 11x17)
1:3,000

Notes

1. Coordinate System: NAD 1983 CSRS New Brunswick Stereographic
2. Data Sources: Client; Stantec; GeoNB (NBHN, NBRN); NB Natural Resources and Energy Development; NB Environment and Local Government; Service NB.
3. Background: Esri, CGIAR, USGS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Project Location:

Project Location Prepared by AC on 2025-06-26
Centre Village, NB

Client/Project 121418452
WattBridge Energy LLC
RIGS-Centre Village

Figure No.
9.2

Title
Preliminary Site Layout

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9.2 Project Infrastructure

9.2.1 Power Generating Equipment

The power generating station comprises ten dual-fuel CTGs which will be capable of generating electricity using both natural gas and ULSD. The CTG technology is derived from the aerospace industry and allows the CTGs to start quickly and achieve full operating power in a very short period, enabling rapid response to grid disruptions. CTGs are typically assembled in a factory and are generally smaller than traditional industrial frame generators and can be shipped using standard transportation methods. Figure 9.3 shows the turbine technology proposed to be used for this Project.

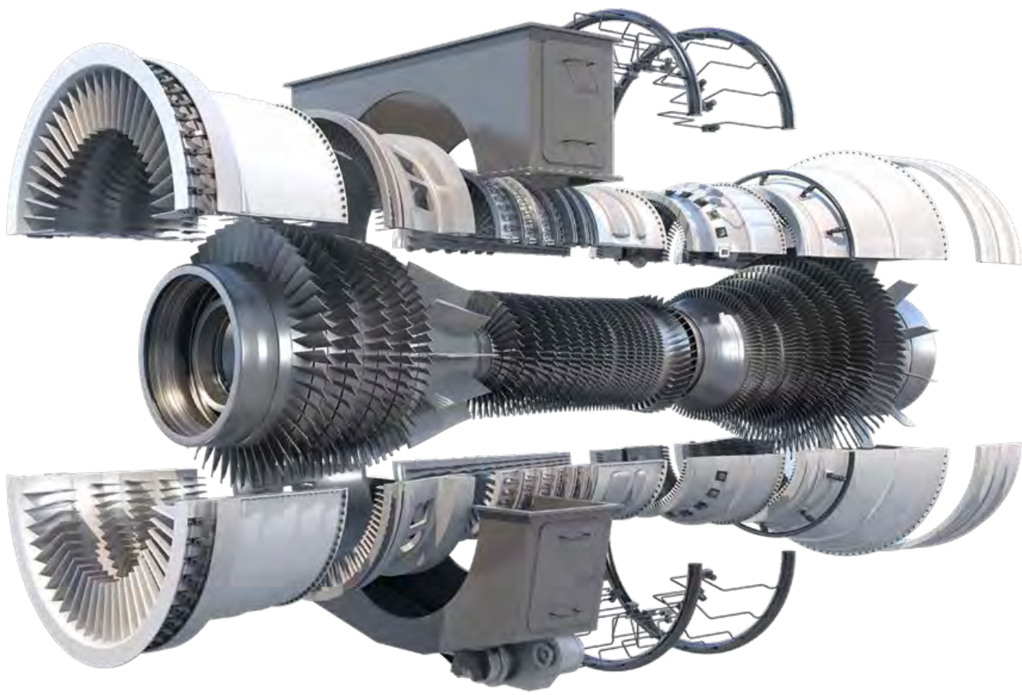


Figure 9.3 Model of Turbine Technology Proposed for the Project

The CTGs will be installed on a continuous concrete pad foundation and each CTG will be equipped with a lube oil cooler, water spray power augmentation, nitrogen oxides (NOx) water injection, air filter system, air recirculating inlet heating system, air fogging system, generator breaker and protection panel, and clutch synchronous condensing system. Each CTG will also be equipped with an exhaust stack (approximately 20 m/65 ft) with required testing and monitoring ports and emission control systems. Table 9.1 provides additional information on systems associated with power generating equipment.

Table 9.1 Auxiliary Systems for Power Generating Equipment

Component	Description
Power Distribution Centre and Electrical Systems	The power distribution centre will include five enclosures (one per two installed CTGs) and plant control and uninterruptible power supply systems. Onsite electrical systems will include a 480 volt (V) low voltage system and a high-voltage system. The low-voltage system, comprising ten 13.8 kV/480 V auxiliary transformers, switch gear, interconnecting cabling and wiring, will be used to power onsite auxiliary systems. The high-voltage system includes 138 kV generator step-up transformers (GSU) for each CTG, two 138 kV collector buses, two dead-end towers, 12 manual disconnects (one per GSU and one per collector bus). The high voltage-system transmits energy produced by the CTGs to the existing power grid via a 138 kV switchyard (Table 9.2).
Natural Gas Fuel System	Natural gas will be delivered to the site via a third party from an existing natural gas pipeline which borders the site (Section 9.3). Delivery of natural gas to the site (and associated custody transfer facilities) is outside the scope of the Project (Section 9.3). However, a fuel regulating station will be constructed on the Project site to regulate the supply of gas, as well as underground piping to deliver the natural gas from the custody transfer station to each of the CTGs.
ULSD Fuel System	Turbine generators will be capable of operating on natural gas or ULSD, therefore Project design includes infrastructure for the unloading, storage, and supply of ULSD to the CTGs. The ULSD fuel system includes an unloading and forwarding station; ULSD filter skid; two storage tanks (each with a capacity of approximately 5680 m^3 representing a combined total of approximately 10 days of storage for ten turbine units operating at maximum load); associated civil works including containment walls; foam fire protection system; and inline heaters.
Emissions Control Systems	Operational emissions from the turbine generators are minimized by burning natural gas and using emissions control systems. Selective catalytic reduction (SCR)/carbon monoxide (CO) emissions controls systems will include a continuous emission monitoring system (CEMS) for each CTG, an aqueous ammonia storage tank (approximately 57 m^3 capacity), ammonia flow control unit, and ducting assemblies. CEMS continuously monitor and record concentrations of key pollutants and parameters, such as NOx, carbon monoxide (CO), carbon dioxide (CO_2), oxygen (O_2), ammonia (NH_3), and particulate matter (PM). This data is used to manage compliance with environmental regulations and helps optimize the operation of emissions control systems.
Cooling System	Air cooling technology will comprise air-cooled generators and lube oil systems.

Volumes and composition of combustion fuel (natural gas and ULSD) will vary over the 25-year operation, but it is assumed the average annual fuel consumption for base case operations would be 3,031,618 gigajoules (GJ) of natural gas and 193,508 GJ of ULSD (assumes approximately seven days of ULSD use per year). Average annual fuel consumption for a stress case (i.e., maximum energy demand) would be 13,972,756 GJ of natural gas and 891,878 GJ of ULSD. Anticipated greenhouse gas emissions from Project operations have been calculated using the stress case values (Section 23).

9.2.2 Ancillary Systems and Facilities

Ancillary systems and facilities that comprise the Project but are not directly linked to power generation are summarized in Table 9.2.

Table 9.2 Ancillary Systems and Facilities

Component	Description
Switchyard	A 138 kV switchyard will be developed to tie the 138 kV generation feeders to the existing 138 kV transmission line that crosses the Project site. The switchyard will be a double bus configuration with three or four breakers per lineup configured so as to allow any one breaker to be taken out of service without losing any connection. The switchyard will be designed to meet NB Power specifications.
Administrative and Operations Building	A multi-purpose building will be constructed to house administration and operation staff and will include a central control system for operation and monitoring of the CTGs.
Water Supply and Treatment	Operation of the CTGs will require a sustainable water supply. Preliminary design estimates a peak demand of approximately 4,870 L/min associated with the operation of ten turbines. It is assumed that raw water will be supplied by groundwater wells on the property. A hydrogeological study is being completed to assess the location, number, and density of the water wells necessary to achieve a sustainable yield and inform final design (i.e., WSSA). The proposed raw water treatment system will be designed to produce high-purity water for turbine operation using a combination of storage, chemical treatment, membrane filtration, and deionization processes. Groundwater will be collected and stored in a designated storage tank (189 m^3/50,000 gallon capacity). To prevent microbial growth and maintain water quality during storage, chlorine will be added. Before entering the reverse osmosis (RO) system, the water will undergo a de-chlorination and prefiltration process to protect the RO membranes from potential damage caused by residual chlorine and solids. Once de-chlorinated, the water will be treated through the RO system, where a significant portion of dissolved solids and impurities will be removed. RO uses a semi-permeable membrane to remove dissolved salts, bacteria, and other impurities from water, producing a portion of reject water that carries away the concentrated contaminants. The RO permeate, or produce stream, will be sent to an electrodeionization (EDI) system which further purifies the water by using electrically active media and ion exchange membranes. Treated water will be stored in a demineralized water tank (45,424 m^3/1.2 million gallon capacity) before delivery to the turbine system. A portion of the demineralized water will be reserved for fire water.
Wastewater System	The RO and EDI processes produce reject water containing the removed dissolved solids, impurities, and ions. This reject water from both processes is a necessary byproduct to ensure the removal of contaminants and achieve the desired water purity. The reject stream from the system is considered effluent and requires proper management and disposal. The discharge of reject process water from the water purification process will be approximately one-third of the volume of raw water intake with water quality composition approximately three times the concentration of the raw groundwater quality. Section 24.5 provides additional detail on liquid effluent from the Project. Domestic wastewater disposal may be required on the site if off-site facilities are not deemed sufficient or proximate for personnel needs. Where personnel numbers are expected to be minimal, a residential sized on-site septic disposal system would be sufficient for wastewater treatment and disposal.

Table 9.2 Ancillary Systems and Facilities

Component	Description
Stormwater Management	Stormwater conveyance will be provided via roadside ditches, swales, and culverts. The development incorporates the use of a stormwater management pond to attenuate peak flows discharging from the site to an existing adjacent unnamed tributary.
Fire Protection System	The fire protection system at the facility will include carbon dioxide-based fire suppression system on the CTG enclosures and fire water supplied from reserved water in the demineralization water tank. Approximately 180,000 gallons (681 m^3) of water in the demineralization tank will be reserved for fire water (although the water supply in the tank could be available if needed).
Access Road	A paved access road, approximately 1.5 km within a 20 m wide right-of-way, will be constructed to provide access to the site from Route 940. Preference will be given to incorporate existing disturbed areas (e.g., trails, temporary access road) in road design to reduce overall footprint of new disturbance.
Onsite Roads and Parking	An asphalt loop road enclosing all ten turbine units will be constructed and maintained on the site for the life of the Project. A paved parking lot will be used for onsite parking and laydown of equipment as needed.

9.3 Ancillary Infrastructure Outside Scope of Project

Natural gas will be delivered to the site by a third-party provider from the existing Maritimes and Northeast Pipeline (M&NP) that intersects the site. Natural gas delivery to the site, including new custody transfer, pressure reduction or metering stations that may be required to supply fuel to the Project are outside the scope of the Project as these facilities will be permitted, constructed, and operated by a third party (M&NP).

9.4 Project Activities

9.4.1 Construction

Construction activities will include site preparation, access road construction, building construction and equipment installation, start-up and commissioning of equipment, and site clean-up and restoration of temporary work and storage areas. Typical construction equipment will include front-end loaders, backhoes, dump trucks, trailers, forklifts and cranes. Site preparation and construction activities are expected to take approximately one year and employ approximately 80 to 120 trades persons. During peak construction activity, construction truck traffic is expected to consist of approximately 20 trucks a day.

9.4.1.1 Site Preparation

Pending approvals to proceed, site preparation activities are expected to start in Q1 2026 and will include clearing and grubbing of vegetation and levelling of the site to a predetermined grade. Vegetation clearing will be scheduled to occur outside of the migratory bird breeding season (mid-April to late August). Grading the site may involve cutting (e.g., excavation) or filling the area depending on existing elevations of the landscape. Blasting is not anticipated to be required for Project construction. Excavated rock and overburden will be stockpiled separately and stored on site for progressive and future site restoration activities. If borrow material (e.g., crushed rock) is required, it will be sourced from local, permitted pits or quarries. Erosion and sediment controls, including but not limited to the stormwater management pond, will be installed and maintained as necessary to protect soil from erosion and prevent sedimentation.

9.4.1.2 Access Road Construction

The proposed access road will require an easement across private property to access the Project site. NB Power will negotiate land access and lease the easement to WattBridge. The proposed access road will be approximately 1.5 km long within with an approximately 20 m wide right-of-way. The access road will be paved to improve durability and facilitate winter snow removal. Preference will be given to incorporate existing disturbed areas (e.g., trails, temporary access road) in road design to reduce overall footprint of new disturbance.

9.4.1.3 Equipment Mobilization, Installation and Construction

Following site preparation activities, additional excavation may be required for building and equipment foundations. Underground piping installation work will also be conducted at this time. A continuous concrete foundation will be poured for the CTGs and individual building foundations will be constructed for the administrative/operations building. Following completion of foundation construction, building construction and equipment installation will occur, including installation of mechanical and electrical systems. Groundwater production wells will be drilled to supply process water for use by the CTGs. A hydrogeological assessment (i.e., WSSA) is planned (see Appendix B for initial application) to determine the number, location and specifications for production wells. Equipment will be trucked to site using transport trailers via the TransCanada Highway and local roads as necessary.

9.4.1.4 Start-up and Commissioning

Once Project construction and installation activities are completed, the start-up and commissioning process can begin, in which performance testing and operator training protocols are conducted. Commissioning and start-up activities are expected to take approximately seven months and will employ a multidisciplinary team of approximately 10-12 dual trade technicians.

9.4.1.5 Site Clean-up and Reclamation

Clean-up activities will be ongoing throughout construction. Following construction, waste materials will be removed, stored soil replaced on areas not covered by asphalt or other infrastructure will be revegetated. Construction waste will be collected and disposed of at licensed waste facilities.

9.4.2 Operation and Maintenance

During operations, the power generating station will combust natural gas (as the default fuel source) to produce power which will be converted to electrical power by coupled generators. The power generating station will not operate continuously. Because the CTGs are modular units capable of starting and stopping independently of each other, they will provide a wide range of dispatch modes including synchronous condensing to meet the generation needs of NB Power. Synchronous condensing helps utilities cope with the destabilizing effects of inverter-based generation like wind and solar. While synchronous condensers have traditionally been standalone devices, the Project will use each of the ten CTGs in “synchronous condenser mode,” where they can be synchronized to the grid while being decoupled from their turbines. In this mode, each generator will continue to spin, while its turbine (and fuel consumption) is off. Each spinning turbine can deliver 50 megavolt-amperes (MVA) of reactive support.

Each CTG will operate at approximately 46.3 MWs, up to the full ten units totaling 463 MW, in summer conditions (25°C) and 478 MW in winter conditions (-20°C). The facility will have a maximum nameplate capacity of 500 MW.

Operating hours will vary based on power demand, with peak operating hours expected to occur during the winter months of December through February of any given year. Assuming a typical operating scenario where the power generating station would operate with a net capacity factor[1] of 7%, from September through November, the CTGs are expected to operate less than 10 hours a month. Assuming a higher use scenario with the Project running at a 17% net capacity factor, the operating hours during this same period would range from less than 4 to 23 hours a month. The highest operating hours for the Project are expected to occur between December and February of any given year, with operating hours ranging from 105 to 217 hours at a 7% net capacity factor or 256 to 528 hours at a 17% net capacity factor. Figure 9.4 shows expected monthly operating hours within any given year for the 7% and 17% net capacity factor scenarios.

1 Net capacity factor refers to a measure of how much actual electricity a power plant produces compared to what it would produce if it had operated at full capacity continuously over the same period.

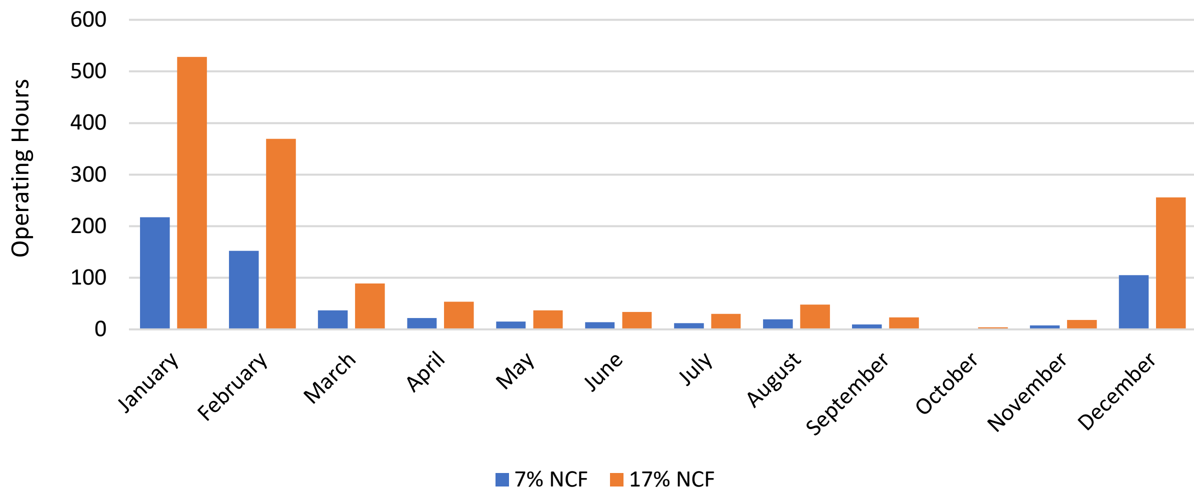


Figure 9.4 Monthly Operating Hours for the 7% and 17% Net Capacity Factor Scenarios

Day to day operation and maintenance will be provided by a staff of approximately 8-10 maintenance and operations technicians. Inspection and maintenance will be conducted on a regular schedule consistent with industry operating experience. System maintenance will be conducted during “off-peak” periods or “shoulder” months (i.e., September-November and March-May). With proper planning of work during these periods, the Project will have a very low forced outage rate. The outage duration is expected to be approximately 48 hours per year per turbine.

The Project will be designed to operate with reliability and resiliency during cold weather conditions.

9.4.3 Decommissioning and Abandonment

The Project is expected to operate under the PPA for a minimum of 25 years and could be extended. A decommissioning decision would be based on system needs at that point in time, based on an updated integrated resource plan from NB Power. Decommissioning and abandonment will be conducted in accordance with a Decommissioning and Reclamation Plan and will involve full or partial removal of infrastructure at the end of the Project life and land reclamation as necessary to meet applicable land use objectives and regulatory requirements. The workforce required for decommissioning would be similar in composition to that required for construction, but smaller.

10 Estimated Maximum Production Capacity

The Project will have a maximum production capacity of 500 MW. Production will range from a single unit operating at 46.3 MW, up to the full ten units totaling 463 MW, in summer conditions (25°C) and 478MW in winter conditions (-20°C).

11 Project Schedule

The preliminary Project schedule is presented in Table 11.1. The operational lifetime is expected to be a minimum of 25 years. Prior to the end of its operational life, WattBridge will consider, in consultation with NB Power, whether to perform equipment upgrades to repower the Project and extend its operational lifetime or proceed with decommissioning. Project decommissioning is expected to take approximately two years.

Table 11.1 Preliminary Project Schedule

Activity/Milestone	Anticipated Timeline
Field Surveys and Technical Studies	Q2-Q3 2025
Stakeholder and Indigenous Engagement	Q1 2025-life of Project
Regulatory Review and Approval Process[1]	Q3 2025-Q1 2026
Site Preparation	Q1-Q2 2026
Installation of Infrastructure	Q2 2026 – Q2 2027
Start-up/Commissioning	Q4 2027 – Q1 2028
Operations	Q3 2028-2053
Decommissioning and Reclamation[2]	2053-2055

Notes:
[1]Assumes provincial Environmental Impact Assessment (EIA) Determination Review process only.
[2]Decommissioning timing depends on the long-term economics of the facility and whether PPA contract is extended.

Refer to Section 9.4.2 for details on expected operating hours for the Project.

12 Project Alternatives

This section of the document identifies potential alternative means of carrying out the Project as well as alternatives to the Project. Alternative means are the various technically and economically feasible ways, including through the use of best available technologies, which would allow a designated project and its physical activities to be carried out. Alternatives to the Project are functionally different ways to meet the need for the Project and achieve its purpose that are technically and economically feasible.

12.1 Alternative Means of Carrying Out the Project

Alternative means of carrying out the Project that have been/are being considered include alternatives associated with facility siting and design, alternative fuel sources, and effluent discharge options.

12.1.1 Facility Siting and Design

In advance of the power procurement process and selection of WattBridge as the preferred proponent for the Project, NB Power initiated various studies to identify suitable sites for project development. Site selection for the Project focused primarily on proximity to power transmission, proximity to natural gas pipelines, minimizing transmission re-enforcements required to interconnect the Project, addressing existing and future transmission issues, and environmental and socio-economic constraints.

Biophysical and archaeological field surveys were undertaken at two candidate sites: one near the Scoudouc Industrial Park and the other the current proposed Project location at Centre Village. Both sites are located in southeastern New Brunswick and met the primary criteria, although desktop and field studies found the Centre Village site to have fewer environmental constraints (e.g., wetlands, watercourses, archaeological potential) and therefore NB Power, in consultation with WattBridge and NSMTC, selected Centre Village as the preferred site. Additional studies are ongoing to help optimize site design on the selected property to help reduce potential environmental effects associated with project development.

12.1.2 Alternative Fuel Sources

NB Power is working to reduce its GHG emissions to net-zero by 2035. Natural gas generation will play an important role in the initial transition to replace emitting generation and reducing GHG emissions. Coal-fired generation would increase generating capacity but would not meet sustainability objectives and is not a preferred alternative as NB Power is seeking to reduce GHG emissions in line with provincial and federal decarbonization objectives.

The CTG technology selected for this Project is capable of burning natural gas and diesel to produce electricity, as well as hydrogen gas if it becomes available in the future. As noted above, a key criterion for Project siting was proximity to a source of natural gas. Natural gas is the preferred fuel source as it is technically and economically feasible and burns cleaner than diesel (even ULSD which is the preferred alternative fuel source for the Project). However, relying on natural gas as a single fuel option was not preferred due to energy security risks related to gas supply. While hydrogen fuel represents further advancement toward decarbonization, and it is possible that over the lifetime of the Project the availability of hydrogen fuel in the region may improve, hydrogen as a fuel source for the Project at this time is currently not technically or economically feasible. The preferred fuel source option is therefore use of natural gas with ULSD as a back-up.

12.1.3 Alternative Effluent Discharge Options

As indicated in Section 9.2.2 and discussed further in Section 24.5, the Project will generate considerable quantities of reject process water depending on the level of operations. Two proposed discharge scenarios are being considered for this reject water. The first scenario is the discharge to the proposed site ditch adjacent to the access road, and eventual discharge into a wetland 300 m west of the generating station. The secondary scenario is conveying effluent to the provincial ditch located along Route 940. Studies are currently underway to understand the design and environmental implications of both scenarios. WattBridge will also engage applicable landowners and regulatory agencies as part of the alternatives evaluation option for reject water discharge.

12.2 Alternatives to the Project

The Project is currently needed by Q3 2028 to provide firm capacity, back up renewables, and act as a contingency (by providing additional energy) for the situation where load grows faster than expected, or aging units become less reliable or fail. Prior to engaging WattBridge in a PPA, NB Power explored using alternative power supply options and/or demand-side resource programs as alternatives to the Project, although as described below, these alternatives were not technically or economically feasible and/or would not fulfill the Project's purpose. These alternatives are described to provide additional context for the purpose and the need for the Project, but it is important to note that none of these alternatives are within the mandate or control of WattBridge and therefore are not viable alternatives to the Project.

Several power supply options were explored as alternatives to the Project by NB Power, but not all generation supply options are equally capable of contributing to energy security in the same way. Electricity consumption is constantly changing, and energy supply must always be in balance with energy demand. NB Power also needs to maintain a minimum level of reserve generation to meet reliability standards. Some generation options are better at these tasks than others.

Generally, a supply option is either considered fully dispatchable (controllable and predictable) or dispatch limited (limited to no control and predictability). Fully dispatchable options can be ramped up or down and can adjust output to meet the requirements of the electrical system. Other generation technologies have limited capabilities, in many cases they are limited to reducing generation to match load but cannot increase generation on demand when load increases. Some generation types have no ability to vary with demand.

Variable renewable generation sources like large wind and solar farms are examples of dispatch limited options. These options are dependent on factors like weather conditions and time of day. Accordingly, they're not able to efficiently respond at all times to the consumption needs of New Brunswickers. These resources generate when they can and don't generate when they can't, regardless of the needs of the system.

Battery storage is another example of a dispatch limited resource, as its ability to dispatch is dependent on the current state of charge. Battery storage can only put energy onto the grid for a finite period of time, based on overall storage capability. This limits the ability to backstop wind and provide reliable peaking capacity during the coldest days of the year. For example, if a battery was discharged during peak time or for economics at one period of the day, it may be depleted for a generation shortage later in the day. Similarly, a battery that is held for reserve in case of generation outages cannot provide reserve once the battery is discharged until it has been charged again. These limitations reduce the ability of batteries to provide dispatchability at all times.

Natural gas combustion turbines (same technology that was selected for the Project, but relying only on natural gas as a single fuel option) were evaluated, but not selected due to energy security risks related to gas supply. The selected alternative (Combustion Turbine – Dual Fuel) has a secondary fuel option to ensure energy security and availability of the resource in extreme conditions.

Natural gas combined cycle units were also considered. These units include both a natural gas-fired combustion turbine as well as a secondary steam turbine that makes them more efficient. Because of the extra capital cost associated with this technology, combined cycle units need to be base-loaded to provide value. This technology was ruled out because it would result in increased emissions and higher costs, both negative outcomes for New Brunswickers.

A final alternative to the Project that was considered by NB Power was for demand-side initiatives such as energy efficiency or demand response programs. Demand-side resources serve resource adequacy needs by reducing load, which reduces the need for additional generation. Typically, these resources result from one of two methods of reducing load: energy efficiency or demand response (load management). The energy efficiency method designs and deploys technologies and design practices that reduce energy use while delivering the same service (light, heat, etc.). Demand response method encourages electricity users to reduce their electricity consumption, particularly during times of high demand, or to shift their demand to parts of the day with lower demand, thus reducing the overall need for capacity. These programs provide great value to the system and are already being accelerated. It is anticipated that approximately 100 MW of demand response programs will be in place by 2028, and even with this there remains a supply gap need. The size and scope of demand side programs is not adequate to close the identified supply gap. Demand-side resource programs do not meet the purpose of the Project and are therefore not a viable alternative to the Project.

In summary, there are no technically and economically feasible alternatives to the Project to provide the necessary regulation of voltage and grid stability to accommodate variable renewable energy sources to the power grid and meet the required Project schedule.

While renewable generation, new storage, and demand-side resource programs may represent an important fraction of new energy and capacity resources, it is important to note the role of traditional thermal natural gas generation to meet peak demand while continuing to support the electrification of the transportation sector in the coming decade. Studies have indicated that using fast-start generation fueled by natural gas is a low-cost way to manage the impacts of this increased need for electricity (peaks in electrical load). This can be run as needed to support peak demand, while complementing the renewable energy resources like wind and solar, that are not always available. While generation emissions do increase using natural gas thermal generation, this Project will result in significant net reductions in overall electricity-related GHG emissions in the province and complies with the *Clean Electricity Regulations*.

Part C: Location Information and Context

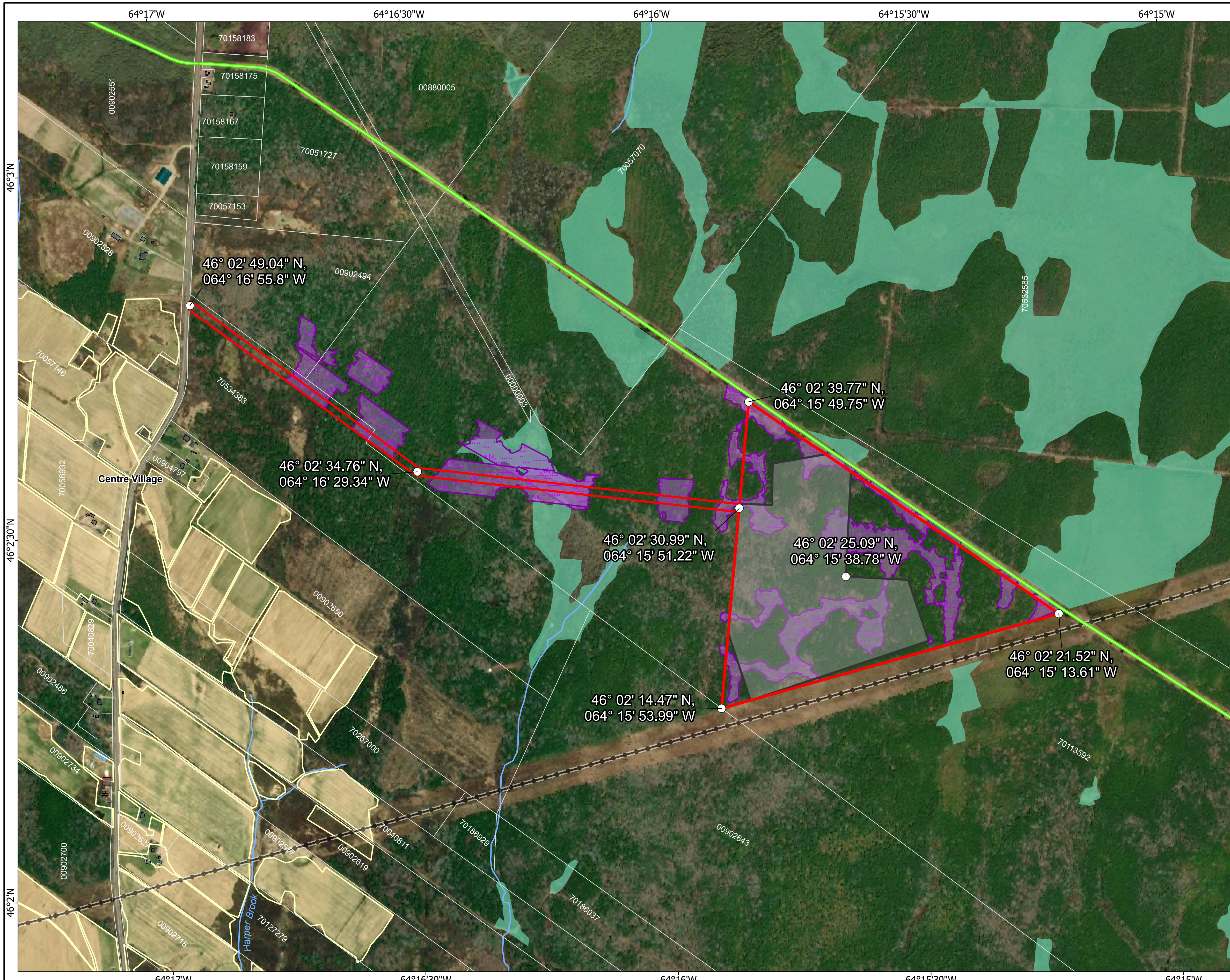
13 Geographic Information

13.1 Geographic Location and Land Ownership

The Project is located within a portion of a 223 ha parcel of land (PID 70113592) in Centre Village, in the Parish of Sackville, County of Westmorland and Province of New Brunswick. NB Power is the registered owner and holds title in fee simple. The center coordinates for the Project Site (approximately 32 ha) within which Project infrastructure will be sited are 46° 02' 25.09" N and 64° 15' 38.78" W (Figure 13.1)

The Project site was selected as it represents a convergence of the M&NP 30" natural gas pipeline and a 138 kV transmission line owned and operated by NB Power. The Project Site is approximately 14 m from the M&NP pipeline and approximately 43 m from the transmission line. The approximate development footprint within the Project Site is expected to be 14.7 ha.

Set back approximately 1.5 km east of Route 940, access to the site will require construction of a new access road across another parcel of privately owned land (PID 70534383) within a 20-m wide right-of-way (RoW). NB Power and WattBridge are in the process of negotiating a RoW for the access road. WattBridge will lease the land from NB Power for the life of the Project.



Stantec

Legend

- Project Area Points of Reference
- Project Area
- Development Footprint (Approximate)

Built Infrastructure

- Road
- Transmission Line (Existing)
- Pipeline (Existing)
- Building

Land Use

- Property Boundary
- Agricultural Land (ARMS)

Wetlands and Waterways

- Watercourse
- Wetland (NBELG)
- Wetland (Stantec)

N

0 100 200 300 400 500 m

(At original document size of 11x17)
1:10,000

Notes

1. Coordinate System: NAD 1983 CSRS New Brunswick Stereographic
2. Data Sources: NB Power; Stantec; GeoNB (NBHN, NBRN); NB Natural Resources and Energy Development; NB Environment and Local Government; NB Agriculture, Aquaculture and Fisheries; Service NB.
3. Background: Esri, CGIAR, USGS, Maxar

Project Location:

Project Location — Centre Village, NB | Prepared by AC on 2025-06-02

Client/Project — 121418452
WattBridge Energy LLC
RIGS-Centre Village

Figure No.
13.1

Title
Project Site and Access Road

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13.2 Proximity to Residences and Nearby Affected Communities

The Project is located east of the rural community of Centre Village. Surrounding lands are primarily agricultural and forested lands with residences scattered along Route 940. The nearest residence is approximately 1.4 km west from the Project site along Route 940.

13.3 Proximity to Indigenous Lands

The nearest Indigenous reserve lands to the Project are the Fort Folly Reserve No. 1 (56.1 ha) which is located approximately 23 km southwest of the Project, in Dorchester, NB (Figure 4.1). This reserve is associated with the Amlamgog (Fort Folly) First Nation which is the smallest Mi'kmaq community in New Brunswick with a total registered population of 141 (32 of which are registered as living on the Fort Folly reserve land) (CIRNAC 2024a). The next nearest Indigenous reserve land is the Metepenagiag Urban Reserve 3 (19.9 ha) which is approximately 36 km southwest of the Project. This reserve is associated with the Metepenagiag Mi'kmaq Nation which is located in Red Bank, at the head of tide of the Miramichi River (in Northumberland County). Metepenagiag is the oldest continuously-settled community in New Brunswick (NSMTC 2025b) and has a total registered population of 719 (CIRNAC 2024b). Amlamgog First Nation and Metepenagiag Mi'kmaq Nation are part of the North Shore Mi'kmaq Tribal Council (NSMTC 2025a).

13.4 Proximity to Federal Lands

The nearest federal lands to the Project are lands associated with the Tintamarre National Wildlife Area near Sackville, NB which are administered by Environment and Climate Change Canada (ECCC) for wildlife research and management (Figure 1.1). The Jolicure Lake unit comprises 1,990 ha of land between Highway 940 and Highway 16 and is approximately 5.5 km from the Project site (TBCS 2025). The Tower Goose Lake unit (28 ha) and the Hog Lake unit (62 ha) are approximately 7.5 and 9.8 km from the Project site, respectively (TBCS 2022, 2024).

14 Physical and Biological Environment

14.1 Physiography

The Project site lies within the Eastern Lowlands Ecoregion of New Brunswick, which is characterized by relatively smooth topographic relief and low elevation, typically late carboniferous sedimentary bedrock geology, and frequently acidic soils (NBDNR 2007). Within the Eastern Lowlands Ecoregion, the Project is situated in the Kouchibouguac Ecodistrict. This ecodistrict is characterized by river estuaries, barrier beaches, and peat bogs (NBDNR 2007). Most soils in this ecoregion are a result of marine deposits near the coastline and glacial tills farther inland, resulting in a range of soils from compact, clay, and sandy loams, to quartzose beach soils and Glaciolacustrine deposits. The bedrock of the Project site is composed entirely of Pennsylvanian grey and red sandstone, mudstone, and conglomerate (NBDNR 2007).

The Project site is in a relatively flat-lying area with forest cover in the upper reaches of the Tantramar River Watershed. Locally, the site slopes gently toward a nearby topographic depression representing the headwaters of an unnamed tributary located approximately 350 m west of the Project site. Regional topography slopes gently west and south toward the Tantramar River and its tributaries, located approximately 5 km west of the Project. The Tantramar River flows south and discharges to the Cumberland Basin of the Bay of Fundy adjacent to Sackville, NB approximately 20 km south of the Project. The Project site elevation is approximately 58 m above sea level (masl).

14.2 Climate

The Project is located within the Eastern Lowlands ecoregion of New Brunswick with climate described as humid continental with long and cold winters and warm summers. Due to lack of major topography in the area, the main control of local climate is the distance to the Atlantic Ocean (Rivard et al. 2005).

According to the 1991-2020 Canadian Climate Normals for the nearest weather station in Sackville, NB, the mean annual precipitation is 1147 mm, which includes a mean annual snowfall accumulation of 231 cm (ECCC 2025a).

14.3 Air Quality

The Project is located within the central air zone, the largest of New Brunswick's three provincial air zones, which encompasses the major population centers of Moncton, Dieppe, Fredericton, Miramichi, and Edmundston. The central zone is home to several major emitters, including the AV Group pulp mill in Nackawic, the Twin Rivers Paper Company pulp mill in Edmundston, and the Arbec Forest Products oriented strand board mill in Miramichi (NBDELG 2024).

The central air zone includes a total of 11 continuous ambient air quality monitoring stations that measure a wide range of substances near both industrial facilities and communities. The NBDELG operates a total of seven monitoring stations in Moncton, Fredericton, Miramichi, and Edmundston. In addition, there are four industry-run stations located in Edmundston, Nackawic, and Miramichi.

The focus of baseline air quality discussed herein for the area is on substances that have the potential to be emitted by the Project in substantive quantities and that have applicable air quality objectives or standards. These include carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), total suspended particulate (TSP), ammonia (NH_3), and particulate matter of 2.5 microns in diameter or smaller ($PM_{2.5}$). Baseline concentrations were only available for CO, NO_2, SO_2, and $PM_{2.5.}$

Representative baseline ambient air quality concentrations were determined using regional ambient air quality monitoring data for the most recent three years published (2020-2022). Regional monitoring data from the ECCC Moncton station (located 34 km northwest of the Project site) were used where available including for NO_2, $PM_{2.5}$, and CO (ECCC 2025a). As SO_2 data were not available for Moncton, SO_2 data from the Miramichi station (145 km northwest) was used instead (NBDELG 2025a). The ambient concentrations of TSP were not measured at either of the nearby monitoring stations; they were estimated using a correlation proposed by Brook et al. (1997). These concentrations were used to assess baseline conditions following the methodology outlined *Alberta Air Quality Model Guideline* (AQMG; AEP 2021).

NBDELG participates in the Canadian Council of Ministers of the Environment's (CCME) Air Quality Management System (AQMS), which serves as a national framework for managing air quality in Canada. The AQMS uses a 'Management Level' system to assess air quality, with each level representing a different air quality grade. In this system, 'green' indicates the highest quality, typically found in pristine, undeveloped areas. 'Yellow' and 'orange' represent declining air quality, while 'red' signifies the poorest air quality and indicates that the Canadian Ambient Air Quality Standards (CAAQS) have been exceeded.

The 2022 Air Quality Monitoring Results (NBDELG 2024) showed that, most of the time, the Moncton station was at a yellow management level for NO_2 and $PM_{2.5}$, with no management level for CO (as there is no associated CAAQS value). NO_2 and $PM_{2.5}$ concentrations in Moncton were in the yellow level, suggesting room for improvement through proactive measures but no exceedances were reported. At the Miramichi Rockcliff station, SO_2 concentrations remained within the green management level, indicating good air quality.

The representative baseline concentrations used for the assessment of the Project emissions are summarized in Table 14.1 and compared to the New Brunswick (NB) Maximum Permissible Ground-Level Concentrations (GLCs) (NBDELG 2018). Particulate Matter less than 2.5 microns in aerodynamic diameter (PM2.5) does not have a NB criterion, and as such, the Canadian Ambient Air Quality Standards (CAAQS 2020) were used (CCME 2017). The baseline NO_2 concentrations are less than 4% of the NB Maximum Permissible GLCs. The baseline SO_2 and CO concentrations are less than 3% of the NB GLCs. The 24-hour average baseline $PM_{2.5}$ concentration is 33% of the CAAQS and the annual $PM_{2.5}$ baseline concentration is 63% of the CAAQS.

Table 14.1 Background Concentrations

Air Contaminant	Averaging Period	Background Concentration (µg/m³)	Ambient Air Criteria [A] (µg/m³)	Comparison of Background to Ambient Air Criteria (%)	Methodology
NO_2	1-hour	7.67	400	1.92	3-year average of the annual 90th percentile of the daily hourly concentrations (2020–2022) measured at the Moncton Thanet Street station.
	24-hour	5.78	200	2.89	Maximum of the 24-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Moncton Thanet Street station.
	Annual	3.55	100	3.55	Maximum annual average over the 3 years of measured data (2020–2022) measured at the Moncton Thanet Street station.
SO_2	1-hour	0.52	900	0.06	3-year average of the annual 90th percentile of the daily hourly concentrations (2020–2022) measured at the Miramichi Rockcliff station.
	24-hour	0.38	300	0.13	Maximum of the 24-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Miramichi Rockcliff station.
	Annual	0.84	60	1.40	Maximum annual average over the 3 years of measured data (2020–2022) measured at the Miramichi Rockcliff station.
CO	1-hour	279	35,000	0.80	3-year average of the annual 90th percentile of the daily maximum hourly concentrations (2020–2022) measured at the Moncton Thanet Street station.
	8-hour	273	15,000	1.82	Maximum of the 8-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Moncton Thanet Street station.
$PM_{2.5}$	24-hour	8.87	27 [B]	32.85	Maximum of the 24-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Moncton Thanet Street station.
	Annual	5.55	8.8 [A]	63.07	Maximum annual average over the 3 years of measured data (2020–2022) measured at the Moncton Thanet Street station.

Table 14.1 Background Concentrations

Air Contaminant	Averaging Period	Background Concentration (µg/m³)	Ambient Air Criteria [A] (µg/m³)	Comparison of Background to Ambient Air Criteria (%)	Methodology
TSP	24-hour	42.2	120	35.17	TSP concentrations were calculated using the PM2.5 .data from the Moncton, Thanet Street Station, based on a correlation proposed by Brook et al. (1997), which estimates the $PM_{2.5}$ fraction of total TSP at 21.6%
	Annual	25.9	70	37.00	

Notes:

[A] Schedule B NB Air Quality Regulation 97-133 – Clean Air Act (NBDELG 2018)

[B] CAAQS

14.4 Hydrogeology

The hydrogeology of the Project site includes both local and regional flow regimes that are expected to be controlled primarily by the bedrock geology and topography. The site is located within the upper reaches of the Tantramar River watershed and regional groundwater flow is expected to follow the topography of the catchment area. Groundwater is inferred to flow towards the west and south with eventual discharge to the Tantramar River and the Bay of Fundy. On a local scale, shallow groundwater is expected to discharge to tributaries of the Tantramar River, including Harper Brook, East Brook, and Long Lake Brook and their respective tributaries. In the absence of major topography in the area (i.e., the maximum ground surface elevation in the watershed is on the order of approximately 70 masl and the Project site is approximately 58 masl), lateral groundwater flow direction at depth is not expected to differ significantly from shallow groundwater.

Based on a review of the New Brunswick online well system (NB OWLS), there were 44 domestic well records within 10 km of the Project site and no records showing within 500 m (NBDELG 2025b). Regional groundwater quality in the Maritime Carboniferous Basin is generally characterized as naturally good to excellent, with commonly elevated concentrations of iron and manganese (Rivard et al. 2005).

14.5 Vegetation and Wetlands

Seventy-five percent of the Kouchibouguac Ecodistrict is covered by forest, much of which is early successional hardwood with trembling aspen (*Populus tremuloides*), red maple (*Acer rubrum*), and paper birch (*Betula papyrifera*). Later successional forests are primarily coniferous stands and mixedwood, and can include red maple, sugar maple (Acer saccharum), American beech (*Fagus grandifolia*), spruce (*Picea* spp.), and hemlock (*Tsuga canadensis*) (NBDNR 2007).

Stantec conducted vegetation and wetland surveys within the Project site, and preliminary wetland surveys along the proposed access road in 2024. The complete area that Stantec surveyed, which includes areas adjacent to the proposed access road, is referred to as the study area. The study area supports four upland habitat types and three wetland habitat types. The upland habitat types include tall shrub thicket, deciduous forest, coniferous forest, and mixedwood forest. Wetland habitats present in the study area include tall shrub swamp, mixedwood treed swamp, and low shrub swamp.

Tall shrub thicket is restricted to the portion of the proposed access road located adjacent to Route 940. This area was once agricultural land that is no longer in production. The overstory consists of a relatively dense tall shrub cover that is composed largely of a mixture of speckled alder (*Alnus incana*), glossy buckthorn (*Frangula alnus*) and choke cherry (*Prunus virginiana*). Glossy buckthorn is a highly invasive species that infests upland habitats as well as swamps. Tree species are absent in the overstory. The ground vegetation layer is well developed and is dominated by rough-stemmed goldenrod (*Solidago rugosa*), necklace sedge (*Carex projecta*), spinulose wood fern (*Dryopteris carthusiana*), and bluejoint reed grass (*Calamagrostis canadensis*).

A small patch of deciduous forest is present near the western end of the proposed access road on a well-drained slope. This stand is approximately 50 years old and is composed almost entirely of red maple (*Acer rubrum*) along with a small amount of paper birch (*Betula papyrifera*). The shrub understory is relatively sparse and is composed entirely of the invasive shrub glossy buckthorn. The ground vegetation layer is composed mainly of spinulose wood fern and evergreen wood fern (*Dryopteris intermedia*) along with lesser amounts of wild lily-of-the-valley (*Maianthemum canadense*).

Coniferous forest is found in mesic to imperfectly drained areas along the proposed access road and in the Project site. These coniferous forest stands range in age from approximately 20 to 40 years. The dense tree overstory of these stands is composed mainly of a mixture of red spruce (Picea rubens) and balsam fir (*Abies balsamea*). Scattered red maple and paper birch are also present in the canopy. The shrub understory is very sparse and is composed of advanced regeneration of balsam fir as well as scattered rhodora (*Rhododenron canadense*). The ground vegetation understory is composed of a carpet of red-stemmed feathermoss (*Pleurozium schreberi*) that is punctuated by small patches of sphagnum moss (*Sphagnum* spp.), bracken fern (*Pteridium aquilinum*) and bunchberry (*Cornus canadensis*).

Mixedwood forest is the most abundant and widespread upland habitat type in the study area and is typically found on mesic sites. These stands range in age from approximately 15 years old to 50 years old. They generally have a moderately dense tree overstory that is composed of a mixture of red maple, white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*), paper birch, and balsam fir. The shrub understory is sparse and consists mainly of advance regeneration of balsam fir along with small amounts of mountain holly (*Ilex mucronata*), beaked hazel (*Corylus cornuta*), and American mountain ash (*Sorbus americana*). The ground vegetation consists of a patchy moss carpet interspersed with patches of ferns and forbs. The most abundant species are bunchberry, bracken fern, stair-step moss (*Hylocomium splendens*), velvet-leaved blueberry (*Vaccinium myrtilloides*), red-stemmed feathermoss, wild lily-of-the-valley, and interrupted fern (*Claytosmunda claytoniana*).

Wetlands are scattered throughout the study area. These wetlands are composed of three main habitat types: tall shrub swamp, low shrub swamp and mixedwood treed swamp. The tall shrub swamp habitat type can be further subdivided into two types. The first type is typically found along fertile seeps. It is characterized by a moderately dense tall shrub canopy that is dominated by speckled alder. Other common shrub species include common winterberry (*Ilex verticillata*), white meadowsweet (*Spiraea alba*), glossy buckthorn, and black chokeberry (*Aronia melanocarpa*). Tree cover is sparse and is composed of scattered white spruce, balsam fir and red maple. The ground vegetation layer is largely composed of a mixture of rough-stemmed goldenrod, spinulose wood fern, dwarf red raspberry (*Rubus pubescens*), sphagnum moss, and common tall manna grass (*Glyceria grandis*).

The second type of tall shrub swamp is generally found in less fertile depressions. It is characterized by a relatively dense tall shrub canopy that is dominated by common winterberry along with small amounts of advanced regeneration of balsam fir and glossy buckthorn. Tree cover is sparse and composed of a mixture of balsam fir, paper birch, red maple, and black spruce (*Picea mariana*). The ground vegetation layer consists of a continuous mat of sphagnum moss that is punctuated by patches of forbs, ferns and graminoids, the most abundant of which are a hybrid white panicle American aster (*Oclemena x blakei*), three-leaved false Soloman's seal (*Maianthemum trifolium*), common tall manna grass, cinnamon fern (*Osmundastrum cinnamomeum*), and bunchberry.

Low shrub swamp is present near the eastern tip of the Project site. This wetland habitat type is found in infertile depressions. Tree cover consists of scattered balsam fir, red maple and black spruce. Shrub cover occurs in large dense patches that are composed mostly of low ericaceous shrubs including black huckleberry (*Gaylussacia baccata*), rhodora, sheep laurel (*Kalmia angustifolia*), and velvet-leaved blueberry. Other common shrub species include gray birch (*Betula populifolia*) and common winterberry. The ground vegetation layer is dominated by sphagnum moss, cinnamon fern, tawny cottongrass (*Eriophorum virginicum*), and bog aster (*Oclemena nemoralis*) along with lesser amounts of three-leaved false Soloman's seal and common wooly bulrush (*Scirpus cyperinus*).

Mixedwood treed swamp is found scattered throughout the study area. This wetland habitat type is characterized by a moderately dense tree overstory that is composed of a mixture of red maple, balsam fir and paper birch. The shrub understory is also moderately dense and is dominated by American mountain ash (*Sorbus americana*), speckled alder, common winterberry, and mountain holly. The ground vegetation layer consists of a carpet of sphagnum moss that is punctuated by patches of cinnamon fern, hairy flat-top white aster (*Doelingeria umbellata*), and sensitive fern (*Onoclea sensibilis*).

Records for vascular plants and lichen occurring within 5 km of the Project site were obtained from the Atlantic Canada Conservation Data Centre (AC CDC 2025). Species at Risk (SAR) and Species of Conservation Concern (SOCC) identified in AC CDC observation records and during vegetation and wetland surveys are shown in Table 14.2. Three individual black ash (*Fraxinus nigra*) were observed in a cluster approximately 12 m from the 20-metre-wide RoW of the proposed access road during field surveys conducted in 2024.

Table 14.2 Vascular Plant and Lichen SAR and SOCC Identified During Wetland/Vegetation Field Surveys (2024)

Common Name (*Scientific Name*)	SARA[1]	COSEWIC[2]	NB SARA[3]	AC CDC S-Rank	Data Source
*Black ash (*Fraxinus nigra*)		TH		S3S4	Field Surveys
Yellow ladies'-tresses (*Spiranthes ochroleuca*)	-	-	-	S1S2	AC CDC

Notes:
[1]SARA = *Species at Risk Act*; [2]COSEWIC = Committee on the Status of Endangered Wildlife; [3]NB SARA = New Brunswick *Species at Risk Act*
Asterisks(*) indicate SAR
Observations from AC CDC records are not all accurate enough to determine whether observation was inside the Project site.
SARA / COSEWIC / NB SARA codes used: SC = Special Concern; TH = Threatened; VU = Vulnerable; EN = Endangered; NAR = Not at Risk
S-Rank definitions (AC CDC 2025):
S1 = Critically Imperiled: Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 = Imperiled: Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 = Vulnerable: Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 = Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 = Secure: Common, widespread, and abundant in the province.
SNR = Unranked: Nation or state/province conservation status not yet assessed.
SNA = A conservation status rank is not applicable because the species is not a suitable target for conservation activities
SU = Unrankable: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

14.6 Wildlife and Wildlife Habitat

The Kouchibouguac Ecodistrict contains two Protected Natural Areas, the closest of which is approximately 40 km from the Project (NBDNR 2007). There are no Important Bird Areas within 20 km of the Project (Birds Canada and Nature Canada n.d.). The Tintamarre National Wildlife Area, which supports habitat for waterfowl and marshbirds during migration and breeding, lies approximately 5 to 10 km southeast of the Project (ECCC 2016). The Upper Tantramar Marsh is an Environmentally Significant Area (ESA) (Tims and Craig 1995) approximately 4-5 km southwest of the Project site, at the headwaters of the Tantramar River at Dave Lake. The marsh is composed of dykeland, bog, shallow marsh, wooded islands, and open water lakes. The ESA provides suitable habitat for several species of nesting and staging waterfowl, and the wetland is likely one of the few nesting locations in New Brunswick for Marsh Wren, Sedge Wren, and Virginia Rail (Tims and Craig 1995).

The terrestrial habitat of the study area includes tall shrub thicket, deciduous forest, coniferous forest and mixedwood forest, interspersed with shrub swamp, mixedwood treed swamp, and low shrub swamp. Dedicated wildlife surveys were not conducted by Stantec in 2024, but incidental wildlife observations were noted during vegetation and wetland surveys. One observation of suitable bat habitat was made (natural cavities within an old red maple) inside the Project site.

Records for wildlife occurring within 5 km of the Project were obtained from the AC CDC, which includes data from the Maritimes Breeding Bird Atlas (MBBA) (AC CDC 2025). Table 14.3 lists wildlife SAR and SOCC that have been reported within or near the Project site as identified by AC CDC records and incidental observations during Stantec field surveys. Bald eagle (*Haliaeetus leucocephalus)* was the only SOCC recorded within the Project site during Stantec field surveys.

Table 14.3 Wildlife SAR and SOCC Observed or Reported Within 5 km of the Project Site

Common Name	Scientific Name	SARA	COSEWIC	NB SARA	AC CDC S-Rank	Data Source
Birds						
Bald Eagle	*Haliaeetus leucocephalus*	-	NAR	EN	S4	Field Surveys, AC CDC
*Bank Swallow	*Riparia riparia*	TH	TH	-	S2B	AC CDC
*Barn Swallow	*Hirundo rustica*	TH	SC	TH	S2B	AC CDC
Black-backed Woodpecker	*Picoides arcticus*	-	-	-	S3	Field Surveys, AC CDC
Black-billed Cuckoo	*Coccyzus erythropthalmus*	-	-	-	S3B	AC CDC
*Bobolink	*Dolichonyx oryzivorus*	TH	SC	TH	S3B	AC CDC
*Canada Warbler	*Cardellina canadensis*	TH	SC	TH	S3S4B	AC CDC
Cape May Warbler	*Setophaga tigrina*	-	-	-	S3B,S4S5M	AC CDC
Cliff Swallow	*Petrochelidon pyrrhonota*	-	-	-	S2B	AC CDC
*Eastern Wood-Pewee	*Contopus virens*	SC	SC	SC	S3B	AC CDC
*Evening Grosbeak	*Coccothraustes vespertinus*	SC	SC	-	S3B,S3S4N,SUM	AC CDC
Killdeer	*Charadrius vociferus*	-	-	-	S3B	AC CDC
Northern Mockingbird	*Mimus polyglottos*	-	-	-	S2B	AC CDC
*Olive-sided Flycatcher	*Contopus cooperi*	SC	SC	TH	S3B	AC CDC
Pine Siskin	*Spinus pinus*	-	-	-	S3	AC CDC
Red Crossbill	*Loxia curvirostra*	-	-	-	S3	Field Surveys

Table 14.3 Wildlife SAR and SOCC Observed or Reported Within 5 km of the Project Site

Common Name	Scientific Name	SARA	COSEWIC	NB SARA	AC CDC S-Rank	Data Source
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	-	-	-	S3B	AC CDC
Willow Flycatcher	*Empidonax traillii*	-	-	-	S1S2B	AC CDC

Notes: Asterisks(*) indicate SAR

[1]*Myotis lucifugus* (Little Brown Myotis), *Myotis septentrionalis* (Long-eared Myotis), and *Perimyotis subflavus* (Tri-colored Bat or Eastern Pipistrelle) are all Endangered under the Federal Species at Risk Act and the NB Species at Risk Act.

SAR / COSEWIC / NB SARA codes used: SC = Special Concern; TH = Threatened; VU = Vulnerable; EN = Endangered; NAR = Not at Risk

S-Rank definitions (AC CDC 2025):

S1 = Critically Imperiled: Critically imperiled in the province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 = Imperiled: Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 = Vulnerable: Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 = Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 = Secure: Common, widespread, and abundant in the province.

SNR = Unranked: Nation or state/province conservation status not yet assessed.

SNA = A conservation status rank is not applicable because the species is not a suitable target for conservation activities

SU = Unrankable: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

14.7 Surface Water and Aquatic Habitat

The Project is located near the headwaters of the Tantramar River watershed, which flows into the Cumberland Basin. Surface water runoff in the Project site is expected to follow the local topography, primarily flowing overland west.

A review of the New Brunswick Hydrographic Layer shows there are no mapped watercourses within the Project site or intersecting the proposed access road. However, an unnamed tributary running north to south is located approximately 300 m to the west of the property boundary (Figure 13.1). Initial field surveys have revealed that the watercourse does not correspond with the New Brunswick Hydrographic Layer and its headwaters begin at the outlet of the wetland, roughly 400 m further south. A preliminary field survey was conducted within the wetland associated with this unnamed tributary and determined that fish habitat is not present within the wetland, but suitable habitat for fish exists south of the wetland in the channelized habitat. This wetland has not yet been field-delineated. While not confirmed, it is expected that the unnamed tributary connects with Harper's Brook approximately 3 km downstream. Harper's Brook then crosses Route 940 through two culverts and then flows into a wetland just south of Patterson Lake. After this, the agricultural landscape negates any natural confluence with the Tantramar River (EOS Eco-Energy Inc. 2021).

15 Health, Social and Economic Context

The Project is located in Westmorland County, approximately 34 km southeast of Moncton and 12 km northeast of Sackville (Tantramar). The Project site is accessible from Route 940, approximately 14.5 km northeast of the TransCanada Highway and is approximately 31 km from the Romeo LeBlanc International Airport in the Greater Moncton area and 18 km from the Canadian National Railway line. The Project site is bordered by the M&NP pipeline and NB Power Transmission Lines 1142, 1143 and 1244.

Located within the municipal boundary of the Town of Tantramar, Project lands fall under the jurisdiction of the Southeast Regional Service Commission. The Commission provides land-use planning services to the Town, as well as other municipalities, under their Plan 360 division, which provides land-use planning, subdivision and building inspection services. The Project site is within the Rural Zone under the Tantramar Planning Area Rural Plan Regulation. The Rural Zone permits a wide variety of land uses, including wind farms, resource related activities, and public utilities such as the Project. The surrounding land use context is predominantly rural development with large lots fronting on Route 940. There are no municipal services in the area, so development is accommodated by well and on-site sewage disposal systems.

From a socio-economic perspective, the Project is located within New Brunswick's Southeast economic region. The Southeast region comprises Albert, Westmoreland and Kent counties and represents approximately 30.2% of the province's total population (NBJobs 2024). Between 2008 and 2023, the region's population grew by 26.6% from 199,431 to 252,408 (NBJobs 2024). With growth in the Southeast having been particularly strong in recent years, driven primarily by a combination of international and interprovincial migration, the region is quickly becoming one of the fastest growing economic regions in Canada (NBJobs 2024).

At the time of the 2021 Census, 63.1% of the region's population aged 25 to 64 had completed some form of post-secondary education. This percentage was even higher (70%) for the region's population aged 25 to 44 years, with 65% of the male population and 75% of the female population having post-secondary credentials (NBJobs 2024). Between 2013 and 2023, the Southeast region's unemployment rate dropped to 6.0% (NBJobs 2024).

Based on the 2021 Census of Population, the population of Westmorland County was 163,576. Within the County there were 4,235 persons who identified as First Nations, Metis or Inuit (Statistics Canada 2023). The Amlamgog (Fort Folly) First Nation and Metepenagiag Mi'kmaq Nation have reserves closest to the Project with total registered populations of 141 and 719 (CIRNAC 2024a,b). Both First Nations are part of the NSMTC. The NSMTC provides health and wellness services, Indigenous skills and employment programs, environmental resource management initiatives, and emergency management support programs to its Member Nation communities. NSMTC also provides support for post-secondary education among students in Member Nation communities (NSMTC 2025a).

Key industries in the Southeast economic region that accounted for a larger share of overall employment in the region included: public administration; fishing, aquaculture and seafood product preparation and packaging; truck transportation; insurance carriers and related activities; and business support services (NBJobs 2024). Sackville is also home to Mount Allison University, a primary undergraduate liberal arts university with approximately 2,400 students. In 2019, average total income levels for individuals aged 15 years and over in the region were $44,500 which is on par with the provincial average of $44,000 (NBJobs 2024). In 2019, government transfers accounted for 15.8% of total aggregate income in the region (NBJobs 2024).

From a community health perspective, the Project falls within Health Zone 1: Moncton/South-East Area and more specifically, the Sackville, Dorchester, Port Elgin Area New Brunswick Health Council (NBHC) Community. The nearest emergency health care services are located at the Sackville Memorial Hospital. The facility is an acute care community hospital and services the local populations of Sackville, Dorchester, Port Elgin and region. The facility, operated by Horizon Health Network (Horizon), offers a range of services, such as ambulatory care, diagnostic imaging, laboratory services, day surgery, and rehabilitation. Horizon Health Network has developed an Indigenous health program with Indigenous patient navigators and has made sacred medicine available in some Horizon facilities. The nearest Horizon facility to the Project offering sacred medicines is The Moncton Hospital (Horizon n.d.).

The Population Health Profile for the Sackville, Dorchester, Port Elgin Area, (NBHC 2022) reports the NBHC Community as having the lowest birth rate in the province (four per 1,000 population) and the highest median age at death (82 years). Despite the lowest birth rate, the area has a higher growth rate than the province as a whole with the community’s total population growing by 6% between 2016 and 2020 (NBHC 2022). Health outcomes of children, as well as their sense of connection at school, are generally lower than in other NBHC communities (NBHC 2022).

The Royal Canadian Mounted Police (RCMP) detachment and local Ambulance New Brunswick and Fire Department are located in Sackville. The Sackville Volunteer Fire Department, with over 40 volunteers and a full-time Fire Chief, also maintains a joint service agreement with neighbouring fire departments.

Part D: Federal, Provincial, Territorial, Indigenous and Municipal Involvement and Effects

16 Financial Support from Federal Authorities

Financial support from the provincial and/or federal government is not required for this Project to proceed. WattBridge has no plans to seek financial support from federal authorities for this Project.

17 Use of Federal Lands for Project

The Project will not be constructed or operated on federal lands. The nearest federal lands to the Project are described in Section 13.4.

18 Jurisdictions That Have Powers, Duties or Functions in Relation to an Assessment of the Project's Environmental Effects

The Project will be subject to federal, provincial and municipal regulatory requirements. As noted in Section 8 of this document, the Project constitutes a "designated project" under the federal *Impact Assessment Act*. Provincially, the Project constitutes an "undertaking" requiring registration with NBDELG under the *Clean Environment Act* as it is an electric power generating facility with a production rating of 3 MW or more. WattBridge is submitting a joint IPD/Environmental Impact Assessment (EIA) Registration to initiate provincial and federal review processes.

Federal, provincial and municipal jurisdictions having power, duties or functions in relation to an assessment of the Project's environmental effects are listed in Table 18.1.

Table 18.1 Jurisdictions with Powers, Duties or Functions Related to Project Environmental Effects

Authority	Legislation/Regulation	Potential Powers/Duties/Functions Relative to the Project
Federal		
Impact Assessment Agency of Canada (IAAC)	*Impact Assessment Act*	IAAC will decide whether a federal impact assessment is required and if so, will lead the process under the *Impact Assessment Act.*
Fisheries and Oceans Canada (DFO)	*Fisheries Act* SARA	DFO will participate in the federal Impact Assessment process (if required) and provincial EIA process, contributing specialist knowledge and oversight with respect to the *Fisheries Act* and SARA as applicable. A Letter of Advice or authorization under the *Fisheries Act* may be required depending on proposed discharge of reject process water and potential interaction with offsite watercourses.
ECCC	*Migratory Birds Convention Act, 1994* SARA *Canadian Environmental Protection Act, 1999* (CEPA, 1999) *Canadian Net-Zero Emissions Accountability Act*	If IAAC determines that the Project requires a federal impact assessment, ECCC will contribute specialist knowledge pertaining to migratory birds, SAR, GHG emissions and climate change, and pollution prevention, and the Decision Statement will be issued by the Federal Minister of Environment and Climate Change. A Damage or Danger Permit under the Migratory Birds Regulations, 2022 may be required for the Project. ECCC is responsible for the implementation of the *Canadian Net-Zero Emissions Accountability Act*, working with other government departments, advisory bodies and proponents to achieve net-zero emissions and meet Canada's climate goals. Under the CEPA, 1999 ECCC oversees the National Pollutant Release Inventory Program, and manages compliance with the Environmental Emergency Regulations, 2019 including the requirement for the development of an environmental emergency plan. ECCC is also responsible for the Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity (CEPA, 1999) which establish emission limits and standards for monitoring and reporting GHG emissions from natural gas-fired generators.
Transport Canada NAV Canada	*Aeronautical Obstruction Clearance* *Aeronautics Act* • Canadian Aviation Regulations	Transport Canada has authority over the location and size of structures that could pose a hazard to aviation (e.g., CTG stacks, cranes) and may issue aeronautical obstruction clearance. NAV Canada assesses land use proposals near airports prior to construction to ensure safety and efficiency are not compromised. Given the site location, Project infrastructure is not expected to represent line-of-sight obstructions, although WattBridge will engage NAV Canada to confirm whether a Land Use Approval and/or approved lighting plan is required.

Table 18.1 Jurisdictions with Powers, Duties or Functions Related to Project Environmental Effects

Authority	Legislation/Regulation	Potential Powers/Duties/Functions Relative to the Project
Provincial		
Department of Environment and Local Government (NBDELG)	*Clean Environment Act* • Environmental Impact Assessment (EIA) Regulation (NB Reg 87-83) • Water Quality Regulation (NB Reg 82-126) • Petroleum Product Storage and Handling Regulation (NB Reg 87-97) *Clean Air Act* • Air Quality Regulation (NB Reg 97-133) *Clean Water Act* • Watercourse and Wetland Alteration Regulation (NB Reg 90-80) *Climate Change Act* • Reduction of Greenhouse Gas Emissions Regulation (NB Reg 2021-43)	The Project is an undertaking under the EIA Regulation and therefore requires registration. NBDELG is responsible for forming a Technical Review Committee to undertake a Determination Review of the submitted EIA registration and making a recommendation to the Minister who will decide if the Project can proceed or if a Comprehensive Review is required. The Project may also require approvals from NBDELG for: the supply of water and water works for the Project; the discharge of air emissions and/or effluent; activity carried out within 30 m of a watercourse or wetland; and storage of petroleum product. Operating approvals will contain specific terms and conditions including requirements for testing, monitoring and reporting. NBDELG will also require baseline and compliance GHG reports for the Project.
Department of Tourism, Heritage, and Culture (NBDTHC) – Archaeology and Heritage Branch	*Heritage Conservation Act*	NBDTHC manages the regulatory protection of heritage resources and requires permits for conducting research on and/or encountering these resources which include built heritage resources, palaeontological resources, and archaeological resources. An archeological survey (walkover) was conducted in July 2024 and the survey found that all areas exhibited low potential for heritage and archaeological resources and no additional investigations or mitigation is recommended, subject to the review and approval of the provincial Archaeology and Heritage Branch. A slight adjustment to the access road subsequent to the 2024 survey will require additional survey work in 2025.

Table 18.1 Jurisdictions with Powers, Duties or Functions Related to Project Environmental Effects

Authority	Legislation/Regulation	Potential Powers/Duties/Functions Relative to the Project
Department of Natural Resources and Energy Development (NBDNRED)	*Species at Risk Act* (NB SARA) • List of Species at Risk Regulation (NB Reg 2013-28) • Prohibitions Regulation (NB Reg 2013-39)	NBDNRED oversees the NB SARA which provides for the protection of species in New Brunswick that are classified as being Extirpated, Endangered, Threatened, or of Special Concern. NBDNRED would participate in the Technical Review Committee review of the provincial EIA Registration.
Department of Transportation and Infrastructure (NBDTI)	*Motor Vehicle Act* *Highway Act*	NBDTI may issue special permits for transportation of oversized loads and require a permit to establish access to an existing highway (if required).
Municipal		
Plan360 (Southeast Regional Service Commission)	*Community Planning Act* Tantramar Planning Area Rural Plan Regulation	The Project is located within the municipal boundary of the Town of Tantramar, which obtains its land use planning services from Plan 360. The site is within the Tantramar Planning Area Rural Plan Regulation and the property is zoned Rural. Utilities are permitted in all zones under the Rural Plan. Plan 360 will issue development and building permits for the project in accordance with the Rural Plan and National Building Code of Canada in effect at the time of development. The Project may also require compliance with applicable by-laws and regulations which may influence Project design and activities.

Part E: Potential Effects of the Project

19 Potential Changes to the Environment

IAAC (2024) guidelines for preparing an IPD require a list of any non-negligible adverse changes that, as a result of the carrying out of the project, may be caused to the following components of the environment that are within the legislative authority of Parliament:

- Fish and fish habitat as defined in subsection 2(1) of the *Fisheries Act*
- Aquatic species, as defined in subsection 2(1) of the *Species at Risk Act*
- Migratory birds, as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*

Subsection 2(1) of the *Fisheries Act* defines 'fish' as: "(a) parts of fish, (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals". Subsection 2(1) of the *Fisheries Act* defines 'fish habitat' as: "water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas". Potential effects on fish and fish habitat are described in Section 19.4.

Subsection 2(1) of SARA defines 'aquatic species' as: "a wildlife species that is a fish, as defined in section 2 of the *Fisheries Act*, or a marine plant, as defined in section 47 of that Act". 'Marine plants', as defined in section 47 of the *Fisheries Act*, includes "all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton". There are no additional aquatic species predicted to interact with the Project.

Subsection 2(1) of the *Migratory Birds Convention Act, 1994* defines 'migratory bird' as: "a migratory bird referred to in the Convention, and includes the sperm, eggs, embryos, tissue cultures and parts of the bird". Potential changes to migratory birds as a result of the Project are described in Section 19.6.

Potential non-negligible adverse changes to other environmental components which are not explicitly within the legislative authority of Parliament are also summarized below as they may potentially contribute to potential effects on Indigenous peoples (Sections 21 and 22). This additional discussion also provides a more fulsome understanding of effects to be assessed under the *Environmental Impact Assessment Regulation* of the *Clean Environment Act*. Preliminary mitigation to reduce potential Project-related effects is identified, although it is recognized that additional mitigation may be developed as part of the impact assessment process.

19.1 Air Quality

19.1.1 Potential Effects

All phases of the Project will generate air contaminant and greenhouse gas emissions. Information on greenhouse gas emissions associated with the Project is provided in Section 23. Additional information on air emissions is provided in Section 24.1.

During construction, air contaminant emissions from construction equipment exhaust and from fugitive dust associated with the construction activities will result in localized effects to air quality. Construction equipment, including excavators, graders, haul dump concrete trucks, and cranes, will primarily consume diesel fuel and release fuel combustion by-products such as nitrogen oxides (NO_X), carbon monoxide (CO), sulphur dioxide (SO_2) and particulate matter (PM).

Fugitive dust emissions from surface disturbance activities (e.g., soil stripping, grading, equipment movement) during construction will include particulate matter of various sizes (e.g., $PM_{2.5}$, and total suspended particulate matter (TSP)).

A high-level estimate of construction phase emissions is provided in Table 19.1 based upon preliminary estimates of the number, type or size, and use of construction vehicles and other equipment.

Table 19.1 Project Construction Air Contaminant Emissions

Pollutant	Potential Annual Emissions (tonne/year)
NOx	268.75
CO	192.25
SO_2	27.68
TSP	51.59
$PM_{2.5}$	20.44

Note:
Construction period is approximately 2 years.

During Project operations, combustion of natural gas or ULSD in the CTGs will result in the release of air contaminants including NO_X, SO_2, CO, ammonia (NH_3), and PM. These substances of interest are combustion by-products emitted by the Project sources. Operational emissions are reduced by burning natural gas and using a standard emissions reduction system which uses aqueous ammonia, selective catalytic reduction (SCR), and carbon monoxide reducing (COR) catalysts to manage combustion by-products (NOx and CO reduction, respectively).

An air dispersion modelling study was conducted to assess the potential effects of Project operations for a base case (5,370 operating hours for 10 CTGs) and a stress case (27,270 operating hours for 10 CTGs) (Appendix C). Predicted air contaminant concentration results from dispersion modelling was compared to the ambient air quality criteria in Schedule B of the New Brunswick *Air Quality Regulation – Clean Air Act* (NBDELG 2018), as well as other standards from other jurisdictions for air contaminants of concern that are not included in the NB criteria.

The maximum potential emissions for each pollutant were estimated based on the highest emissions from expected operating conditions, including start-up and shutdowns and fuel type usage (natural gas and ULSD), for the CTGs. The maximum annual Project operational phase air contaminant emissions are summarized in Table 19.2.

Table 19.2 Project Operational Air Contaminant Emissions

Pollutant	Potential Annual Emissions (tonne/year)	
	Base Case	Stress Case
NOx	6.84	74.05
CO	10.68	54.22
SO_2	0.20	4.64
TSP/ $PM_{2.5}$	2.77	44.75
NH_3	1.61	60.46

Potential effects on ground-level (ambient) air quality associated with the Project were evaluated using plume dispersion modelling. The AERMOD dispersion model was run to predict maximum contaminant concentrations associated with the Project in comparison to air quality standards. The AERMOD dispersion model was used for the following substances: CO, NO_2, SO_2, TSP, NH_3, and $PM_{2.5}$.

Maximum predicted concentrations of all contaminants are less than their respective ambient air quality standards/criteria. Maximum contaminant concentrations are predicted to occur near the Project and decrease with increasing distance from the Project. The dispersion modelling indicates that the operation of the Project is not expected to cause or contribute to a substantial degradation of ambient air quality. Because the model was set up to simulate the worst-case scenario of burning diesel, this represents a very conservative scenario and most of the time, the maximum contaminant concentrations should be less than modelled. Additional details on the air dispersion modeling results are available in Appendix C.

Atmospheric emissions during the decommissioning would be similar or less than those associated with construction.

19.1.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential Project construction- (and decommissioning) related effects on air quality; additional mitigation may be identified as Project planning and assessment continues:

- Vehicles and equipment will be required to meet emission control standards including the *On-Road Vehicle and Engine Emission Regulations* and the *Off-road Compression-Ignition (Mobile and Stationary) and Large Spark Ignition Engine Emission Regulations.*
- The concentration of sulphur in diesel fuel shall not exceed 15 mg/kg to comply with the federal *Sulphur in Diesel Fuel Regulations*.
- Construction vehicle idling times will be reduced to the extent possible to reduce emissions, as a best management practice.
- Dust control measures such as watering roads to suppress dust distribution and ceasing operations during periods of high winds will mitigate the generation and distribution of particulate matter(dust) during construction activities.
- To the extent practical, disturbed surfaces will be revegetated or temporarily covered following construction activities to reduce the potential for wind erosion and dust generation.

The following preliminary mitigation measures may be implemented to reduce potential air contaminant emissions from combustion equipment (i.e., CTGs) during Project operations; as engineering progresses, further mitigation measures, including facility specific mitigation measures, may be developed:

- The Project is being designed consistent with best available control technology to control emissions and potential impacts on air quality.
- The facility will primarily operate on cleaner burning natural gas, with ULSD used as needed. Emissions of CO, NO_2, TSP, $PM_{2.5}$ and SO_2 are reduced when burning natural gas (the primary fuel) as compared to ULSD.
- Each of the CTGs have a standard emissions reduction system which implements aqueous ammonia, selective catalytic reduction (SCR) and carbon monoxide reducing (COR) catalysts to manage emissions of NO_X and CO.
- Emissions of SO_2 will be minimized when operating on ULSD, which contains no more than 15 parts per million (ppm) of sulfur.

19.2 Acoustic Environment

19.2.1 Potential Effects

The Project will generate noise emissions during construction, operation and decommissioning activities, resulting in a change in existing sound levels. During construction, operation of mobile construction equipment, including excavators, graders, haul dump concrete trucks, and cranes, and stationary equipment such as generators, will generate temporary noise emissions at the site. Construction related traffic, including mobilization of equipment and workers to the site, will generate transient noise along transportation routes throughout the construction (and decommissioning) period.

During operations, the power generation station will generate noises typical of power plant operations. Predictive acoustic modelling was undertaken to understand potential noise effects of Project operations, including startup and steady-state operations, on nearby receptors (Appendix D). Receptors are noise-sensitive locations, such as homes, schools, and hospitals located outside of a facility fence line and do not include industrial or commercial locations. Results were compared to the New Brunswick *Noise Compliant Response Guidelines* (NBDELG 2023) and Health Canada's *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise* (Health Canada 2023). The New Brunswick guidelines suggest noise limits for different times of day while the Health Canada guidelines recommend a guideline level related to the estimate of the percentage of people who are potentially annoyed by noise emissions (percent highly annoyed; %HA).

Based on predictive acoustic modelling that assumed quiet rural baseline sound levels and a worst-case scenario of all 10 CTGs operating simultaneously during daytime and nighttime hours, the worst-case noise effect is predicted to comply with the New Brunswick Noise Guideline levels of 50 A-weighted decibels (dBA) at night for all identified receptors. When results were compared to Health Canada's guidance, it was found that the predicted change in %HA was less than 6.5% at all receptors except one, indicating that additional mitigation measures should be considered (Appendix D).

19.2.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential effects on the acoustic environment; additional mitigation may be identified as Project planning and assessment continues:

- Vehicle and equipment emissions will be managed by conducting regular maintenance on machinery and equipment, with repairs performed to keep equipment in good working order, to maintain normal operating noise levels.
- Idling of vehicle engines, equipment, and machinery will be avoided where practicable.
- Construction activities that have the potential to generate noise disturbance will be limited to daytime hours as feasible to limit nuisance noise to off-site receptors at night.
- Enclosures will be used on equipment to reduce noise emissions.

- The need for additional noise mitigation will be considered through Project planning and design including consideration of noise mitigation for dominant noise sources.
- If after detailed engineering has been completed and the updated noise modelling confirms Project-related noise emissions exceed provincial or federal guidelines, a noise mitigation plan will be developed to respond to potential exceedances and complaints from affected receptors.

19.3 Groundwater and Surface Water

19.3.1 Potential Effects

The Project is anticipated to have effects on groundwater quality and quantity, as well as surface water quality and quantity during construction, operations and decommissioning. Construction activities may require excavations which could result in a localized lowering of the water table. Site development will result in a change in impervious surfaces and increase stormwater flows. Stormwater runoff during all Project phases may result in elevated turbidity and suspended solids in the runoff. If subsurface disturbance is extensive, the increased turbidity and suspended solids may also reach the groundwater system via groundwater recharge.

Blasting is not anticipated to be required for Project construction and no interactions are predicted with domestic wells in the area. A review of the NB online well system reveals no records of private well records within 500 m of the Project. No Project interaction with domestic wells is predicted.

As described in Sections 9.2 and 9.4, the Project will require extraction of groundwater through production wells to supply process water needs during Project operations. The Project will discharge effluent during the operations phase including reject process water from the RO/EDI processes, intermittent backwash water, and intermittent Clean-in-Place (CIP) water. CIP water discharges will be intermittent and infrequent with an anticipated higher chemical concentration than the reject process water or backwash water and will be collected separately and hauled away for treatment and disposal at an approved facility. CIP water discharge is therefore not considered in the effects discussion below. Section 24.4 provides additional details on anticipated effluent discharges. Surface water runoff (i.e., stormwater) will also require management during construction, operation, and decommissioning of the Project.

A hydrogeological study (i.e., WSSA), to be conducted in summer 2025, will include drilling test wells for the groundwater supply, to provide water quantity and water quality data in the vicinity of the test wells on the Project site. This will inform the number, location, and design of groundwater production wells required for the Project. Disturbance to soil and material above or below the water table during construction and decommissioning could potentially affect physical hydraulic properties of groundwater, resulting in a change of groundwater quantity. Groundwater extraction during Project operations is expected to result in a change in groundwater quantity (e.g., change in groundwater levels).

Groundwater sampling data from 21 wells within the 10 km of the Project (NBDELG 2025b) showed some exceedances of aesthetic objectives of the Guidelines for Canadian Drinking Water Quality (GCDWQ) (Health Canada 2024) for iron and manganese, and exceedances of the Canadian Council of Ministers of the Environment (CCME) Freshwater Aquatic Life (FWAL) guidelines for arsenic, copper, iron, lead, selenium and zinc as well as elevated levels of turbidity and total coliform. Reject process water is assumed to be three times the raw groundwater concentration, so the effluent water quality is anticipated to exceed the GCDWQ and CCME FWAL guidelines for nitrite, aluminum, arsenic, cadmium, copper, iron, lead, selenium, thallium, and zinc.

Site development is not anticipated to substantially alter identified site drainage areas, although site development will contribute to an increase in surface runoff quantity. The proposed site is located on an identified local high point in the area and will primarily drain controlled to the west with a smaller portion of undeveloped forested area draining uncontrolled to the southeast. Clearing is proposed for approximately 70% of the site to support the installation of Project infrastructure including site access/laydown areas.

Studies are currently underway to evaluate proposed reject process water effluent discharge options, including discharge to a wetland 300 m west of the site or discharge to a ditch located along Route 940. The discharge of liquid effluents from Project operations could potentially result in changes to groundwater quality (e.g., through percolation of effluent to the water table), changes in surface water quality (e.g., discharge of contaminants), and changes in surface water quantity (e.g., increase in surface water flows). Depending on the location of the discharge and the presence of fish habitat, changes in surface water quality and quantity may also result in changes to fish and fish habitat (Section 19.4).

Industrial effluent discharges are regulated by the NBDELG under the *Water Quality Regulation* of the *Clean Environment Act*. Under this regulation, operators of sources of water contaminants are required to obtain an approval for the construction, operation or modification of the source of contaminants. It is anticipated that effluent discharges from the Project will trigger this requirement regardless of the discharge option selected and additional treatment and/or monitoring requirements will likely vary by discharge location option. Discharges to fish-bearing watercourses are also subject to federal regulation and are discussed further in Section 19.4. Further assessment will be undertaken to understand potential effects of effluent discharge to the tributary. This work will include, but not be limited to, an assessment of the effects of temperature and salinity on freshwater discharge, water quality sampling of the proposed tributary, and an assimilative capacity study of the receiving water. WattBridge will consult with NBDELG on potential effluent discharge and treatment options and permitting requirements.

Effects of Project decommissioning are expected to be similar to those incurred during construction. Potential effects to groundwater and surface water resources during decommissioning will be considered and addressed in a future decommissioning and reclamation plan. In summary, potential effects on groundwater and surface water resources are predicted to occur as a result of Project construction, operations, and decommissioning, particularly related to the operation of groundwater production wells and the discharge of reject process water from the RO/EDI process during Project operations. No interaction with private wells is predicted.

19.3.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential effects on groundwater and surface water; additional mitigation may be identified as Project planning and assessment continues:

- Siting of Project infrastructure will avoid watercourses.
- No physical activity (e.g., vegetation removal, soil disturbance, construction) will occur within 30 m of wetland or watercourse unless a Watercourse and Wetland Alteration (WAWA) Permit has been issued by NBDELG.
- A Water Supply Source Assessment (WSSA) will be undertaken in accordance with the *Clean Environment Act* and the necessary approvals will be obtained prior to drilling of production wells.
- A spill management plan will be developed prior to Project construction to include procedures for spill prevention and response.
- Throughout all phases of the Project, equipment will be kept in good working order and inspected regularly for leaks.
- Storage, stockpiling and use of fuel, lubricant and other hazardous substances will be in designated areas outside of buffer zones designed to protect sensitive habitats including watercourses and wetlands.
- A stormwater management plan will be developed with specific procedures to manage surface runoff and erosion and sedimentation during construction and operation of the Project.
- The site will be graded to drain stormwater away from buildings and equipment, and to prevent localized ponding. Site grading will be designed to direct surface runoff to conveyance ditching and the stormwater detention pond.
- On-site erosion and sediment control measures will be constructed, maintained and monitored to confirm they are working as expected to avoid silt laden runoff into wetlands and watercourses.
- Frequent inspection of surface water runoff controls will be made to ensure that they function efficiently and determine if routine maintenance is required. Inspections will take place before and after heavy precipitation events to identify whether erosion and sedimentation control measures have failed; if failure occurs, repairs will be immediately undertaken.
- Stormwater will be kept separate from process water streams to reduce the volume of wastewater to be treated prior to discharge.
- No unauthorized discharges to wetland or watercourses will occur. Effluent discharges will be treated as necessary to meet applicable regulatory criteria prior to discharge.
- Herbicide use will be prohibited in buffer areas around watercourses and wetlands; hand clearing will be used when practical, particularly within 30 m of wetlands and watercourses.

19.4 Fish and Fish Habitat

19.4.1 Potential Effects

The Project site and proposed access road footprints do not contain any watercourses that would necessitate in-water work, such as stream diversion or culvert installation. Consequently, no interactions with fish and fish habitat are anticipated during the construction or decommissioning phases of the Project. However, should further evaluations indicate that the preferred effluent discharge option involves conveyance via the access road ditch to the offsite wetland, there may be potential interactions with fish and fish habitat south of the wetland outlet in a tributary of Harper Brook. If the alternate effluent discharge scenario is applied, the discharge is directed to the ditch along Route 940 and there will be no predicted interactions with fish and fish habitat during the operational phase.

Discharges to fish-bearing watercourses are subject to regulation under the federal *Fisheries Act*, administered by Fisheries and Oceans Canada (DFO). This Act prevents the discharge of deleterious substances to fish-bearing water courses and prohibits the harmful alteration, disruption, or destruction (HADD) of fish habitat (including but not limited to changes in flow or discharge of deleterious substances).

As described in Section 19.3.1, further studies (including an assimilative capacity study) will be undertaken to understand potential Project interactions to the watercourse south of the wetland as a result of effluent discharge during operations. A fish habitat assessment conducted in June 2025 confirmed the absence of fish habitat within the wetland, but identified potential fish habitat at the outlet of the wetland. As a conservative approach for this IPD, it is assumed that the tributary south of the wetland constitutes fish habitat and may be fish bearing, however this will be confirmed in further studies.

Under the wetland discharge scenario, there is potential for interaction with fish habitat in the tributary south of the wetland. Potential effects could include reductions in quality of fish habitat due to changes in temperature, flow regime, entry of deleterious substances, and/or sedimentation/erosion. These changes to fish habitat could potentially lead to changes in fish health, survival and reproductive success. WattBridge will continue to conduct technical studies to understand the implications of effluent discharge options and consult with DFO on potential effects on fish and fish habitat and permitting requirements under the *Fisheries Act*.

19.4.2 Potential Mitigation

Depending on the effluent discharge option selected for the Project and the outcomes of the technical studies, there may be no interaction with fish and fish habitat. If potential impacts to fish and fish habitat are identified, WattBridge will engage with DFO regarding the proposed effluent discharge, its effects on fish and fish habitat, and the permitting requirements under the *Fisheries Act*. This may include the submission of a request for review to DFO to assess the potential for death of fish or the harmful alteration, disruption, or destruction of fish habitat.

19.5 Vegetation and Wetlands

19.5.1 Potential Effects

Field studies in the Project site identified several wetlands and plant SOCC (Section 14.2.1). Potential Project effects on vegetation and wetlands may include changes in vegetation abundance and diversity, changes to plant SOCC and/or changes in wetland habitat and function. Project construction will require vegetation clearing and ground disturbance which will result in loss of vegetation and could also result in erosion causing sedimentation of wetlands. Excavation during construction could also affect hydrology and/or require dewatering which could also affect vegetation and wetlands. Construction activities, including onsite transportation, could generate dust which could reduce vegetation health and productivity. Construction activities may also lead to the introduction of or increase in abundance of non-native and potentially invasive plant species as construction equipment is brought on site.

Site development will require infilling or infringement of wetland habitat in the Project site and along the proposed access road, resulting in changes in wetland habitat and function (e.g., changes to hydrological regime, storage capacity or overall function of wetlands).

Site maintenance during operations may include the application of road salt or other de-icing agents to onsite roads and parking lots which could potentially affect adjacent wetlands and vegetation. Vegetation maintenance around the Project footprint could result in direct loss of vegetation.

If, after additional evaluation and consultation, the preferred option during Project operations is to discharge Project effluent to an offsite wetland west of the Project site, the affected wetland could experience changes in wetland habitat and function. Additional studies will be undertaken to characterize existing wetland habitat and functions to understand potential implications of this discharge scenario.

Decommissioning and abandonment activities will involve vehicle movement and ground disturbance which could cause temporary effects on site vegetation and wetlands which may have been restored following construction. However, following decommissioning and removal of equipment, the land will be reclaimed as necessary to meet applicable land use objectives, thereby resulting in potential positive changes to vegetation and wetlands.

19.5.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential effects on vegetation and wetlands; additional mitigation may be identified as Project planning and assessment continues:

- Clearing and grubbing will be confined to the Project footprint.
- No physical activity (e.g., vegetation removal, soil disturbance, construction, effluent discharge) will occur within 30 m of wetland unless a WAWA Permit has been issued by NBDELG.
- Standard erosion and sedimentation control measures will be employed, particularly to avoid silt laden runoff into wetlands and watercourses.

- Known locations of plant SAR and SOCC within 30 m of the Project footprint will be flagged and avoided to the extent feasible.
- Equipment will be cleaned prior to mobilization, and when traversing from one region to another, to avoid introduction of invasive species.
- Material stockpiles will be kept a minimum of 30 m from a watercourse or waterbody with the appropriate erosion control mitigation in place to prevent sediment from entering a watercourse, waterbody or wetland.
- Temporarily disturbed areas will be restored to pre-construction conditions.
- Herbicide use will be prohibited in buffer areas around watercourses and wetlands; hand clearing will be used when practical, particularly within 30 m of wetlands and watercourses.

19.6 Migratory Birds

19.6.1 Potential Effects

Project construction will require vegetation clearing and ground disturbance, and installation of infrastructure, resulting in physical alteration of habitat for migratory birds. These changes in habitat (e.g., habitat loss and/or fragmentation, creation of new habitat) will persist throughout Project operations and potentially through decommissioning and abandonment. Noise and light emissions during all Project phases may also result in sensory disturbances and indirect changes to habitat. Lighting poses a risk of attraction for birds.

Direct and indirect changes to habitat may lead to change in habitat use by migratory birds (e.g., changes in foraging, nesting behaviour, predator avoidance) and affect bird health and reproductive success. These habitat changes may result in changes in species composition, abundance and/or distribution in a localized area.

Additionally, direct physical injury and/or mortality effects could occur for migratory birds due to collision or contact with Project infrastructure, vehicles, or equipment (e.g., vehicle bird strike, electrocution on power lines) during the operation and maintenance phase.

Effects of Project decommissioning are expected to be similar to those incurred during construction. Potential effects to migratory birds during decommissioning will be considered and addressed in a future decommissioning and reclamation plan.

19.6.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential effects on migratory birds; additional mitigation may be identified as Project planning and assessment continues:

- Where feasible, infrastructure will be sited within previously disturbed and developed areas to reduce impacts to undisturbed avian habitat.

- Siting of Project infrastructure will avoid areas of importance for migratory birds (e.g., designated critical habitat, overwintering areas, migration stopovers), to the extent feasible.
- Lighting (number of lights, intensity of lights, and amount of time lights are turned on) will be limited to that required to maintain site safety and security. Shield site lights downward to avoid attracting/disorienting birds.
- Vegetation clearing will be completed outside the migratory bird nesting period (mid-April to end of August) unless unavoidable. Where activities may result in risk of harm to migratory bird nests during this period, a qualified biologist will complete a pre-activity nest survey in accordance with federal guidelines (ECCC 2022).
- If an active bird nest is found, beneficial management practices will be followed, including applying an appropriate setback and timing restriction, and NBNRED and/or Canadian Wildlife Service (CWS) will be consulted, as appropriate.
- The need for bird markers and/or deterrents to reduce bird collisions and/or nesting on infrastructure will be considered during Project design.
- Vehicle and equipment emissions will be managed by conducting regular maintenance on machinery and equipment, with repairs performed to keep equipment in good working order, to maintain normal operating noise levels.
- Idling of vehicle engines, equipment, and machinery will be avoided where practicable.
- Herbicide use will be prohibited in buffer areas around wetlands; hand clearing will be used when practical, particularly within 30 m of wetlands and watercourses.

19.7 Wildlife and Wildlife Habitat

19.7.1 Potential Effects

Potential Project effects on wildlife and wildlife habitat (including non-migratory birds such as bald eagle and wildlife SAR) will be similar as described above for migratory birds. Vegetation removal and ground disturbance during Project construction will result in the direct loss and alteration of wildlife habitat. Habitat may also be indirectly affected through sensory disturbance associated with light and noise emissions which will continue during all Project phases. Direct and indirect effects on habitat may lead to changes in wildlife movement. Physical barriers (e.g., fencing), sensory disturbance and vegetation removal may fragment the habitat and cause impediment of wildlife movement through the life of the Project. Changes in wildlife movement can affect animal behaviour (e.g., foraging, breeding, nesting) and result in health and mortality effects to wildlife. Changes in wildlife mortality risk may occur during all Project phases due to potential physical destruction of key habitat features (e.g., nests, hibernacula) and/or collisions with Project traffic and/or infrastructure (e.g., overhead lines).

The installation of Project infrastructure may create new roosting or nesting habitat for some species (e.g., raptors). Accumulation of nesting materials on certain equipment during Project operations can cause equipment malfunctions (e.g., power outage, fire) and/or mortality risk to raptors if not property managed.

19.7.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential effects on wildlife and wildlife habitat; additional mitigation may be identified as Project planning and assessment continues:

- Vegetation clearing will be limited to areas required for construction and safe operations.
- Vegetation clearing will be completed outside the core maternity roosting period for bats (May 1 to August 31). If habitat tree removal or general tree clearing is required during the maternity roosting period, a qualified biologist will review the trees to determine bat occupancy before removal.
- Herbicide use will be prohibited in buffer areas around watercourses and wetlands; hand clearing will be used when practical, particularly within 30 m of wetlands.
- Wildlife incidents will be reported to NBNRED and/or CWS, as appropriate.
- The need for bird markers and/or deterrents to reduce bird collisions and/or nesting on infrastructure will be considered during Project design.
- If an active raptor nest is found on Project infrastructure, NBNRED will be consulted on an appropriate action plan to relocate the nest and discourage future nest building.
- Personnel will not feed, harass, or hunt wildlife while working on the Project.
- Project personnel will be trained on wildlife awareness.
- Food waste will be stored and disposed of in a manner to avoid attracting wildlife.

19.8 Heritage Resources

19.8.1 Potential Effects

An archaeological survey (walkover) was conducted in July 2024 on the Project site and access road (previous alignment) in accordance with the *Guidelines and Procedures for Conducting Professional Archaeological Assessments in New Brunswick* (AHB 2012). The site and access road (previous alignment) were found to exhibit low potential for heritage and archaeological resources. Since the survey was completed in July 2024, a portion of the access road has been realigned, and a follow-up survey will be required to reassess archaeological potential for the adjusted RoW.

Information on heritage resources as it pertains to potential effects on Indigenous peoples is provided in Section 21.

19.8.2 Potential Mitigation

As noted above, additional investigation will be required in accordance with the *Guidelines and Procedures for Conducting Professional Archaeological Assessments in New Brunswick* (AHB 2012) for the portion of the access road which was not covered by the previous archaeological survey. Pending results of the additional survey additional mitigation may be recommended subject to the review and approval of the provincial Archaeology and Heritage Branch.

19.9 Socio-economic Environment

19.9.1 Potential Effects

The Project is expected to have minor effects on the socio-economic environment given the conformity of proposed land use with current land use zoning and limited Project employment numbers, particularly during operations. Although the Project will be sited on lands owned by NB Power, there will be a change in land use due to the development of a greenfield site and ongoing presence of the power generating station. Unauthorized recreational use (e.g., ATV or snowmobile use) of the converging pipeline and transmission line RoWs may be affected by the Project presence. Development and ongoing use of the access road will also represent a long-term change in land use.

During construction and decommissioning, the transport of workers and equipment to and from the site will result in changes in local traffic volume and patterns, potentially affecting use and safety of public transportation networks and generating traffic noise for nearby residents.

As indicated in Section 7, the Project will have an important positive effect on the NB transmission grid, by providing voltage support to allow additional renewables integration, and by providing necessary back-up generation capacity should generation gaps arise (i.e., reduce the potential for power interruptions or rolling blackouts). The Project is also expected to have a small positive effect with respect to employment and procurement activity, particularly during Project construction. During operations, this effect will be fairly minor.

Potential effects on Indigenous health, social and economic conditions are described in Section 22.

19.9.2 Potential Mitigation

The following preliminary mitigation measures may be implemented to reduce potential effects on the socio-economic environment; additional mitigation may be identified as Project planning and assessment continues:

- WattBridge will work with NSMTC to help identify qualified Indigenous suppliers of services and materials.
- Local and Indigenous material/labour will be prioritized to increase local beneficial economic effects.
- Merchantable timber will be removed in accordance with an existing agreement between NB Power and J.D. Irving, Limited.
- All large-sized vehicles will obtain appropriate weight and size permits if and as required.
- If lane/road closures are required to move large equipment, this will be conducted at low traffic times to the extent practical.
- The public will be notified about long delays or disruptions to the transportation network.

20 Changes on Federal and/or Extra-Provincial Lands

The Project is not located on federal lands (Section 13.4) and no non-negligible adverse changes to the environment on federal lands or to the marine environment (including interprovincial, boundary or international waters) are likely to be caused by carrying out the Project. The nearest federal lands (Jolicure Lake unit of the Tintamarre National Wildlife Area) are located approximately 5.5 km from the Project site and non-negligible effects of the Project are not predicted to extend this distance. .

21 Potential Effects on Indigenous Peoples Relating to Physical and Cultural Heritage, Current Use of Lands and Resources for Traditional Purposes, and Cultural Heritage, and Historical, Archaeological and Palaeontological Resources

WattBridge, in cooperation with NB Power, is engaging with Indigenous groups with respect to the Project to better understand how the Project may potentially affect Indigenous peoples relating to physical and cultural heritage, current use of lands and resources for traditional purposes, and cultural heritage, and historical, archaeological and palaeontological resources. Section 4.1 summarizes Indigenous engagement to-date and Section 4.2 outlines plans for future engagement.

An archaeological survey (walkover) was conducted by a professional archaeologist in July of 2024 within the Project site and along the proposed access road (previous alignment). The survey found that all areas exhibited low potential for heritage and archaeological resources and no additional investigations or mitigation is recommended, subject to the review and approval of the provincial Archaeology and Heritage Branch (AHB). All work associated with the Archaeological Impact Assessment was conducted in accordance with the *Guidelines and Procedures for Conducting Professional Archaeological Assessments in New Brunswick* (AHB 2012). Additional archaeological survey work will be undertaken in accordance with provincial guidelines to confirm archaeological potential of the section of access road which was not previously surveyed in 2024.

The Project may potentially result in non-negligible adverse effects on access or loss of traditional lands and the ability to hunt, fish, gather and harvest as well as the ability to practice cultural activities. Potential non-negligible adverse effects on fish and fish habitat (Sections 19.4), migratory birds (Section 19.6) and other wildlife (Section 19.7) could potentially affect traditional land and resource use by Indigenous peoples. WattBridge, in coordination with NB Power, will continue to engage with Indigenous groups to better understand and mitigate potential effects due to the Project.

22 Potential Effects on Indigenous Health, Social, and Economic Conditions

The nearest Indigenous reserve lands to the Project are the Fort Folly Reserve No. 1 (56.1 ha) which is located approximately 23 km southwest of the Project, in Dorchester, NB. The next nearest Indigenous reserve land is the Metepenagiag Urban Reserve 3 (19.9 ha) which is approximately 36 km southwest of the Project. Amlamgog (Fort Folly) First Nation and Metepenagiag Mi'kmaq Nation are part of the NSMTC, which is a minor equity partner in the Project (NSMTC 2025a).

Potential non-negligible adverse effects to the environment where traditional use and/or commercial purposes by Indigenous communities occurs could potentially affect Indigenous health, social, and economic conditions. This could occur where the quality of natural resources on which Indigenous communities rely on for traditional or commercial purposes are affected by the Project.

Potential Project-related changes could include clearing of vegetation during construction; changes to freshwater fish and fish habitat during operations (depending on effluent discharge scenario); and changes in land access. Clearing of vegetation could result in changes in abundance and distribution of species of interest (including plants and wildlife) to Indigenous communities. Changes in access to land may affect quality of traditional use experiences and hunting/harvesting success.

Hunting, gathering, harvesting and fishing are culturally important activities and may also be used to improve food security. Communal commercial fishing conducted by Indigenous communities is culturally important and also represents an important source of income to Indigenous communities. A non-negligible adverse effect on traditional land and resource use and/or commercial communal fishing could therefore affect health, social and economic conditions of affected Indigenous communities, including mental and social well-being.

WattBridge is committed to actively engaging and partnering with Indigenous communities to understand and reduce potential adverse effects and enhance positive effects. Potential positive effects include the sharing of economic opportunities and benefits which, through collaboration, could have positive effects on Indigenous health, social and economic conditions for Indigenous peoples in the region.

23 Greenhouse Gas Assessment

This chapter provides information on the Project's estimated net greenhouse gas (GHG) emissions in accordance with the SACC and associated technical guidance (ECCC 2020; 2021) The SACC applies to designated projects under the *Impact Assessment Act* and requires proponents to provide, in their IPDs, an estimate of maximum annual net GHG emissions for each phase of the project, a description of potential impacts on carbon sinks (e.g., removal of trees during clearing); and a discussion of how alternative means affect GHG emissions (Section 12).

23.1 Greenhouse Gas Emissions

The Project is expected to release direct GHG emissions during construction, operation, and decommissioning phases. The relevant GHGs are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which primarily occur from hydrocarbon fuel combustion (e.g., diesel and natural gas combustion). The total amount of GHGs released from Project activities are calculated as the sum of the amount of each GHG multiplied by its global warming potential (GWP). In line with the ECCC National Inventory Report (NIR; ECCC 2025b), the global warming potentials of 1 (CO_2), 28 (CH_4), and 265 (N_2O) were applied.

During construction, GHG emissions are expected to occur from the combustion of diesel in construction equipment, such as cranes, loaders, and dump trucks. The amount of diesel combusted during construction was estimated using the approximate number of hours that each equipment type would operate, expected equipment needed for construction and an assumed fuel consumption rates for equipment. Diesel-specific emission factors from the NIR that relate diesel consumption to GHG emissions were used and these are presented in Table 23.1.

Table 23.1 Diesel GHG Emission Factors

Activity	CO_2 (g/L)	CH_4 (g/L)	N_2O (g/L)
Diesel combustion, off-road diesel ≥ 19 kW, Tier 3	2,681	0.073	0.022

Note:
g/L = grams per litre
Source of emission factors is ECCC (2025b), Table A6.1-15

An additional source of GHG emissions during construction is emissions from cleared vegetation. The Project is situated on approximately 50 acres (20 hectares (ha)) of land that is considered mainly mixed wood (coniferous and deciduous) with approximately 8.7 ha of wetland. For the purpose of this estimation, vegetation that is cleared is assumed to be burned; this is a conservative assumption as cleared vegetation is unlikely to be disposed of by burning. Burning causes the carbon in the vegetation to be released as CO_2 and some CH_4, as well as some N_2O. Following the National Inventory report's methodology, 90% of carbon is converted to CO_2 and 1% of carbon is converted to CH_4 (remaining carbon remains in ash). An estimate of the GHG emissions from burning this biomass was made using assumptions on the amount of biomass per ha in the Project's disturbed area and the type of trees in the area (assumed mixed wood). The parameters used in the assessment are provided in Table 23.2.

Table 23.2 Parameters for Land-use Change Estimates

Parameter	Value	Source
Forested Disturbed Area	20 ha	Proponent
Wetland Disturbed Area	8.7 ha	GIS (Figure 13.1)
Biomass per hectare (mixed wood)	87 t biomass (dry)/ha	NRCan (1997)
Carbon fraction	0.5 t C/t biomass	Intergovernmental Panel on Climate Change (IPCC, 2023)
Organic carbon in wetlands	1.10 t C/ha-y	IPCC (2023)

Notes:
ha = hectare
t biomass (dry)/ha tonnes of dry biomass per hectare
t C/t biomass tonnes of carbon per tonne of dry biomass

The estimated direct GHG emissions over the construction period are presented in Table 23.3. Approximately 21,130 t CO_2e emissions are anticipated from construction activities or approximately 10,565 t CO_2e per year.

Table 23.3 Total Direct GHG Emissions from Construction Activities (24 Months)

Activity	CO_2 (t)	CH_4 (t)	N_2O (t)	CO_2e (t)
Diesel combustion	17,680	0.48	0.15	17,732
Land-use change	2,938	11.8	0.49	3,398
Total Direct	**20,617**	**12.2**	**0.64**	**21,130**

Note:
t = tonnes

During operation, GHG emissions may occur from the combustion of natural gas and light fuel oil in the combustion turbine. Additional, smaller sources for maintenance activities may also occur as needed, however, those are expected to be negligible compared to the combustion in the turbines. The Project lifetime is 25 years. The GHG emissions from operation activities were estimated using the estimated annual natural gas and light fuel oil consumption, fuel-specific emission factors, and fuel-specific higher heating values. The emission factors used are presented in Table 23.4.

Table 23.4 GHG Emission Factors and Higher Heating Values (HHV)

Activity	HHV (MJ/m^3)	CO_2 (g/m^3)	CH_4 (g/m^3)	N_2O (g/m^3)
Natural gas	38	1,919[A]	0.49[B]	0.049[B]
Light fuel oil	42,200[C]	2,753[D]	0.18[D]	0.031[D]

Notes:
[A] Table A6.1-1 (NB), ECCC (2025b)
[B] Table A6.1-3, ECCC (2025b)
[C] The Engineering Toolbox (2003)
[D] Table A6.1-6, ECCC (2025b)
g/m^3 = grams per cubic metre
MJ/m^3 = megajoules per cubic metre

The Proponent estimated the amount of energy that would be provided through natural gas and fuel oil combustion in two operational cases: base case and stress case. In the base case, 10 CTGs are anticipated to operate for 5,370 operating hours per year and the stress case operational hours increase to 27,270 operating hours with more starts and stops. To provide a conservatively high estimate of GHG emissions from Project operation, GHG emissions from peak annual fuel use under the stress case are presented.

During operation, the Project is expected to combust up to approximately 375,179,336 m^3 of natural gas in the peak year of the stress case, which will be sourced from the existing M&NP pipeline. The amount of natural gas that will be combusted annually will vary depending on the Project's hours of operation in the year. GHG emissions from the combustion of each fuel are presented in Table 23.5.

Table 23.5 Total Direct GHG Emissions from Operation Activities (Peak Stress Case, Y2)

Activity	CO_2 (t/y)	CH_4 (t/y)	N_2O (t/y)	CO_2e (t/y)
Natural gas combustion	900,806	184	18.4	910,825
Light fuel oil combustion	0.06	<0.001	<0.001	0.06
Total	**900,806**	**184**	**18.4**	**910,825**

The total operation annual emissions in the peak stress case are 910,825 t CO_2e per year.

The specific activities that are required for decommissioning are not yet known. As a preliminary estimate, the estimated construction emissions (not including land-use change emissions) of 17,732 t CO_2e can be considered representative for decommissioning activities. As decommissioning would occur after 2050, it is anticipated that much lower emissions of GHGs would occur for decommissioning as technologies would be available with lower GHG intensities than those planned for construction.

The Project currently does not intend to use electricity from the grid during construction, such that there would not be any acquired energy GHG emissions during construction. During operation, some electricity may be obtained for site services use when the combustion gas turbines are not operating. Because information on the electricity use is not currently available, acquired energy emissions will be quantified during the impact assessment process, as applicable.

Currently, the Project does not intend to capture and store CO_2 nor use offset credits. The Project does not directly reduce or eliminate existing GHG emissions in Canada (i.e., no avoided domestic GHG emissions). For this initial Project Description, the net GHG emissions are equal to the direct emissions.

Mitigation measures that are currently planned for the Project construction include standard measures to reduce fuel and energy use to the extent reasonable, such as through anti-idling technologies and practices, and maintenance of equipment. During operation, similar mitigation measures to reduce fuel use and increase energy efficiency will be implemented to the extent reasonable.

In 2023, the GHG emissions reported for New Brunswick and Canada were 11 million tonnes (Mt) CO_2e and 694 Mt CO_2e, respectively, as reported in Canada's NIR (ECCC 2025b), where 2023 represents the most recent year with this information. The Project's operation emissions shown in Table 23.5 are anticipated to represent 7.9% of New Brunswick's annual emissions and 0.1% of Canada's annual emissions.

23.2 Carbon Sinks

As a result of Project construction and for the purposes of the GHG calculation, it is assumed that the existing vegetation, including trees and wetlands, will be cleared, which potentially represents a loss of carbon sinks. Depending on the tree species present at the Project site and stand age, a loss of carbon sinks may occur.

24 Waste and Emissions Generated by the Project

The Project has the potential to generate various atmospheric (air, noise, light), liquid, and solid wastes and emissions during construction, operation and decommissioning.

24.1 Air Contaminants

As described in Section 19.1, the Project will generate air contaminants during all Project phases. During construction, particulate matter (PM, dust) will be generated during vegetation clearing, earth moving and material handling, and general movement of vehicles on unpaved surfaces. Construction equipment (e.g., excavators, graders, haul trucks, cranes) will also release fuel combustion related by-products such as NO_x, SO_2, CO and particulate matter. These emissions will be managed through regular equipment maintenance, reduced vehicle idling, and best management practices for dust control.

Air contaminant emissions (e.g., NO_X, SO_2, CO, and PM) will be generated during operations as a result of the combustion of natural gas and ULSD in the CTGs. These emissions will be mitigated by advanced pollution control using the PROENERGY standard emissions reduction system to manage emissions of NO_X and CO. Ammonia (NH_3) is generated as a byproduct of the emissions reduction system during the operations phase.

Air dispersion modelling operational emissions (Appendix C) indicates that the Project is not expected to cause or contribute to a substantial degradation of ambient air quality.

24.2 Greenhouse Gas Emissions

The Project is expected to release direct GHG emissions during construction, operation, and decommissioning phases including CO_2, CH_4, and N_2O, which primarily occur from hydrocarbon fuel combustion (e.g., diesel and natural gas combustion). An additional source of GHG emissions during construction is emissions from cleared vegetation. Section 23 provides an estimate of Project-related anticipated GHG emissions.

24.3 Noise

During construction, noise will be generated during site preparation and installation of infrastructure, noise emissions will be generated by delivery of equipment and supplies and operation of heavy equipment onsite. These noise emissions will be intermittent over approximately 12-15 months. Start-up and commissioning activities will also be intermittent, occurring over a period of approximately six months, with noise generated primarily from the CTG equipment including variable bleed valves during start-up. Acoustic modelling has been undertaken to predict total sound power levels at nearby receptors during start-up and steady state operations, assuming a high emissions scenario of all 10 CTGs operating simultaneously (Appendix C). Modelling results predict noise levels will comply with the New Brunswick Noise Guideline levels for all identified receptors. The change in noise levels during the high emissions scenario for one potential receptor location was predicted to exceed Health Canada guidance for nuisance. Additional mitigation measures will be reviewed during detailed design to identify opportunities to further reduce noise levels for this potential receptor location (e.g., Section 19.1.2; Appendix D).

24.4 Light

Temporary site and construction equipment lighting will be required during construction and decommissioning activities. During the operation and maintenance phase, long-term use of lighting will be required for the safety and security purposes. Facility lighting will be as efficient as possible, with perimeter lighting directed inward to the Project sight to reduce potential light trespass to the surrounding environment. If it is determined that any Project structures may constitute an obstacle to air navigation, the structures will be marked and lit in accordance with Transport Canada standards.

24.5 Liquid Effluent and Stormwater

Effluent discharges from Project operations will include reject process water from the high purity treatment (prefiltration/ RO/EDI) processes including continuous reject water, intermittent backwash water, and intermittent Clean-in-Place (CIP) water. Surface water runoff (i.e., stormwater) will also require management during construction, operation and decommissioning of the Project.

The RO and EDI processes involved in raw water treatment system produce reject water containing the dissolved solids, impurities, and ions removed from the raw water. This reject water from both processes is a necessary byproduct to ensure the removal of contaminants and achieve the desired water purity. The reject stream from the systems is considered effluent and requires proper management and disposal. Reject process water from the water purification process will be approximately one-third of the volume of raw water intake with water quality composition approximately three times the concentration of the raw groundwater quality. As explained in Section 9.4.2, the operating time for the Project will vary and likewise, the volume of effluent discharge will vary greatly. The mean monthly flow of effluent discharge under a 7% net capacity factor scenario is 0.8 US gallons per minute (usgpm) (October) to 113 usgpm (January). Consistent with the increased operating time, the 17% net capacity factor scenario effluent flow range is higher at 2 usgpm (October) to 274 usgpm (January).

Two proposed discharge scenarios are being considered for this reject water. The first scenario is the discharge to the proposed site ditch adjacent to the access road, and eventual discharge into a wetland approximately 300 m to the west of the Project site (see Figure 13.1). The secondary scenario is conveying effluent to the provincial ditch located along Route 940. Studies are currently underway to understand the design and environmental implications of the discharge scenarios with respect to fish and fish habitat. WattBridge will also engage applicable landowners and regulatory agencies as part of the alternatives evaluation option for reject water discharge.

Routine backwashing of all of the systems' components is a critical process in water purification systems to ensure the efficiency and longevity of filters. It involves reversing the flow of water to clean the filter media by removing trapped contaminants. Backwashing is triggered by factors such as increased turbidity in the filter effluent or a significant differential pressure across the filter. During system backwash of the filters, TSS levels may be elevated. Since the raw water source of the demineralization treatment plant is groundwater, TSS is expected to be low to negligible in waste streams on average compared to a surface water treatment system. However, some solids will still be released in short durations during a backwash. To overcome this potential occasional elevated TSS, backwash water will be routed to the stormwater pond for gravity settling.

CIP water is chemically concentrated wash water that is required to maintain the function of RO membranes. It is typically initiated based on a schedule or volume throughput basis. Since discharge will be an intermittent, infrequently produced effluent stream with an anticipated higher chemical concentration than the reject process water or backwash water, it will be collected separately and hauled away for treatment and disposal at an approved facility.

Stormwater will be conveyed to an onsite stormwater management pond via roadside ditches, swales, and culverts. The stormwater management pond will be used to attenuate peak flows discharging from the site to an offsite wetland.

If onsite washroom facilities are required to accommodate onsite workers, WattBridge will obtain the necessary approvals for onsite septic disposal services.

24.6 Solid and Hazardous Waste

Other types of wastes expected to be generated by the Project include non-hazardous domestic solid waste (e.g., food waste, office waste, packing materials); hazardous solid waste (e.g., oily waste [e.g., filters, rags, waste oil, lubricants], batteries, paints); construction and demolition wastes (e.g., scrap metals, insulation waste, asphalt, concrete); and organic material (e.g., cleared vegetation, excavated rocks and soils).

Merchantable timber cleared from the site as applicable, through agreements with J.D. Irving, Limited which operates woodlands in the Project vicinity. Uncontaminated excavated clean soil/stone will be used onsite as backfill material, bunding, and/or landscaping. Other wastes will be sorted and stored in appropriate receptacles and removed from site for disposal at licensed treatment and/or disposal facilities. Hazardous waste will be stored in a dedicated area before being transported by a licensed contractor for disposal in accordance with the *Transportation of Dangerous Goods Act.*

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Appendices

Appendix A Record of Indigenous Engagement by NB Power

New Brunswick Power Corporation's First Nations Engagement and Communication Log - Renewable Integration and Grid Stability (RIGS) Project
Mi'gmawe'l Tplu'taqnn Incorporated

ID #	Date	Activity (e.g. letter, email, phone call, meeting)	NB Power Contact	First Nation Contact	Purpose	Summary of Discussions	Questions/Comments/Interests/ Concerns/ Issues Raised	Interest/Concern (YES/NO)	Response/Actions	Status
1	2024/07/25	MS Teams Meeting	Jesse Perley Cholena Bagley Tara Van Norden Andrea McGathey Fawn Zeuchner Mat Gorman Christina Laflamme David Maguire Kathleen Duguay	Kristie Halka-Glazier Adam Simon Derek Simon	To introduce Project	NB Power introduced the Project by noting that a Request for Expressions of Interest was isseud in June for the construction and operation of a 400 MW simple cycle combustion turbine generating station at a site owned by NB Power. It was noted that NB Power was seeking a partner to sign a 25-year power and capacity purchase agreement. The deadline for submission is August 9, 2024. It was also shared that field studies will commence in July on two NB Power properties – Scoudouc and Center Village (20 km east of Memramcook).	N/A	NO	N/A	N/A
2	2024/12/05	Email	Tara Van Norden Jesse Perley Matt Gorman	Chiefs Kristie Halka-Glazier Dean Vicaire	To provide update on Project	NB Power sent an email to MTI and the Chiefs advising that the REOI had closed and that discussions were underway with a potential partner. It was also noted that NB Power was assessing the Scoudouc industrial park as a potential location.	Chief Terry Richardson responded with some questions as follows: 1. Have any consultations been done with the communities to date? What is the plan? 2. Has MTI been engaged as well as North Shore Mi'kmaq Tribal Council? 3. What about the closest community? 4. Will this require more gas? 5. Where will it come from?	YES	**ACTION ID#2.1:** NB Power to respond to questions	**ACTION ID#2: COMPLETE** See ID #3
3	2024/12/06	Email	Tara Van Norden Jesse Perley Matt Gorman	Chiefs Kristie Halka-Glazier Dean Vicaire	To adress Action ID#2.1	NB Power replied to Chief Richardson on December 6 answering his questions.	N/A	NO	1. No formal consultations have been conducted as the Project is still in early conception whereby we are working through understanding the Regulatory framework required to permit, and details surrounding the style of technology will be dependent on the proponent chosen to lead the file. The Proponent will carry the requirement to conduct consultation and permit the respective project.	N/A
									2. Following the due diligence process and formal selection and onboarding of a proponent for this work, NB Power will be supporting the Proponent in consultation and engagement efforts as they navigate the regulatory process to permit the Project. NB Power will continue to provide regular updates on this Project during reoccurring monthly meetings as the Project is further refined and becomes available with the understanding that they will provide updates to you and your communities, as required. MTI has been engaged, per the previous correspondence. As for North Shore, I know the potential proponent has been in contact with NSMTC but NB Power has not. Discussions are preliminary and we will update as more information becomes available.	N/A

									3. NB Power verified with MTI that engagement on the project will continue through monthly meetings unless otherwise stated. We believe the closest community for both locations would be Fort Folly First Nations.	N/A
									4. Yes, siting took into consideration proximity to the MNMP pipeline for ease of Natural Gas distribution tie lines into the facility. Particulars are yet to be determined based of technological needs.	N/A
									5. MNMP Pipeline (non domestic sources outside of New Brunswick)	
4	2024/12/10	Email	Tara Van Norden	Chief Terry Richardson	To respond to answers provided by NB Power	Chief Terry Richardson replied thanking NB Power for the quick responses	N/A	NO	N/A	N/A
5	2024/12/10	Email	Tara Van Norden	Kristie Halka-Glazier Adam Simon Derek Simon Aaron Power Junior Denny Ryan Louis	To provide Monthly Project Updates document in advance of meeting	Tara Van Norden emailed the Monthly Project updates. The Renewable Integration and Grid Stability (RIGS) Project was added to the Monthly document and moving forward, NB Power will start providing information on this Project.	N/A	NO	N/A	N/A
6	2024/12/11	Hybrid Meeting (MS Teams and In-person at he Belledune generating station)	Tara Van Norden Cholena Bagley Andrea McGathey Jesse Perley Mat Goman Jeff Yeomans David Maguire Chantal St. Pierre Steve Doucet Richard	Kristie Halka-Glazier Adam Simon Aaron Power Derek Simon Junior Denny Ryan Louis Jake Metallic Starr Blanchard	To provide update on Project	Mat Gorman introduced the Project as it is new to the Monthly project updates document. A brief overview of the Project was provided and it was noted that going forward information would added to the Monthly project updates document. It was also noted that Stantec had been hired as the engineering consultant.	N/A	NO	N/A	N/A
7	2024/01/20	Email	Tara Van Norden	Kristie Halka-Glazier Adam Simon Aaron Power Derek Simon Junior Denny Ryan Louis Jake Metallic	To provide Monthly Project Updates document in advance of meeting	Update: initiated the development of a Project description continued evaluating proposals to identify potential partner met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulatory requirements associated with the Project	N/A	NO	N/A	N/A
8	2025/01/23	MS Teams Meeting	Cholena Bagley Christina Laflamme Katherine French Andrea McGathey Kathleen Duguay Tyara Van Norden Mat Gorman David Maguire Chantal St. Pierre	Kristie Halka-Glazier Junior Denny Ryan Louis Jake Metallic	To provide update on Project	The following update was provided: ◊initiated the development of a Project description ◊continued evaluating proposals to identify potential partner ◊met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulatory requirements associated with the Project	N/A	NO	N/A	N/A
9	2025/02/24	Email	Tara Van Norden	Kristie Halka-Glazier Adam Simon Aaron Power Ryan Louis Jake Metallic Junior Denny Derek Simon	To provide Monthly Project Update document in advance of meeitng	Update: initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued assessing a potential location for the development of the Project continued evaluating proposals to identify a potential partner	N/A	NO	N/A	N/A

10	2025/02/27	Meeting	Cholena Bagley Christina Laflamme Katherine French Andrea McGathey Kathleen Duguay Tara Van Norden David Maguire	Kristie Halka-Glazier Junior Denny Aaron Power Adam Simon Jake Metallic	To provide update on Project	The following update was provided: - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued assessing a potential location for the development of the Project - continued evaluating proposals to identify a potential partner	Kristie asked when we suspect to get through this piece. Dave is not sure of the timeline.	NO	Dave advised there were two potential locations for this project. Based on constraints Center Village is the preferred location for this project.	N/A
11	2025/03/24	Email	Tara Van Norden	Kristie Halka-Glazier Adam Simon Aaron Power Junior Denny Ryan Louis Jake Metallic Derek Simon	To provide Monthly Project Update document in advance of meeitng	The following update was provided: - selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A
12	2025/03/27	Meeting	Tara Van Norden Katherine French Andrea McGathey Kathleen Dugay David Maguire	Kristie Halka-Glazier Aaron Power Jake Metallic Derek Simon Ryan Louis	To provide update on the project	There was no new update or questions	N/A	NO	N/A	N/A
13	2025/04/17	Email	Tara Van Norden	Kristie Halka-Glazier Adam Simon Aaron Power Junior Denny Ryan Louis Jake metallic Derek Simon	To provide Monthly Project Update document in advance of meeitng	The following update was provided: - selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A
14	2025/04/24	Meeting	Tara Van Norden Katherine French Mat Gorman Kathleen Duguay Chantal st. Pierre Andrea McGathey	Kristie Halka-Glazier Aaron Power Adam Simon	To provide update on the project	Mat advised that he was advised by Department of Environment on Tuesday that we cannot do Water Supply Source Assessment (WSSA) investigations until the EIA is registered. We can do geotechnical work under the existing Wetland and Watercourse Alteration (WAWA) permit. There were no questions.	N/A	NO	N/A	N/A

15	2025/05/26	Email	Tara Van Norden	Kristie Halka-Glazier Aaron Power Adam Simon Junior Denny Derek Simon Jake Metallic Ryan Louis	To provide monthly project update document in advance of meeting	Update: - selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A

: and Communication Log - Renewable Integration and Grid Stability (RIGS)
Kopit Lodge

ID #	Date (YY/MM/DD)	Activity (e.g. letter, email, phone call, meeting)	NB Power Contact	First Nation Contact	Purpose	Summary of Discussions	Interests/ Concerns/ Issues Raised	Interest/Concern (YES/NO)	Response/ Actions	Status
1	2024/12/06	Email	Tara Van Norden Jesse Perley Matt Gorman	Chief Sock Darienne Perley-Francis	To introduce the Project	An email was sent to the Chief and Kopit Lodge to introduce the Project	N/A	NO	N/A	N/A
2	2025/01/20	Email	Tara Van Norden	Darienne Perley-Francis	To provide update on Project	The following update was provided: - initiated the development of a Project description - continued evaluating proposals to identify potential partner - met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulatory requirements associated with the Project	N/A	NO	N/A	N/A
3	2025/02/25	Email	Tara Van Norden	Darienne Perley-Francis	To provide update on Project	The following update was provided: - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued assessing a potential location for the development of the Project = continued evaluating proposals to identify a potential partner	N/A	NO	N/A	N/A
4	2025/03/24	Email	Tara van Norden	Darienne Perley-Francis	To provide update on Project	The following update was provided: - selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A

5	2025/05/26	Email	Tara Van Norden	Darienne Perley-Francis Keegan McGrath	To provide update on Project	Both project updates for April and May were sent. Update: selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement initiated atmospheric air modelling and submitted required permit applications to conduct water investigations and geotechnical baseline data requested consulting services to perform field surveys on the Scoudouc property to further assess property for future development, when required	N/A	NO	N/A	N/A

New Brunswick Power Corporation's First Nations Engagement and Communication Log - Renewable Integration and Grid Stability (RIGS)
Wolastoqey Nation in New Brunswick

ID #	Date	Activity (e.g. letter, email, phone call, meeting)	NB Power Contact	First Nation Contact	Purpose	Summary of Discussions	Interests/ Concerns/ Issues Raised	Interest/Concern (YES/NO)	Response/ Actions	Status
1	2024/07/10	Meeting	Jesse Perley Cholena Bagley Tara Van Norden Andrea McGathey Fawn Zeuchner Mat Gorman Christina Laflamme David MaguireK Kathleen Duguay	Ian Peach Colin Curry Gordon Grey Robert Bernard Trudi Cummings Tim Plant Richard Francis	To introduce the Project	NB Power introduced the Project and noted that a partnership was being proposed where it will be an exclusive off taker of a 25-year power and capacity purchase agreement. The deadline for submission is August 9, 2024. Field studies will commence in July on two NB Power properties – Scoudouc and Center Village (20 km east of Memramcook). More details will be shared during the monthly meeting. Mat asked if there were any questions. There were none.	N/A	NO	N/A	N/A
2	2024/11/25	Meeting	Tara Van Norden David Maguire Kathleen Duguay Cholena Bagley Anthony Bielecki Andrea McGathey Christina Laflamme Greg Carroll	Ian Peach Trudi Cummings Gordon Grey Robert Bernard Colin Curry Jamie Gorman Tom Lewey	To provide update on Project	Dave provided an update on the Project and that there would be more information to come as part of the Monthly Project update document. There will be an EIA required.	N/A	NO	N/A	N/A
3	2024/12/05	Email	Tara Van Norden Jesse Perley Matt Gorman	Chiefs John Cloutier Ian Peach	To provide update on Project	An email was sent to the Chiefs and WNNB advising that NB Power had issued a Request for Expressions of Interest (REOI) in June 2024 for a partner to construct and operate a dual-fuel combustion turbine to help us ensure energy security for New Brunswickers. The REOI had closed, and NB Power was currently moving forward with due diligence with a proponent. The site is currently planned for the Scoudouc industrial park; however the location has not been finalized. This project would go by the Maritimes and North East pipeline.	N/A	NO	N/A	N/A
4	2024/12/10	Email	Tara Van Norden	Ian Peach Colin Curry Gordon Grey Mason Perley Thomas Lewey Andrew Uriah RDCC's	To provide Monthly Project Update document in advance of meeting	The Monthly Project Update document was sent out in adance of the meeting. NB Power noted that Project was added to the document and moving forward, NB Power would start providing regular updates. There was no WNNB December Monthly meeting.	N/A	NO	N/A	N/A
5	2025/01/08	Email	Tara Van Norden	Ian Peach Colin Curry Gordon Grey Mason Perley Andrew Uriah Tom Lewey RDCC's	To provide Monthly Project Update document in advance of meeting	Update: initiated the development of a Project description continued evaluating proposals to identify potential partner met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulatory requirements associated with the Project	N/A	NO	N/A	N/A

6	2025/01/25	Meeting	Tara Van Norden David Maguire Kathleen Duguay Katherine French Cholena Bagley Anthony Bielecki Andrea McGathey Christina Laflamme Jesse Perley Greg Carroll Matt Roherty	Ian Peach Gordon Grey Andrew Uriah Colin Curry Trudi Cummings Rivert Bernard Thomas Lewey Mason Perley Richard Francis Tim Plant	January Monthly Meeting	The following update was provided: - initiated the development of a Project description - continued evaluating proposals to identify potential partner - met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulatory requirements associated with the Project There were no questions.	N/A	NO	N/A	N/A
7	2025/02/10	Email	Cholena Bagley	Ian Peach Colin Curry Gordon Grey Mason Perley Andrew Uriah Thomas Lewey RDCC's	To provide Monthly Project Update document in advance of meeting	Update: initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued assessing a potential location for the development of the Project continued evaluating proposals to identify a potential partner	N/A	NO	N/A	N/A
8	2025/02/12	Meeting	Tara van Norden	Ian Peach Colin Curry Gordon Grey Mason Perley Abdrew Uriah Thomas Lewey RDCC's	To provide update on Project	The February Monthly meeting was cancelled due to a death in the community of Bilijk.	N/A	NO	N/A	N/A
9	2025/03/11	Email	Tara Van Norden	Ian Peach Colin Curry Gordon Grey Mason Perley Andrew Uriah Thomas Lewey RDCC's	To provide Monthly Project Update document in advance of meeting	The following update was provided: - selected a preferred site/location for the development of the Project - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement initiated atmospheric air modelling and submitted required permit applications to conduct water investigations and geotechnical baseline data	N/A	NO	N/A	N/A
10	2025/03/12	Meeting	N/A	N/A	To provide monthly updates	WNNB was hosting open houses in communities. Meeting was cancelled	N/A	NO	N/A	N/A
10	2025/04/09	email	Tara Van Norden	Ian Peach Gordon Grey Andrew Uriah Colin Curry Thomas Lewey Mason Perley RDCC's	To provide monthly update on Project in advance of the monthy meeting.	The following update was provided: - selected a preferred site/location for the development of the Project - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement initiated atmospheric air modelling and submitted required permit applications to conduct water investigations and geotechnical baseline data	N/A	NO	N/A	N/A

11	2025/04/09	Meeting	Tara Van Norden Katheen Duguay Cholena Bagley Anthony Bielecki Andrea McGathey Christina Laflamme Matt Gorman Matt Roherty	Ian Peach Colin Curry Gordon Grey Andrew Uriah Thomas Lewey Sal Poirier Kaleb Zelman Trudi Cumming Robert Bernard Richard Francis Tim Plant	To provide monthly updates	There were no questions or updates.	N/A	NO	N/A	N/A
12	2025/05/09	Email	Tara Van Norden	Ian Peach Colin Curry Gordon Grey Andrew Uriah Mason Pelrey Thomas Lewey RDCC's	to provide monthly updates on projects in advance of the monthly meeting	The following update was provided: - selected a preferred site/location for the development of the Project - initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation - continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement initiated atmospheric air modelling and submitted required permit applications to conduct water investigations and geotechnical baseline data	N/A	NO	N/A	N/A
13	2025/05/14	Meeting	N/A	N/A	To provide monthly updates	Minutes are being reviewed	N/A	No	N/A	N/A

New Brunswick Power Corporation's First Nations Engagement and Communication Log - Renewable Integration and Grid Stability (RIGS)
Peskotomuhkati

ID #	Date	Activity (e.g. letter, email, phone call, meeting)	NB Power Contact	First Nation Contact	Purpose	Summary of Discussions	Interests/ Concerns/ Issues Raised	Interest/Concern (YES/NO)	Response/ Actions	Status
1	2024/07/10	Meeting	Cholena Bagley Tara Van Norden Andrea McGathey Fawn Zeuchner Christina Laflamme David Maguire	Harry Sappier Kim Reeder	To introduce the Project	Dave introduced the Project by stating that NB Power issued a Request for Expressions of Interest (REOI) for proposals to build, own and operate a 400 MW simple cycle combustion turbine generating station at a site owned by NB Power. Combustion turbines with synchronous condensers (technology to assist with grid stability) and dual-fuel capability (natural gas/liquid fuel) are being considered as the preferred option. Field studies will commence in July on two NB Power properties – Scoudouc and Centre Village (20 km east of Memramcook). More details will be shared during the monthly meetings.	Kim asked about the land in Scoudouc and is it land that NB Power owns. Kim asked for a copy of the REOI. Dave will have it sent.	YES	Dave advised that they are potential alternative sites at this point, and that NB Power owns the existing Eel River site, and are in the process of obtaining potential sites in Scoudouc and Centre Village. ACTION ID#1.1: Dave Maguire to send a copy of the REOI to Kim Reeder for the RIGS potential project	ACTION ID#1.1: COMPLETE See ID#2
2	2024/07/25	Email	Cholena Bagley	Harry Sappier Kim Reeder	To address Action ID#1.1	An email was sent with a copy of the REOI to close Action ID#1.1.	N/A	NO	N/A	N/A
3	2024/12/06	Email	Tara Van Norden Jesse Perley Matt Gorman	Chief Akagi John Ames Harry Sappier	To provide update on Project	An email was sent to provide an update on the Project. The email stated that NB Power had issued a Request for Expressions of Interest (REOI) in June 2024 for a partner to construct and operate a dual-fuel combustion turbine to help us ensure energy security for New Brunswickers. The REOI has closed, and NB Power is currently moving forward with due diligence with a proponent. The site is currently planned for the Scoudouc industrial park; however the location has not been finalized. This Project would go by the Maritimes and North East pipeline.	N/A	NO	N/A	N/A
4	2024/12/13	Email	Tara Van Norden	Harry Sappier Kim Reeder	To provide Monthly Project Update document in advance of meeting	Tara Van Norden emailed the project updates for review. NBP has added the Renewable Integration and Grid Stability (RIGS) project. We will start providing information on this project moving forward. Tara mentioned to reach out at any time if there are any questions regarding the updates since we will not be having our December monthly meeting. • Update: ◊ initiated the development of a Project description ◊ currently evaluating proposals to identify partner				N/A
5	2024/12/19	Email	Kathleen Duguay Matt Gorman	Kim Reeder	Information on RIGS	Kathleen emailed Mat Gorman asking for some information on RIGS to be shared with Kim Reeder.				See ID#6

6	2024/12/20	Email	Mat Gorman Kathleen Duguay	Kim Reeder	Information on Rigs	Mat emailed the project update document which shares information on the RIGS project. RENEWABLE INTEGRATION AND GRID STABILITY (RIGS) • Project Description: The RIGS Project involves the acquisition of generation capacity and synchronous condenser support through a 25-year Power Purchase Agreement (PPA) with a qualified and experienced partner. The PPA partner will develop, own, and operate a 400 MW natural gas fired generation facility (with the ability to also fire on fuel oil), and will sell the capacity and associated energy from this facility to NB Power. The site will be developed to accommodate up to 500 MW. NB Power will be responsible for supplying fuel to the PPA partner and to purchase the energy output of the facility. The Project will also require a transmission line and gas supply line connection to the facility. • Update: ◊ initiated the development of a Project description ◊ currently evaluating proposals to identify partner Schedule • Federal Detailed Project Description – Spring 2025 • EIA Registration – Spring 2025 • EIA Determination – December 2025				
7	2025/01/24	Email	Tara Van Norden	Harry Sappier Kim Reeder	To provide Monthly Project Update document in advance of meeting	Update: initiated the development of a Project description continued evaluating proposals to identify potential partner met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulatory requirements associated with the Project	N/A	NO	N/A	N/A
8	2025/01/28	Meeting	Tara Van Norden Cholena Bagley Christina Laflamme Andrea McGathey Kathleen Duguay Matt Gorman Katherine French	Kim Reeder	To provide update on Project	The following update was provided: - initiated the development of a Project description - continued evaluating proposals to identify potential partner and met with representatives of the Impact Assessment Agency and the Department of Environment and Local Government to discuss the regulaory requirements associated with the Project	Kim advised that there was a press release put out that NB Power did not share. Kim asked for the RIGS entirety is this the first step or is the 500 MW what the full Project is.	YES	Mat Gorman advised that the release was from Government and not NB Power. Mat provided an overview of the Project and at the time the press release came from the minister we were negotiating with one group, and it is to see if this project is feasible. Once that's decided we will be able to share who the proponent is. Mat advised they are working on a Project description as well. Mat advised he believes this is the full Project.	N/A
9	2025/02/24	Email	Tara Van Norden	Harry Sappier Kim Reeder	To provide Monthly Project Update document in advance of meeting	PGRI was unavailble to meet in February. RIGS Update: initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued assessing a potential location for the development of the Project continued evaluating proposals to identify a potential partner	N/A	NO	N/A	N/A
10	2025/02/25	Meeting	N/A	N/A	To provide update on Project	Due to vacation/other work commitments, PGRI asked for meeting to be cancelled.	N/A	NO	N/A	N/A

11	2025/03/24	Email	Tara Van Norden	Harry Sappier Kim Reeder Chief Akagi Jarrett Paul	To provide Monthly Project Update document in advance of meeting	RIGS Update: selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A
12	2025/03/25	Meeting	Tara Van Norden Cholena Bagley ChristinaLaflamme Andrea McGathey Kathleen Duguay Katherine French Andrew Robinson	Kin Reeder Jarrett Paul Harry Sappier Chief Akagi	To provide update on Project	There were no new updates. There were no questions.	N/A	NO	N/A	N/A
13	2025/04/17	Email	Tara Van Norden	Kim Reeder Harry Sappier Jarrett Paul Alexa Meyer	To provide Monthly Project Update document in advance of meeting	Update: selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A
14	2025/04/22	Meeting	Tara Van Norden Cholena Bagley Andrea McGathey Kathleen Duguay Katherine French	Harry Sappier Jarrett Paul	To provide update on Project	Update: Harry asked if the EIA registration has been done. EIA registration to be done closer to summer 2025. Harry also wanted to inquire who will be doing the archeological work. It is Stantec doing the work.	N/A	NO	N/A	N/A
15	2025/05/22	Email	Tara Van Norden	Harry Sappier Kim Reeder Jarrett Paul	To provide Monthly update document in advance of meeting	Update: selected a preferred site/location for the development of the Project. The site selected is a property in Centre Village approximately 20 km east of Memramcook. During preliminary desktop and field studies, there were no unique environmental constraints identified at this location initiated the development of a detailed Project description to satisfy the requirements of the Impact Assessment Act and EIA Regulation continued discussions with the preferred partner to negotiate the details of a Power Purchase Agreement	N/A	NO	N/A	N/A

Appendix B Water Supply Source Assessment Initial Application

Stantec Consulting Ltd.
141 Kelsey Drive, St. John's, NL A1B 0L2

June 26, 2025

File: 121418392

Department of Environment and Local Government
Environmental Assessment Section
PO Box 6000
Fredericton, NB E3B 5H1

Reference: Water Supply Source Assessment Initial Application, Renewable Integration and Grid Stability Project, Centre Village, New Brunswick

Stantec Consulting Limited (Stantec) was retained by WattBridge Energy, LLC to conduct a hydrogeological assessment for a proposed gas turbine generation facility to be constructed on Parcel ID 70113592 in Centre Village, New Brunswick (NB). The draft WSSA application form and associated mapping is attached to this letter for your review and comment.

Regards,

STANTEC CONSULTING LTD.

Digitally signed by Praamsma, Titia
Date: 2025.06.26 12:20:06 -02'30'

Titia Praamsma PhD, P.Geo
Senior Hydrogeologist
Phone: (709) 700-6127
Mobile: (709) 743-5239
titia.praamsma@stantec.com

Attachments: WSSA Application
Figure 1 Proposed Drill Targets
Table 1 Water Quality Data from NB OWLS within 10 km of the Project Area

cc. Cliff Oliver, VP Development, Wattbridge

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Water Supply Source Assessment Initial Application

1. Name of proponent.

WattBridge Energy, LLC.

2. Location of drill targets (including property PID) and purpose of the proposed water supply.

The proposed location of the Project is in Centre Village, New Brunswick (NB), on Parcel ID 70113592 along the east of Route 940, located adjacent to the Maritimes and Northeast Pipeline and NB Power Transmission Lines 1142, 1143 and 1244.

The purpose of the Project is to provide 500 MW clean burning natural gas peaking power that will bring much-needed capacity, reliability and resiliency to the electrical system, which is particularly important during extreme weather events. In addition, this new gas fired peaking generation will reduce NB Power's dependency on existing oil and coal steam generation within their portfolio. Reducing the dispatch requirements of these coal and oil units will dramatically reduce NB Power's carbon footprint ranging between 100,000 Ton/yr and 250,000 Ton/yr. Additionally, the facility will be designed to aid the electrical system with zero emissions synchronous (sync) condense operations. Synchronous condensing operation occurs while the units are in reserve shutdown allowing NB Power to continuously balance the frequency variations in the region created by wind. Further, these are modular units capable of starting and stopping independently of each other. They will provide a wide range of dispatch mode and sync condensing to meet the generation needs of NB Power. As part of the Project, a sustainable water supply is required for the operation of the combustion turbines.

Three drill targets are proposed. The locations of each drill target are summarized in Table 1 and are shown in Figure 1, attached.

Table 1 Drill Target Coordinates

Test Well ID	Easting (m)	Northing (m)
TW01	402560	5099430
TW02	402510	5099340
TW03	402610	5099330

Note:
Coordinates are in UTM Zone 20T

3. Required water quantity (in m^3/day) and/or required pumping rate.

Preliminary designs estimate an average daily demand of approximately 4,900 litres per minute (L/min) (7,000 m^3/day), which exceeds the trigger demand of 35 L/min (50 m^3/day) for a Water Supply Source Assessment (WSSA) under the Environmental Impact Assessment (EIA) Regulation (NB Reg 87-83) of the New Brunswick Clean Environment Act (NBDELG 2025). The total number of wells required to meet this demand will not be known until a test program is completed.

4. List alternate water supply sources in area (including municipal systems).

The Property is located in the Town of Centre Village, which relies on individual wells as groundwater sources. The main river in the area is the Tantramar River, which is approximately 4.5 km west of the Project area. Therefore, no feasible alternate water supply sources are readily available.

5. Discuss area hydrogeology as it relates to the project requirements.

Surficial geological mapping (Rampton 1984) indicates that the bedrock is overlain by a till blanket typically 0.5 m to 3 m thick. The matrix forming these deposits is typically heterogeneous, varying from sandy to clayey, usually reflecting the composition of the underlying bedrock (Boisvert 2004; Carr 1964). Bedrock outcrops in the area are rare.

Regional bedrock geology is characterized by the fractured sedimentary deposits of the Maritime Carboniferous Basin, which consists of a series of sedimentary subbasins with complex internal stratigraphy and frequent lateral discontinuity as a result of different sedimentation rates and faulting (Rivard et al. 2005). The Maritime Carboniferous basin covers an area of approximately 46,000 km2 and extends into Nova Scotia, Prince Edward Island, and large parts of New Brunswick.

Local bedrock geology mapping (Smith 2007) indicates that the site is underlain by the Richibucto Formation of the Pictou Group, which consists of:

- grey and brownish red, commonly micaceous, lithic and arkosic sandstone
- pebbly sandstone and intraformational mudstone-clast conglomerate
- brownish red to brick-red and lesser grey siltstone and mudstone
- minor intraformational limestone-cobble conglomerate
- thin, laterally extensive limestone beds
- minor thin coal seams

The Salisbury Formation, also part of the Pictou Group, underlies the Richibucto Formation and forms a geological contact at surface approximately 800 m west of the Project boundary. The Salisbury Formation consists of:

- brownish red to brick-red mottled mudstone
- siltstone and greyish maroon fine-grained sandstone
- pinkish grey, red and grey, fine- to medium-grained and pebbly, lithic and feldspathic arsenite
- intraformational mudstone-clast conglomerate
- polymictic pebble conglomerate
- minor thin coal seams

The Boss Point Formation of the Cumberland Group underlies the Pictou Group and forms a geological contact at surface with the Salisbury Formation approximately five km west of the Project area.

Structurally significant features in the vicinity of the Project include a regional east-west anticline associated with the Saint-Joseph Fault located approximately one km north of the site (Smith 2007), which is indicative of potential fault-related fracturing in bedrock underlying the Project area.

The hydrogeology of the site includes both local and regional flow regimes that are expected to be controlled primarily by the bedrock geology and topography. The site is located within the upper reaches of the Tantramar River watershed and regional groundwater flow is expected to follow the topography of the catchment area. Groundwater is inferred to flow towards the west and south with eventual discharge to the Tantramar River and the Bay of Fundy. On a local scale, shallow groundwater is expected to discharge to tributaries of the Tantramar River, including Harper Brook, East Brook, and Long Lake Brook and their respective tributaries. In the absence of major topography in the area (i.e., the maximum ground surface elevation in the watershed is on the order of approximately 70 m above sea level (masl) and the Project area is approximately 58 masl), lateral groundwater flow direction at depth is not expected to differ significantly from shallow groundwater.

The geology/hydrostratigraphy will also control the ability for groundwater to flow through each type of surficial geology and bedrock unit. In this area, the till is not recognized to be an effective confining layer, and groundwater will generally recharge through the overlying till layers and into the bedrock (Rivard *et al.* 2005). Flow through the till layers will occur through the pore space between the grains of gravel, sand, silt, and clay that make up the till blanket, while flow through the rock will generally have lower matrix (primary) porosity and permeability values. Bedrock of the Richibucto Formation is highly stratified with significant variability in bedding thickness and composition. Because of this heterogeneity, some layers act as aquifers, and some as aquitards or confining units. Further, based on the depositional conditions of each unit, groundwater may be stored within the matrix, particularly in sandstones and conglomerate layers. The presence of primary porosity/permeability in these units are supported by historical aquifer testing, which has shown that investigated sites behaved similarly to porous media at large scale (Rivard *et al*. 2005).

Residential wells within 10 km of the Project area have a median yield of 46 L/min. However, regional studies of wells drilled within the Richibucto Formation within 30 km of the Project area indicate at least 52 wells with inferred yields over 600 L/min. Further, deeper wells designed for high volume extraction within the same geological unit, such as the Shediac municipal water supply, have reported individual yields of up to 2,040 L/min.

6. Outline the proposed hydrogeological testing and work schedule.

Following approval of the undertaking from NBDELG, a drilling program is planned with three test wells, with diameters between 150 mm to 250 mm, within approximately 100 m of each other. The depth of the wells will depend on the estimated yields encountered during drilling. Upon completion of the drilling program, aquifer testing will be conducted on at least one of the wells, which will include a step-drawdown test, a 72-hour constant rate test, recovery test, and water sampling during the testing to confirm the suitability of the water wells to provide production water for the Project. Water level data will be collected from the pumping well and from the other two wells, which will be used as observation wells. A minimum of three water samples will be collected during the constant rate test of each pumping well and will be submitted to an accredited laboratory for analysis of chemical and bacteriological water quality, including one at the beginning, middle, and end of the aquifer test.

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7. Identify any existing pollution or contamination hazards within a minimum radius of 500 m from the proposed drill targets. Historical land use that might pose a contamination hazard (i.e. tannery, industrial, waste disposal, etc.) should also be discussed.

To evaluate potential for groundwater quality risks in the Project area, the following current and historical sources are considered:

- infiltration of overland runoff containing road salt, pesticides, fertilizers, herbicides, animal waste, and petroleum fuel constituents from adjacent agricultural properties and transmission lines
- releases of inorganic chemicals and bacteria from septic field systems from adjacent properties
- accidental releases of effluent, petroleum fuels or lubricants, agricultural chemicals, pesticides, or herbicides
- infiltration of different and/or poorer quality water from deeper depths in the bedrock formations.

The Federal Contaminated Sites Inventory indicates no federally registered contaminated sites within 500 m of the Project Area.

Available mapping of aquifer vulnerability to surface contamination indicates the Project area has moderate vulnerability (Rivard *et al.* 2005). This assessment is made based on the generally low thickness of the overburden, the relatively high recharge rate to the aquifer, and the permeability of the bedrock formation itself.

The actual risk to well water quality is a function of distance between the potential contamination source and a well, the direction of groundwater flow, and the physical/chemical properties of the contaminant and the hydrogeologic system. It is noted that the developed portions of adjacent agricultural properties, including roadways, are greater than 500 m from the proposed drill targets (Figure 1) and are not expected to affect water quality, as it relates to release of chemicals or the presence of septic fields, in the vicinity of the proposed drill targets. Seasonal use of pesticides and/or herbicides for the nearby pipeline and transmission lines are not significant operations are also not expected to affect local groundwater quality. Nonetheless, in an area of fractured bedrock with moderately permeable overburden, careful attention to well location and well construction (particularly casing installation) are important. Wells will therefore be located as far away as practical from any portion of effluent disposal systems, including any drain fields (if present), and wetlands/surface water bodies. Wells will be installed with a minimum of 6 m of casing, grouted into bedrock as per the *Water Well Regulation* of the Clean Water Act (NBDELG 2020). Deeper casing depths will provide greater confidence in the elimination of surface water infiltration to a well. Due to the greater potential for surface water infiltration to impact wells with a shallow casing, a casing depth of 12 m or more is recommended. This approach will be used to reduce the potential for well water quality impacts due to road salt runoff and infiltration, fertilizer runoff and infiltration, infiltration of microbiological parameters from animal pasture, or effluent discharge malfunction.

8. Identify any groundwater use problems (quantity or quality) that have occurred in the area.

No groundwater quantity problems were identified in the area as part of this study.

Regional groundwater quality in the Maritime Carboniferous Basin is generally characterized as naturally good to excellent, with commonly elevated concentrations of iron and manganese. The most common groundwater type in the upper 100 to 200 m of local aquifers is calcium bicarbonate with moderate hardness and slightly alkaline pH, while at greater depths, sodium chloride type may also be encountered (Rivard *et al.* 2005). This water type typically forms from the dissolution of calcite by carbonic acid derived from atmospheric precipitation and the soil zone. The levels of hardness (attributed to calcium and magnesium) and alkalinity (due to bicarbonate) are directly related to the availability of carbonate minerals in the overburden or bedrock within the flow system, up to the point of carbonate mineral saturation.

Groundwater quality in the vicinity of the site is further evaluated based on sampling data from 21 wells within 10 km of the Project Area available through the NB OWLS (NBDELG 2025b). In accordance with Regulation 93-203 of the Clean Water Act (New Brunswick Department of Environment and Local Government 2025), water quality test results provided in the OWLS is in aggregate form and does not identify the individual well from which the sample was taken. As such, it is difficult to separate water quality samples based on geological unit. Analytical results available through the NB OWLS within 10 km of the Project Area are summarized in Table C-1 attached.

Groundwater quality from the NB OWLS is consistent with regional descriptions by Rivard *et al.* (2005) with groundwater quality samples showing primarily bicarbonate alkalinity with major cations predominantly represented by calcium. Concentrations of iron and manganese exceed aesthetic objectives of the Guidelines for Canadian Drinking Water Quality (GCDWQ) (Health Canada 2024) in the majority of sample data available. Elevated levels of turbidity are also noted, as well as regular occurrences of total coliform. However, without an understanding of sampling methodology and the condition of wells that were sampled, it is difficult to interpret potential causes for turbid groundwater and the presence of coliform.

9. Identify any watercourse(s) (stream, brook, river, wetland, etc.) within 60 m of the proposed drill targets.

Based on available wetland mapping from the province and from a wetland delineation study completed by Stantec in 2024 (reporting in progress), various wetlands were identified within the Project area (see attached Figure 1). The nearest wetland to a proposed drill target is approximately 10 m. No streams, brooks, or rivers were identified within 60 m from the proposed drill targets.

10. Identify site supervisory personnel involved in the source development (municipal officials, consultants and drillers).

Consultant: Stantec Consulting Ltd.

- Hydrogeologist: Titia Praamsma, PhD, P.Geo.(NB, NL, NS)
- Environmental Engineer: Aaron Power, P.Eng. (NL, NS)

Well Driller:

- TO BE DETERMINED

11. Attach a 1:10000 map and/or recent air photo clearly identifying the following:

- proposed location of drill targets and Property PID
- domestic or production wells within a 500 m radius from the drill target(s)
- any potential hazards identified in question 7.

Figure 1 shows the Property PID, a 500 m buffer around the drill targets, existing domestic wells within the map extents (none identified), proposed test well locations, and potential pollution and/or contamination hazards identified within 500 m of the Property. It is noted that although there are no wells identified on the map extent in the NB OWLS, it is assumed that most or all buildings along Route 940 would have a domestic well.

12. Attach a land use/ zoning map of the area (if any). Superimpose drill targets on this map.

Available land use mapping indicates agricultural land use approximately 1.3 km west of the westernmost drill target. Land use mapping nearer the drill targets is not available and land is primarily undeveloped in the vicinity of the proposed drill targets. Available land use mapping and nearby utility corridors for pipeline and transmission line are shown in Figure 1.

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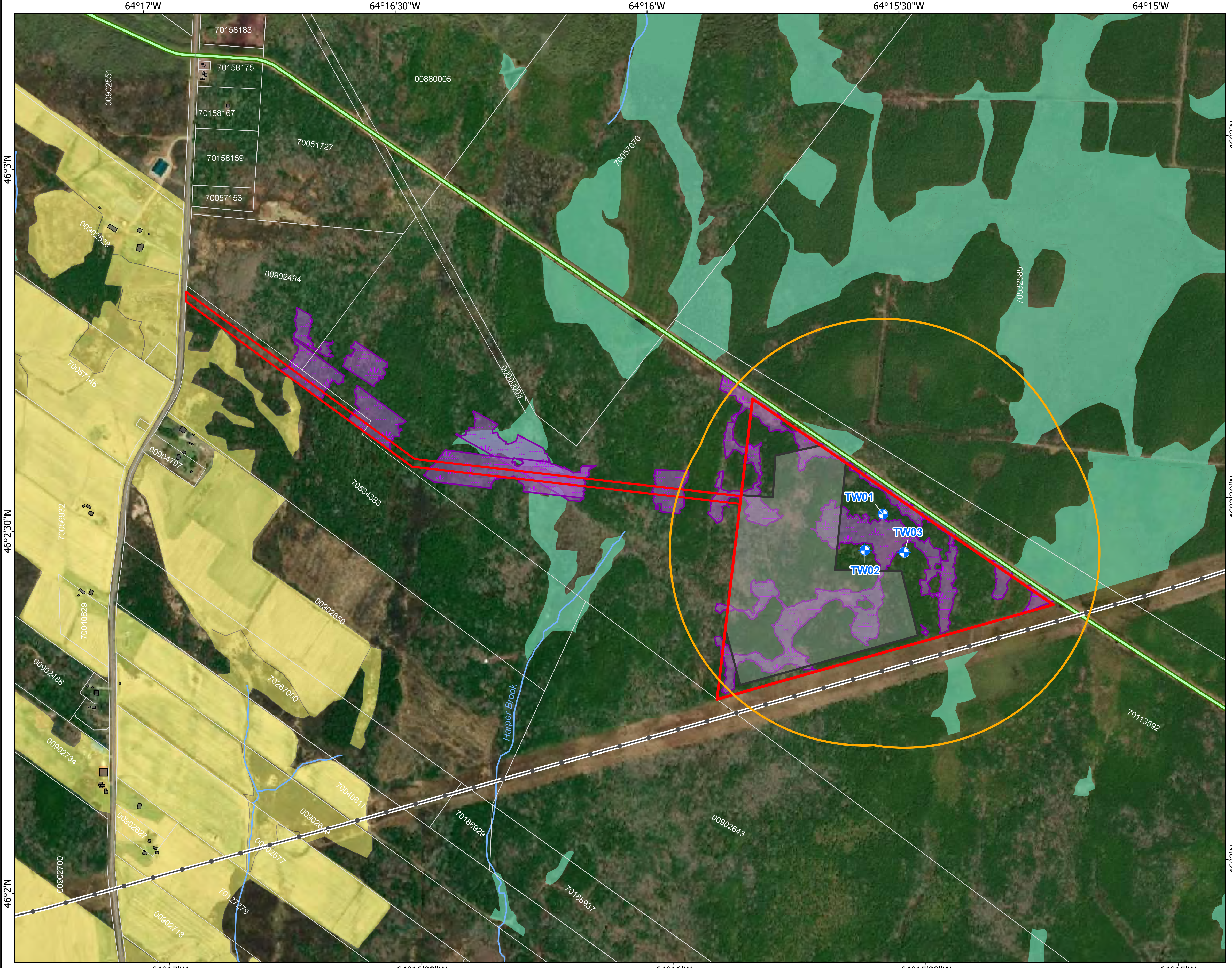

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Legend

- Proposed Test Well Locations
- Proposed Test Well Locations 500m buffer
- Project Area
- Development Footprint (Approximate)

Built Infrastructure

- Road
- Transmission Line (Existing)
- Pipeline (Existing)
- Building

Land Use

- Property Boundary
- Agriculture

Wetlands and Waterways

- Watercourse
- Wetland (Stantec, 2024)
- Wetland (NBELG)

N

0 100 200 300 400 m

(At original document size of 11x17)
1:10,000

Notes

1. Coordinate System: NAD 1983 CSRS New Brunswick Stereographic
2. Data Sources: Client; Stantec; GeoNB (NBHN, NBRN); NB Natural Resources and Energy Development; NB Environment and Local Government; NB Agriculture, Aquaculture and Fisheries; Service NB.
3. Background: Esri, USGS, Maxar

Project Location:

Project Location
Centre Village,
New Brunswick, Canada

Prepared by AC on 2025-06-17

Client/Project
WattBridge Energy LLC
RIGS-Centre Village

121418452

Figure No.
1

Title
Proposed Drill Targets

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Table 1 Water Quality Data from NB OWLS within 10 km of the Project Area
WSSA Initial Application for the Renewable Integration and Grid Stability Project at the Centre Village Location New Brunswick
Stantec Project No. 121418452.500

Parameters	Units	Criteria[1]	Criteria[2]	Sample Number																				
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
General Chemistry Parameters																								
Bicarbonate Alkalinity	mg/L	-	-	72	-	88.1	77.1	129.7	143	114.3	-	58.5	100.6	179.8	131.4	-	22.4	-	46.7	42.3	-	94.2	142	274
Total Dissolved Solids	mg/L	500*	-	220.99	-	199.05	129.27	165.50	203.27	152.23	193.00	95.44	120.72	209.01	330.00	-	36.10	-	77.75	62.48	-	134.92	209.93	382.68
Carbonate Alkalinity	mg/L	-	-	0.0	-	0.0	0.0	1.3	1.0	1.7	-	0.1	1.3	2.1	4.4	-	0.0	-	0.0	0.0	-	0.0	0.0	0.0
Hardness	mg/L CaCO3	-	-	88.2	-	138	97	104	171	120	130	70.4	108	150	49.2	-	18.6	-	56.6	46.7	-	98.4	153	5.69
Total Alkalinity	mg/L CaCO3	-	-	72	-	88.1	77.1	131	144	116	120	58.6	102	182	136	-	22.4	-	46.7	42.3	-	94.2	142	274
Dissolved Chloride	mg/L	250*	120	76.8	-	40	10.9	7.75	25.9	6.73	19.1	11.2	4.14	4.8	99	-	3.67	-	12.3	7.39	-	16.9	24.9	18.7
Colour	TCU	15*	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	1	0.06	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	<0.05
Nitrate	mg/L N	10	13	1.9	-	6.05	4.25	<0.05	1.8	<0.05	-	2.2	0.56	<0.05	<0.05	-	<0.05	-	1.45	0.071	-	0.2	2.55	<0.05
Nitrate + Nitrite	mg/L N	-	-	1.95	-	6.1	4.3	<0.05	1.8	<0.05	5.6	2.2	0.61	<0.05	<0.05	-	<0.05	-	1.45	0.121	-	0.21	2.6	<0.05
pH	unitless	7.0 - 10.5	6.5 - 9.0	8.16	-	7.24	8.16	8.02	7.86	8.19	7.8	7.15	8.15	8.1	8.55	-	6.87	-	8.19	7.05	-	7.13	8.23	**9.14**
Sulphate	mg/L	500*	-	7.08	-	8.53	6.94	11	3.99	14.3	7	4	3.27	7.34	18.1	-	4.16	-	3.72	6.02	-	7.83	11.4	46.8
Turbidity	NTU	1*	-	3.95	-	20	2.1	6.3	0.3	1.4	0.2	2.1	0.29	8.6	<0.2	-	7	-	1.7	2.03	-	7	0.7	17.4
Conductivity	µS/cm	-	-	423	-	375	234	302	379	286	337	177	233	383	640	-	68.7	-	148	125	-	263	375	648
Total Coliform	Presence/Absence	Ab	-	Ab	Pr	Pr	Ab	Ab	Ab	Pr	-	Pr	Ab	Pr	Ab	Pr	-	Ab	-	Pr	Pr	-	Ab	Ab
E.coli	Presence/Absence	Ab	-	Ab	Ab	Pr	Ab	Ab	Ab	Ab	-	Ab	Ab	Ab	Ab	Ab	-	Ab	-	Ab	Ab	-	Ab	Ab
Total Metals																								
Alumnium	mg/L	0.1* / 2.9	0.005 / 0.1 [3]	<0.025	-	0.034	<0.025	<0.025	<0.025	<0.025	0.002	<0.025	<0.025	<0.025	<0.025	-	0.066	-	<0.025	<0.025	-	<0.025	<0.025	0.265
Antimony	µg/L	6	-	<1	-	<1	<1	<1	<1	<1	<0.1	<1	<1	<1	<1	-	<1	-	<1	<1	-	<1	<1	<1
Arsenic	µg/L	10	5	<1.5	-	<1.5	<1.5	<1.5	**8**	2.7	1	<1.5	<1.5	<1.5	2.3	-	**5.09**	-	3.66	<1.5	-	<1.5	<1.5	<1.5
Barium	mg/L	2	-	0.404	-	0.631	0.027	0.094	0.802	0.093	0.452	0.952	0.08	0.22	0.508	-	0.322	-	0.815	0.157	-	0.188	0.205	0.032
Boron	mg/L	5	15	<0.01	-	<0.01	<0.01	0.027	0.021	0.016	0.02	<0.01	<0.01	0.027	0.053	-	<0.2	-	<0.01	<0.01	-	<0.2	<0.01	0.085
Bromide	mg/L	-	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	0.126	<0.1	<0.1
Cadmium	µg/L	7	0.04 [4]	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.01	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5
Calcium	mg/L	-	-	32.2	-	46	34.5	36.2	61.5	40.7	45.7	23.9	38.8	50.8	14.4	-	6.76	-	18.8	16.1	-	27.2	53	1.7
Chromium	µg/L	50	-	<10	-	10	<10	<10	23	<10	<1	<10	<10	<10	<10	-	<10	-	<10	<10	-	12	<10	20
Copper	µg/L	1,000* / 2,000	2 [4]	**24**	-	**13**	**18**	<10	<10	<10	**5**	**17**	<10	<10	<10	-	**18**	-	<10	**23**	-	**41**	**14**	<10
Fluoride	mg/L	1.5	-	<0.1	-	<0.1	<0.1	0.117	<0.1	0.135	0.08	<0.1	<0.1	0.153	0.139	-	<0.1	-	<0.1	<0.1	-	0.106	<0.1	0.388
Iron	mg/L	0.3*	0.3	**0.577**	-	0.109	0.105	**1.58**	<0.01	0.129	<0.02	**0.315**	0.039	0.799	0.021	-	**1.2**	-	0.172	0.252	-	**0.47**	0.034	0.262
Lead	µg/L	5	1 [4]	<1	-	**3.64**	**1.13**	**2.8**	<1	<1	<0.1	<1	<1	<1	<1	-	<1	-	<1	**1.4**	-	**2.34**	<1	<1
Lithium	mg/L	-	-	-	-	-	-	-	-	-	0.0062	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	-	-	1.89	-	5.59	2.64	3.3	4.18	4.39	3.98	2.61	2.76	5.62	3.2	-	0.41	-	2.36	1.58	-	7.41	4.96	0.35
Manganese	mg/L	0.02* / 0.12	-	0.029	-	0.017	<0.005	0.26	<0.005	0.18	0.003	0.011	<0.005	0.24	0.078	-	0.348	-	<0.005	0.01	-	0.054	<0.005	0.0098
Molybdenum	mg/L	-	0.073	-	-	-	-	-	-	-	0.0011	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	µg/L	-	25 [4]	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	-	-	0.72	-	3.51	1.2	2.9	3.1	4.5	2.13	1	0.8	3.9	6.1	-	0.78	-	1.23	0.789	-	4.11	1.06	1.57
Selenium	µg/L	50	1	**1.6**	-	<1.5	<1.5	<1.5	<1.5	<1.5	-	<1.5	<1.5	<1.5	<1.5	-	<1.5	-	<1.5	<1.5	-	<1.5	**6.25**	<1.5
Sodium	mg/L	200	-	49.7	-	15.2	7.52	23.4	9.97	11.2	16.6	7.25	6.76	25.8	107	-	4.89	-	4.55	4.04	-	13.3	17.7	148
Strontium	mg/L	7	-	-	-	-	-	-	-	-	0.269	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	µg/L	-	0.8	<1	-	<1	<1	<1	<1	<1	<0.1	<1	<1	<1	<1	-	<1	-	<1	<1	-	<1	<1	<1
Uranium	µg/L	20	15	<0.5	-	0.922	4.19	<0.5	6.5	0.7	6.7	<0.5	2.3	0.9	<0.5	-	<0.5	-	0.85	<0.5	-	-	2.33	<0.5
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	0.003	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	µg/L	5000	30	<5	-	**60**	<5	**37**	<5	<5	**26**	7	<5	<5	<5	-	**36**	-	**34**	**237**	-	21	9	<5

Notes:

Water quality results from New Brunswick Depart of Environment. (n.d.). Online well log system (OWLS). https://www.elgegl.gnb.ca/0375-0001/index.aspx?userType=

Selected units of measurement and significant figures are based on the source data from the OWLS.

1 = Guidelines for Canadian Drinking Water Quality Summary Table (Health Canada 2024)

2 = Canadian Council of Ministers of the Environment Canadian Water Quality Guidelines for the Protection of Aquatic Life (1999; last updated 2012); Freshwater aquatic life

3 = Aluminum guideline varies depending on pH: 5 µg/L if pH < 6.5 & 100 µg/L if pH ≥ 6.5 (CCME Freshwater Guidelines)

4 = Actual value is calculated based on hardness. Minimum value shown for demonstrative purposes

<# = parameter not detected above the state reportable detection limit

* = Operational Guideline or Aesthetic objective

"-" = No applicable criteria or no parameter not analyzed

Shaded = Value exceeds GCDWQ

Bold & Underlined = Value exceeds CCME Freshwater Guidelines

Appendix C Air Dispersion Modelling Study

Centre Village Air Dispersion Modelling Study

Final Report

June 13, 2025

Prepared for:
WattBridge Energy LLC

Prepared by:
Stantec Consulting Ltd.

File Number:
121418392

Limitations and Sign-off

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Executive Summary

WattBridge Energy LLC (WattBridge) retained Stantec Consulting Ltd. (Stantec) to conduct an Air Dispersion Modelling (ADM) study to assess the potential effects on air quality from the Centre Village Renewables Integration and Grid Security Project (the Project).

This ADM study was conducted to support the ongoing planning of the Project, and the environmental assessment (EA). The purpose of the ADM study was to provide information on the potential environmental effects of the Project on air quality in the vicinity of the Project.

The United States Environmental Protection Agency (US EPA) plume dispersion model, AERMOD, was used in the study to assess the potential environmental effects of the Project activities on air quality. The ADM study area consists of a 50 km by 50 km area, centered on the Facility. The emissions inventory for the sources associated with Project activities was developed using engineering estimates provided by the client.

As New Brunswick does not have provincial guidance for conducting dispersion modelling, the modelling was conducted with reference to the acceptable methods and approaches in the nearest provincial jurisdiction with specific modelling guidance, i.e., Nova Scotia, as outlined in NSECC’s Guidance Document (NSECC 2023) — an approach that has also been accepted in previous dispersion modelling projects in New Brunswick.

Predicted concentrations from the dispersion modelling are compared against the ambient air quality criteria in Schedule B of the New Brunswick Air Quality Regulation – Clean Air Act (NBDELG 2018) as well as standards from other jurisdictions for air contaminants of concern that are not included in the NB criteria. Particulate Matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$) does not have NB criterion, and as such, the Canadian Ambient Air Quality Standards (CAAQS 2020) were applied (CCME 2017). Similarly, Ammonia (NH_3) does not have NB criteria, nor CAAQS, so Nova Scotia's Proposed Standard (NSECC 2023) was used for comparison purposes.

Representative background concentrations were added where applicable to the model predicted values to account for influences from other existing regional emission sources not included in the modeling, i.e., to assess cumulative effects on air quality.

The results of the dispersion modelling show that the maximum predicted ground-level concentrations of air contaminants modelled (including background) are less than the applicable ambient criteria.

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1 Introduction

WattBridge Energy LLC (WattBridge) retained Stantec Consulting Ltd. (Stantec) to conduct an Air Dispersion Modelling (ADM) study to assess the potential effects on air quality from the Centre Village Renewables Integration and Grid Security Project (the Project).

The United States Environmental Protection Agency (US EPA) plume dispersion model, AERMOD (Version 24142), is used in the study. As the province of New Brunswick does not have guidance for air contaminant dispersion modelling, the general approach used in this modelling study follows the methods described in Nova Scotia Air Assessment Guidance Document (NSECC 2023; hereafter referred as the "NSECC Guidance Document") — an approach that has also been accepted in previous dispersion modelling projects in New Brunswick

The ADM study area consists of a 50 km by 50 km area, centered around the WattBridge facility, near to Centre Village, New Brunswick. The ADM study area is shown in Figure 1-1.

In this study, the predicted concentrations from the dispersion modelling are compared to the ambient air quality criteria in Schedule B of the New Brunswick Air Quality Regulation – Clean Air Act (NBDELG 2018), as well as other standards from other jurisdictions for air contaminants of concern that are not included in the NB criteria. This report is presented in six sections. General information and the dispersion modelling methodology are presented in Sections 1–3. The results of the dispersion modelling are presented and discussed in Section 4, and closure is presented in Section 5. References are provided in Section 6.

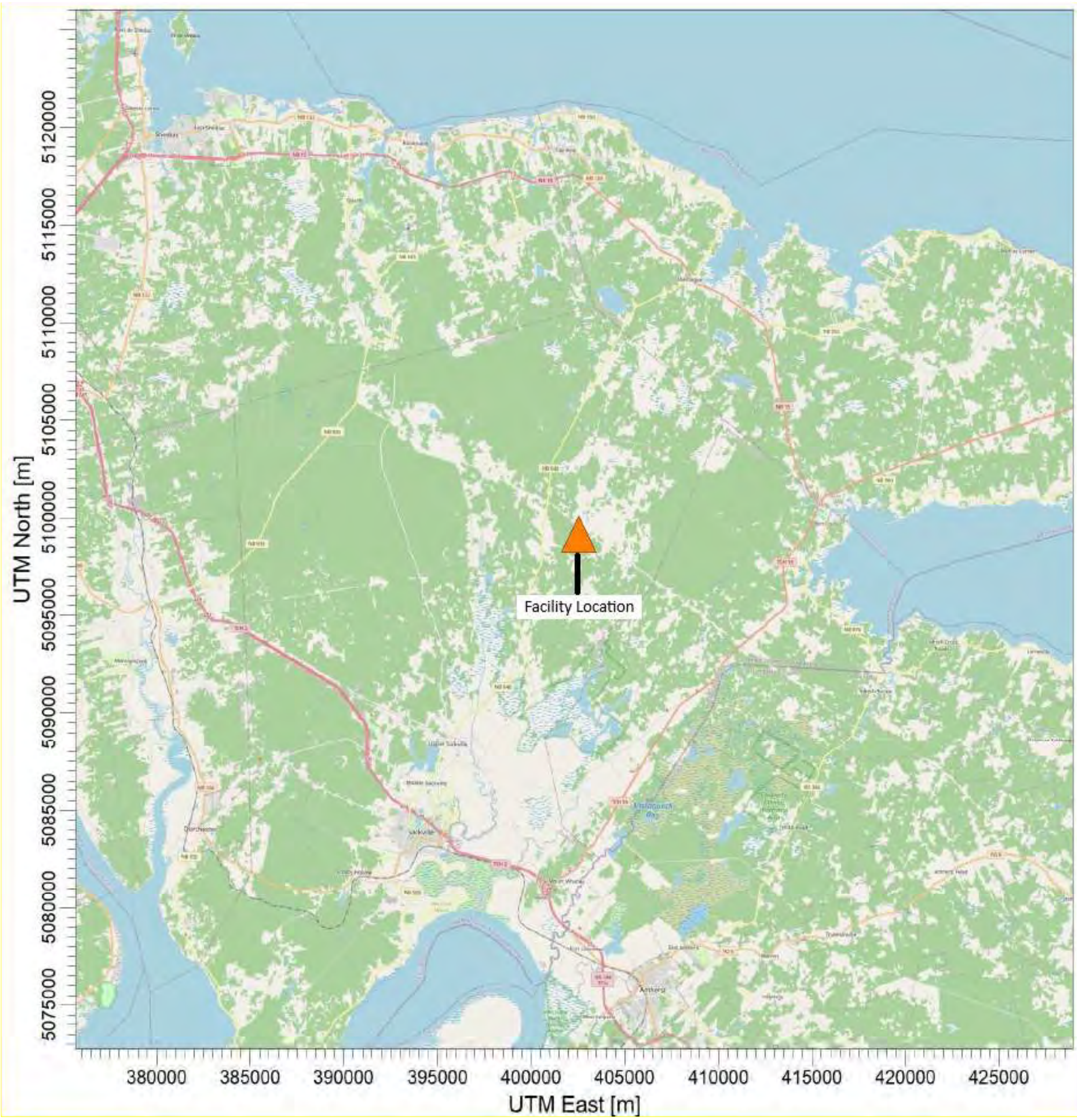

Figure 1-1 Study Area for Air Dispersion Modelling – Centre Village, New Brunswick

1.1 Facility Overview

WattBridge is planning to construct a 500 MW power generating station comprising of ten dual-fuelled combustion turbine generators (CTGs) in a simple-cycle arrangement near Centre Village, New Brunswick (the Facility). The CTGs which will be capable of generating electricity using natural gas and ultra-low sulfur diesel (ULSD) as well as potentially hydrogen if available in the future. The units will primarily operate using natural gas and will use approximately 1 weeks' worth of ULSD per operating year.

The CTGs will be installed on a continuous concrete pad foundation. Each unit will be equipped with systems to improve performance and reduce environmental impacts, including water injection to reduce nitrogen oxide emissions and advanced emissions control systems such as selective catalytic reduction (SCR) and carbon monoxide (CO) emissions controls. Operational emissions from the turbine generators will be managed through the use of natural gas, which results in lower emissions than ULSD for most air contaminants.

These CTGs are designed to meet growing generating capacity requirements and support grid reliability. They will help prevent prolonged or frequent loss-of-load events (i.e., blackouts) and provide flexible backup power to accommodate the increasing penetration of weather-dependent, variable renewable energy sources

The Facility's emissions are generated by the CTGs, with the exhaust gases released through dedicated stacks, each approximately 20 meters in height.

2 Air Contaminants Assessed

The ADM study considered air contaminants released from the CTGs, based on manufacturer specifications, while using natural gas or ULSD. The study also considered the PROENERGY standard emissions reduction system, which uses aqueous ammonia (NH_3), selective catalytic reduction (SCR), and carbon monoxide reducing (COR) catalysts to manage emissions of NO_X and CO.

The air contaminants assed in the ADM study included the following:

- Particulate matter with aerodynamic particle diameter less than or equal to 2.5 microns ($PM_{2.5}$)
- Total particulate matter (TSP)
- Carbon Monoxide (CO)
- Ammonia (NH_3)
- Nitrogen dioxide (NO_2)
- Sulphur dioxide (SO_2)

These air contaminants are provided in Table 2-1, alongside the applicable air quality criteria. For example, air contaminants with NB specific criteria used the current New Brunswick Maximum Permissible Ground-Level Concentrations (GLCs) (NBDELG 2018). Particulate Matter less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$) does not have a NB or Ontario criteria, as such, the Canadian Ambient Air Quality Standards (CAAQS 2020) were applied (CCME 2017). Similarly, Ammonia (NH_3) does not have NB criteria, nor CAAQS, so Nova Scotia's Proposed Standard (NSECC 2023) was used for comparison purposes.

Table 2-1 Air Contaminants Modelled and Applicable Air Quality Criteria

Contaminant	CAS No.	Air Quality Criteria (µg/m^3)	Averaging Period	Criteria Source
Carbon Monoxide (CO)	630-08-0	35,000	1-hour	NBDELG 2018
		15,000	8-hour	NBDELG 2018
Nitrogen Oxides (NO_x) as Nitrogen Dioxide (NO_2)	10102-44-0	400	1-hour	NBDELG 2018
		200	24-hour	NBDELG 2018
		100	Annual	NBDELG 2018
Ammonia (NH3)	7664-41-7	100	24-hour	NSECC 2023
Total Particulate Matter	NA1	120	24-hour	NBDELG 2018
		70	Annual	NBDELG 2018
Particulate Matter ≤ 2.5 microns in aerodynamic diameter ($PM_{2.5}$)	NA2	27	24-hour	CCME 2020
		8.8	Annual	CCME 2020
Sulphur Dioxide (SO_2)	7446-09-5	900	1-hour	NBDELG 2018
		300	24-hour	NBDELG 2018
		60	Annual	NBDELG 2018

3 Study Methodology

3.1 Overview

The methodology for the ADM study consists of the following:

- Develop an emissions inventory and background concentration inventory to represent typical emissions from the Facility
- Process required model inputs including meteorological data and topographic data
- Model air contaminant releases from the Facility's CTG stacks using the US EPA plume dispersion model AERMOD to predict the maximum GLCs within a 50 km by 50 km domain centered around the Facility
- Compare the predicted maximum GLCs (including background concentrations where applicable) to the applicable air quality criteria.
- Prepare a report to describe the work undertaken and the results of the ADM study

The potential effects of the Facility's emissions on ambient air quality are estimated through the use of a numerical atmospheric dispersion model, AERMOD. Dispersion models simulate transport, dispersion, transformation, and deposition processes of air contaminants in the atmosphere. Dispersion models are used to predict ambient air quality changes for a wide range of meteorological conditions and account for local terrain influences. Because of the many uncertainties associated with the application of dispersion models, the model results can be viewed as "best estimates" relative to the decision-making process when standardized model approaches are adopted (US EPA 2005).

As New Brunswick does not have provincial guidance for conducting dispersion modelling, the modelling was conducted with reference to the acceptable methods and approaches in the nearest provincial jurisdiction with specific modelling guidance, i.e., Nova Scotia, as outlined in NSECC's Guidance Document (NSECC 2023) — an approach that has also been accepted in previous dispersion modelling projects in New Brunswick.

3.2 Model Description

Dispersion modelling was conducted using the latest version of the United States Environmental Protection Agency (US EPA) AERMOD dispersion modelling system (Version 24142 (US EPA 2024). The AERMOD system is recommended in the NSECC guidance and has historically been accepted for assessing air quality compliance in New Brunswick. The AERMOD modelling system consists of three separate programs, including the plume dispersion model (AERMOD), a meteorological pre-processor (AERMET), and a terrain pre-processor (AERMAP).

AERMOD is a steady-state plume dispersion model which can simulate the effects of hourly varying meteorological conditions on air contaminant transport, dispersion, transformation, and deposition. The model is designed to estimate near-field (less than 50 km) GLCs taking into account terrain influences. The concentration distribution in the plume is assumed to be Gaussian in both horizontal and vertical directions. AERMOD contains algorithms for near-source effects such as building downwash, transitional plume rise, and partial plume penetration.

AERMOD requires hourly meteorological data processed with the AERMET meteorological pre-processor including parameters that characterize the amount of turbulence in the atmosphere (friction velocity and Monin-Obukhov length). AERMOD produces hourly average pollutant concentrations that can be further processed to obtain predictions for other averaging periods. Input terrain elevations at receptor locations for the AERMOD model are assigned by the terrain pre-processor AERMAP. In addition to terrain elevations, AERMAP assigns a height scale to each receptor location which represents the terrain height that has the greatest influence on dispersion for an individual receptor.

At the time that the modelling was completed, Version 24142 was the most recent version of the AERMOD model available from the US EPA.

3.3 Model Input Preparation

The inputs for the ADM study consist of three components: 1) meteorological data; 2) receptor grid and terrain data; and 3) source characteristics and emissions data. These components are described briefly in the following sections.

3.3.1 Meteorology

Meteorology influences the manner in which air contaminants released from industrial and natural sources disperse in the atmosphere. Thus, the meteorology has a direct effect on ambient air quality. Atmospheric dispersion of the air contaminants emitted is governed by wind direction, wind speed, and the amount of turbulence that exists in the mixed layer of air in contact with the ground. Turbulence levels are dependent on thermal effects (e.g., vertical temperature stratification) and mechanical effects caused by topography, surface roughness, and wind speed. The height of the mixing layer determines the vertical extent to which emissions are likely to be transported.

Meteorological data were obtained and processed in accordance with the NSECC Guidance (NSECC 2023). Five years of Weather Research and Forecasting (WRF) model data covering the period of 2020 to 2024 were obtained and processed using AERMET (the meteorological processor for AERMOD). The processed AERMET output files (generated using the WRF data with a grid resolution of 4 km) were obtained from Lakes Environmental (Lakes Environmental 2024).

A five-year wind rose plot of the 2020–2024 WRF data set (for the WattBridge site) is provided in Figure 3-1. The wind rose plot shows the distribution of wind directions and wind speeds based on where the wind is blowing from. The dominant winds are from the south and southwest directions. Both the low wind speeds and strong winds also occurred most frequently from the southwest quadrant.

The meteorological data that are used to assess the changes to air quality associated with Facility's emissions account for the seasonal and diurnal variations over a five-year period, and for the amount of turbulence in the atmosphere. The data are viewed as being representative of the wide range of weather conditions that could occur in the region.

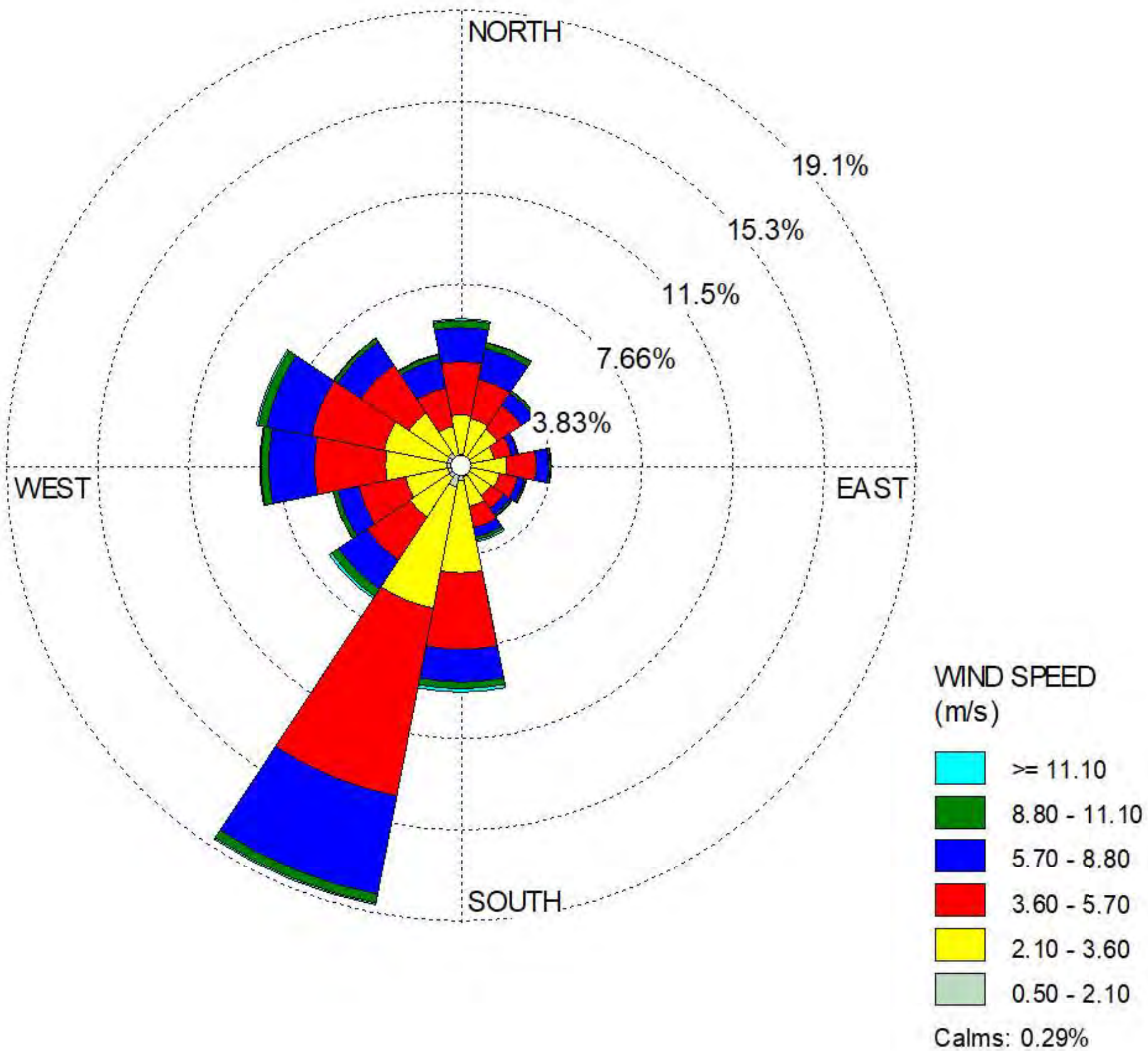

Figure 3-1 Five-year Wind Rose Plot – WattBridge Site (WRF Data 2020-2024)

3.3.2 Receptor Grid and Terrain Data

The terrain elevation data covering the study area were obtained from the National Elevation Dataset (NED) with a resolution of 30 m. The terrain dataset was processed using AERMAP to establish terrain elevations and calculate hill scale values at the receptor locations, which are required to run AERMOD. The hill scale values are related to the size and height of the terrain and are calculated by AERMAP based on surrounding terrain elevations in the area of the specific receptor location.

The receptor grid used in the modelling study was developed generally following the guidance for the nested grid spacing defined in the NSECC Guidance (NSECC 2023), as follows:

- 20 m spacing along the Facility fence line
- 50 m spacing within 500 m of the sources
- 100 m spacing within 1,000 m of the sources
- 250 m spacing within 2,000 m from the sources
- 500 m spacing within 5,000 m from the sources
- 1,000 m spacing beyond 5,000 m from the sources

The described grid comprises 4,222 receptor locations. This extent of the receptor grid is considered sufficient to indicate the magnitude and spatial variation of the ground-level concentrations of air contaminants resulting from the Facility’s emissions.

Sensitive receptors, including schools, hospitals, daycares, and parks within a 5 km radius, were scanned based on the definition provided in NSECC Guidance (NSECC 2022a). No sensitive receptors were identified within a 5 km radius.

The receptor grid used in the modelling is shown in Figure 3-2, while Figure 3-3 is a plot of the terrain elevation data within the study area.

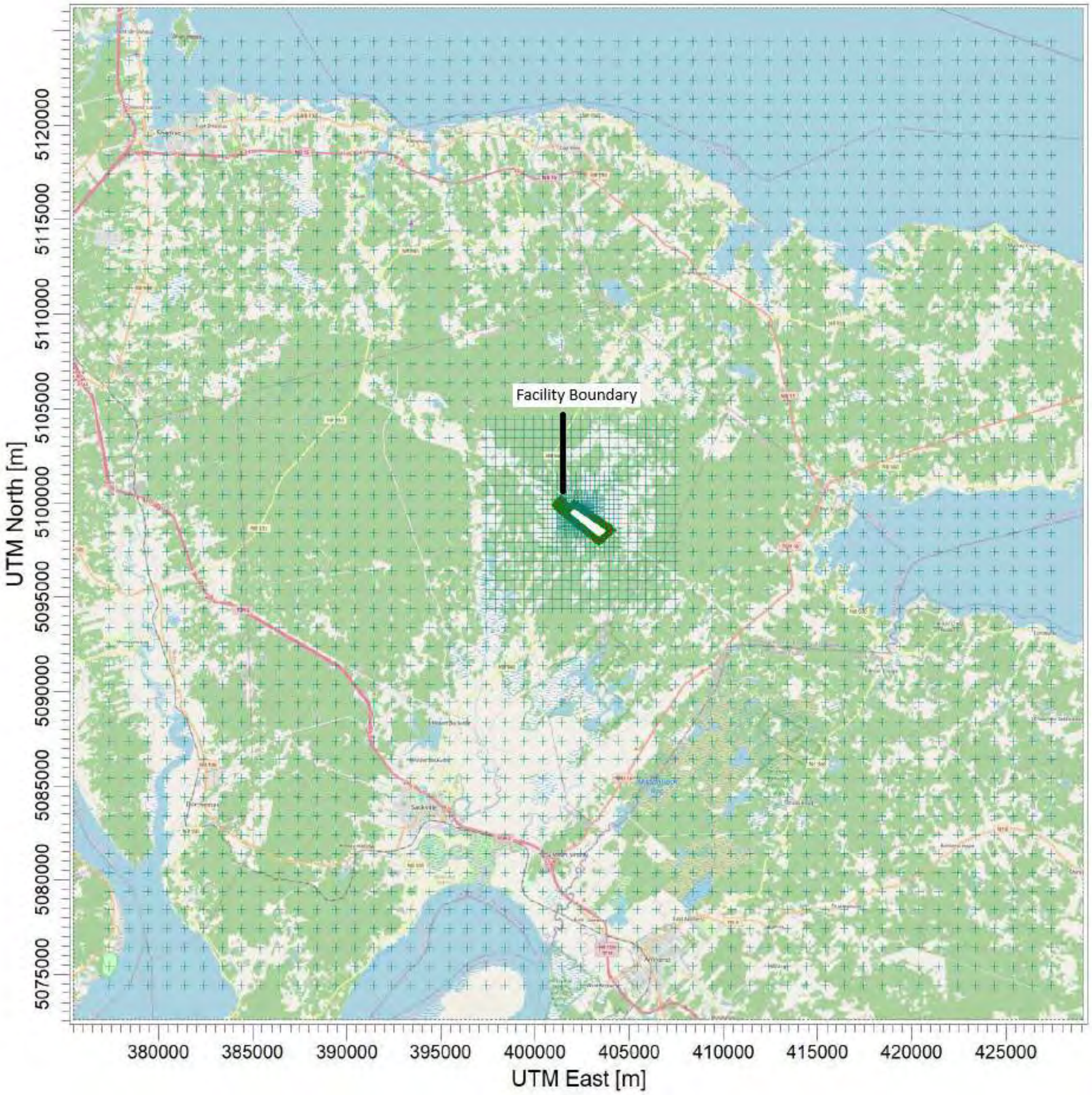

Figure 3-2 Receptor Grid

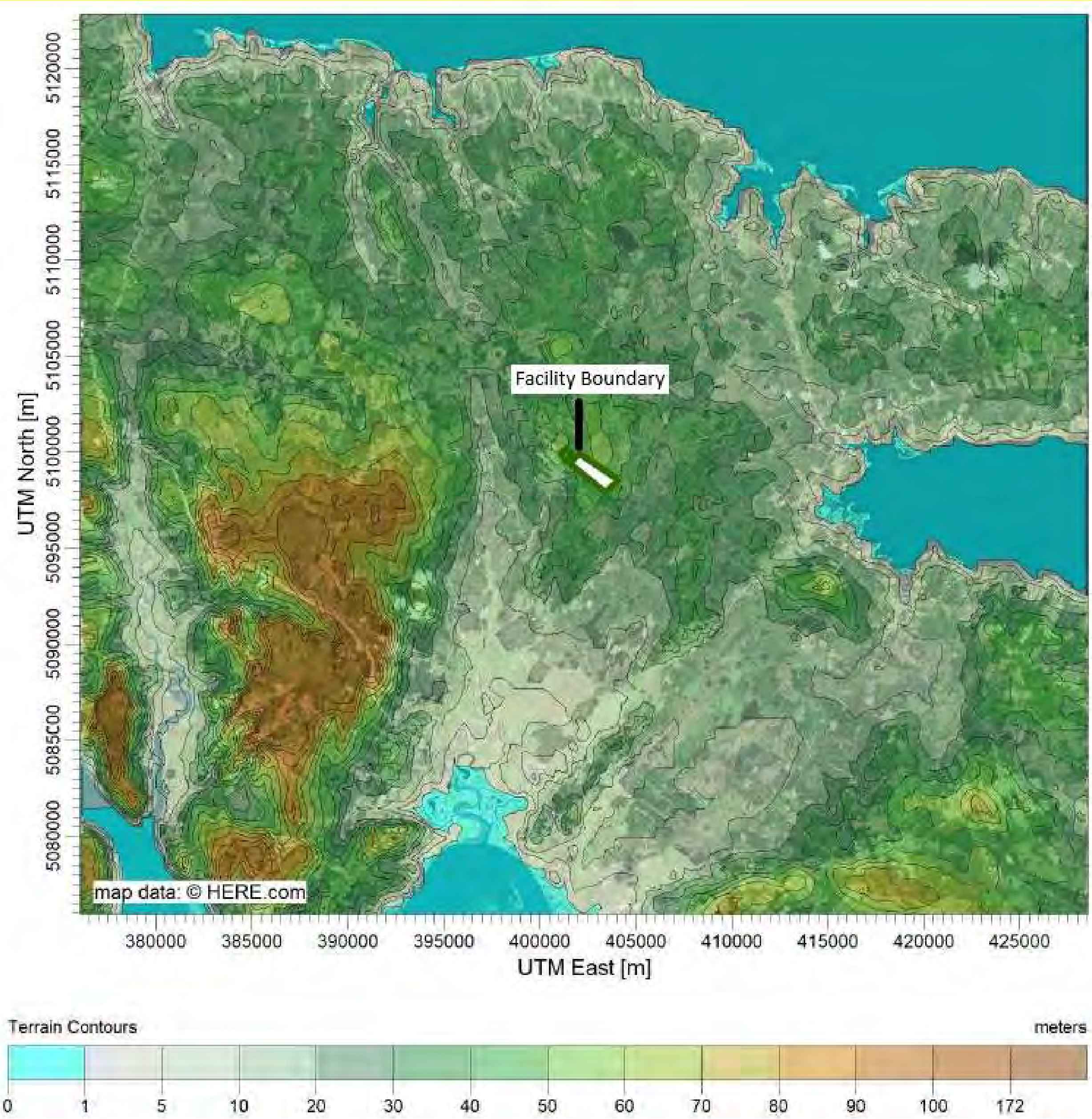

Figure 3-3 Terrain Elevation Within Study Area

3.3.3 Source Characteristics

The source input data required to run the AERMOD dispersion model for this study consisted of two main components: 1) source information and emissions data; 2) building downwash analysis (to account for building wake effects). These components are briefly described in the following sections.

3.3.3.1 Source Information and Emissions Data

The source data required to run the AERMOD dispersion model includes the following:

- Physical locations of the emission sources (point sources)
- Average emission rate of the selected air contaminant
- Physical heights of the emission sources (stack exit height)
- Diameters of the stack exits (stack exit diameter)
- Average exhaust gas exit velocities
- Average exhaust gas temperatures

An emissions inventory was prepared for input to the dispersion model. The objective of the emissions inventory is to establish the characteristics of the emission source(s) (i.e., rate of emission, stack height, stack diameter, exhaust gas flow, exhaust gas temperature). Detailed operational data (number of starts and operating hours) were used to develop refined emissions scenarios for Facility operation.

Wattbridge provided detailed operational data covering three case scenarios over a 25-year period: base (lower-range operating hours per year), high (mid-range operating hours), and stress (upper-range operating hours). Operational data provided consisted of projected hours of operation, number of starts, power output, and total capacity factor, each per year over the expected lifetime of the project. Each of the modelled operating years for these cases was analyzed to determine the range of expected annual operational scenarios. As presented in Table 3-1, year 2 for both the base and stress cases would lead to the scenario with the maximum potential emissions.

Table 3-1 Operational Scenarios – Year 2 (per 10 units)

	Units	Base Case	Stress Case
Unit Starts	Number	2,155	3,250
Operating Hours	Hours	5,370	27,270
Output	MWh	318,163	1,413,163
Total Capacity Factor	%	7.26%	32.26%

Wattbridge also provided detailed source emission characteristics for the CTGs. The source emissions characteristics data included a range of operating loads (50–100%), using either natural gas or ULSD, under various ambient conditions (temperature and relative humidity), along with the projected stack exhaust flow, temperature, and emissions for each scenario (case). Each of the 16 operating cases, were analyzed to determine the expected range of the emissions, projected stack exhaust flow, and temperature when using natural gas or ULSD. The modeled parameters, presented in Table 3-2, present the lowest exhaust stack flow (from Case 13) and the lowest exhaust stack temperature (from Case 3), which would result in the worst-case dispersion under a 100% operating load. Transient emissions during start-up and shut-down were also provided. Transient emissions are only applicable for NO_x and CO while other contaminants are expected to have relatively steady emissions through start up and shutdown. Detailed emission source characteristics for the 16 cases using natural gas or ULSD can be found in Appendix B.

Table 3-2 Point Source Emission Parameters – Case 7

Source	Location (UTM)		Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Temperature (K)	Orientation
	x-coordinate (m)	y-coordinate (m)					
CTG Exhaust Stack	402395.84	5099313.25	19.81	3.048	23.97	619.26	Vertical
	402399.70	5099338.39					
	402403.28	5099363.41					
	402407.02	5099388.35					
	402410.78	5099413.50					
	402414.33	5099438.31					
	402418.05	5099463.46					
	402421.63	5099488.59					
	402425.28	5099513.27					
	402392.39	5099288.19					

Emissions from natural gas and ULSD were estimated for air contaminants with transient behavior (NO_x and CO), with emission rates calculated for each period as follows:

- 1-hour emission rate: Includes 30 minutes of start-up emissions and 30 minutes of normal operations.
- 24-hour emission rate: Includes 4 hours of start-up emissions, 4 hours of shut-down emissions, and 16 hours of normal operations
- Annual emission rate (base case): Assumes a total of 537 operating hours, comprising 215.5 hours of start-up emissions, 215.5 hours of shut-down emissions, and 106 hours of normal operations.
- Annual emission rate (stress case): Assumes a total of 2,727 operating hours, including 325 hours of start-up emissions, 325 hours of shut-down emissions, and 2,077 hours of normal operations.

Emissions from natural gas and ULSD were estimated for the other air contaminants (SO_2, TSP, $PM_{2.5}$, and NH_3), emission rates were calculated for each period as follows:

- 1-hour emission rate: includes 60 minutes of normal operations (as there are no transient emissions associated with these air contaminants)
- 24-hour emission rate: consistent with 1-hour emission rate
- Annual emission rate (base case): Assumes a total of 537 operating hours, comprising 215.5 hours of start-up emissions, 215.5 hours of shut-down emissions, and 106 hours of normal operations.
- Annual emission rate (stress case): Assumes a total of 2,727 operating hours, including 325 hours of start-up emissions, 325 hours of shut-down emissions, and 2,077 hours of normal operations.

As presented in Table 3-3, the emission rates, scenarios, and fuel types are detailed. A majority of the scenarios had higher emission rates for the base case, as there are more start-ups and shut-downs per operating hour compared to the stress case, resulting in a higher emission rate. Section 3.4 discusses the modeling scenarios, which were selected using a conservative approach—assuming the highest potential emission rates, including diesel usage, even though actual planned diesel use is expected to be minimal throughout the year.

The detailed emissions inventory, including sample calculations, can be found in Appendix B.

Table 3-3 Point Source Emission Rates for Base Case and Stress Case for Natural Gas and ULSD (per unit)

Contaminant	Averaging Period	Emission Rate (g/s)			
		Base Case		Stress Case	
		Natural Gas	ULSD	Natural Gas	ULSD
Nitrogen Dioxide (NO_2)	1-hour	2.62	5.15	2.62	5.15
	24-hour	1.09	2.10	1.09	2.10
	Annual (7 Days of Diesel)	0.15	0.15	0.31	0.31
Sulphur Dioxide (SO_2)	1-hour	0.06	0.09	0.06	0.09
	24-hour	0.06	0.09	0.06	0.09
	Annual (7 Days of Diesel)	0.004	0.004	0.02	0.02
Total Suspended Particulate (TSP)	24-hour	0.51	1.95	0.51	1.95
	Annual (7 Days of Diesel)	0.06	0.06	0.19	0.19
Carbon Monoxide (CO)	1-hour	5.17	4.85	5.17	4.85
	8-hour	5.17	4.85	5.17	4.85
Ammonia (NH3)	24-hour	0.81	0.79	0.81	0.79

3.3.3.2 Building Downwash Analysis

Downwash effects due to wind interaction with the spatial orientation of the stack and the surrounding buildings are considered in the dispersion modelling. Since building wake effects may influence the predictions, building heights and widths were included in the AERMOD input file using the US EPA Building Profile Input Program (BPIP-PRIME v04274) (US EPA 1997).

The implementation of the plume rise model referred to as PRIME (Plume Rise Model Enhancements) allows for streamline ascent/descent effects to be considered, as well as the enhanced dilution due to building induced turbulence. PRIME addresses the entire structure of the wake, from the cavity immediately downwind of the building, to the far wake (US EPA 1997). The PRIME module has been incorporated into the latest version of AERMOD. Wind direction-dependent building information such as width and height were generated using the US EPA BPIP-PRIME (Building Profile Input Program).

A three-dimensional view of the CTG exhaust stacks (shown as red cones) and the buildings at the Facility is provided in Figure 3-4.

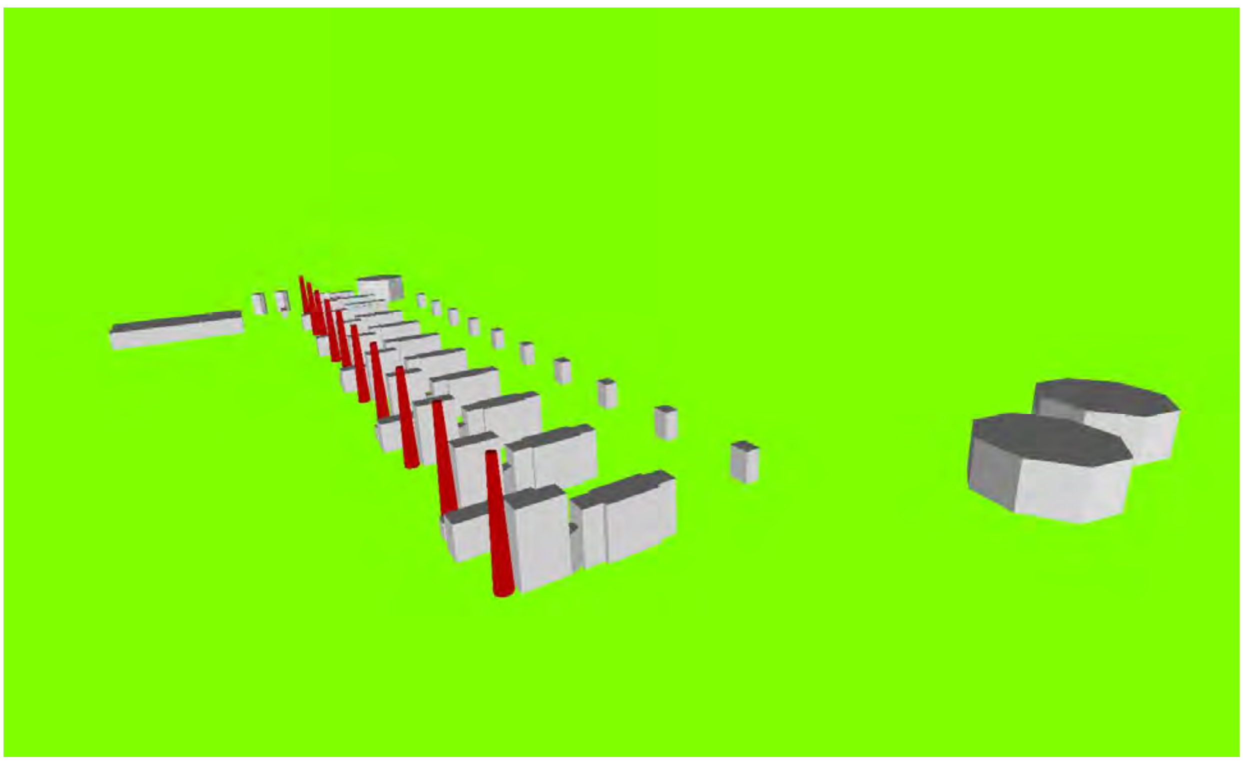

Figure 3-4 Facility Stacks and Buildings

3.4 Modelling Scenario

The ADM study assumed the continuous operation of the Facility, 24 hours a day, seven days a week, from January 1 to December 31. It used the maximum emission rates for 1-hour, 24-hour, and annual periods, based on the higher emission rates for each air contaminant from either ULSD and/or natural gas while under 100% operating load. The annual emission rate was primarily based on a realistic scenario in which natural gas is used as the main fuel, with ultra-low sulfur diesel (ULSD) used for approximately one week per year. The modelled emission rates for each of the air contaminants are presented in Table 3-4.

Table 3-4 Modelled Emission Rates for Air Contaminants (per unit)

Air Contaminant	CAS #	Modelled Scenario	Fuel Type	Averaging Period	Emission Rate g/s	Comments
Nitrogen Dioxide (NO_2)	10102-44-0	Base/Stress Case	Diesel	1-hour	5.15	The 1-hour emissions are consistent between the base and stress case.
		Base Case	Diesel	24-hour	2.10	Base case is modelled as there are more start-up/shut-downs per operating hours when compared to the stress case.
		Stress Case	Diesel/Natural Gas	Annual (7 Days of Diesel)	0.31	This is the realistic scenario in which most of the fuel usage is natural gas with 7 days of diesel
Sulphur Dioxide (SO_2)	7446-09-5	Base/Stress Case	Diesel	1-hour	0.09	The 1-hour emissions are the same for both the base and stress case.
		Base/Stress Case	Diesel	24-hour	0.09	Consistent with 1-hour emission rate
		Stress Case	Diesel/Natural Gas	Annual (7 Days of Diesel)	0.02	This is the realistic scenario in which most of the fuel usage is natural gas with 7 days of diesel
$PM_{2.5}$	NA-1	Base Case	Diesel	24-hour	1.95	The emission rate is consistent for start-up/shut-down/normal operations.
		Stress Case	Diesel/Natural Gas	Annual (7 Days of Diesel)	0.19	This is the realistic scenario in which most of the fuel usage is natural gas with 7 days of diesel.
Total Suspended Particulate (TSP)	NA-2	Base Case	Diesel	24-hour	1.95	The emission rate is consistent for start-up/shut-down/normal operations.
		Stress Case	Diesel/Natural Gas	Annual (7 Days of Diesel)	0.19	This is the realistic scenario in which most of the fuel usage is natural gas with 7 days of diesel
Carbon Monoxide (CO)	630-08-0	Base/Stress Case	Natural Gas	1-hour	5.17	The 1-hour emissions are the same for both the base and stress case.
		Base/Stress Case	Natural Gas	8-hour	5.17	Consistent with 1-hour emission rate
Ammonia (NH_3)	7664-41-7	Base/Stress Case	Natural Gas	24-hour	0.81	The emission rate is consistent for start-up/shut-down/normal operations.

Emissions were modeled continuously over the 5-year period. Although it is understood that the units are not expected to operate continuously 24/7/365 under a 100% operating load, there is a possibility that the 1-hour, 8-hour, and 24-hour maximum emission rates could occur at any time therefore the modelling was done conservatively to evaluate those conditions. As such, a number of contaminants were modelled when burning ULSD as this corresponds to the worst-case GLCs.

This approach is conservative for the 1-hour and 24-hour averaging periods, as the Facility is expected to operate intermittently to supplement the grid rather than continuously. Operations will primarily rely on natural gas, with ULSD anticipated to be used on an as needed basis.

For the annual averaging period, a more realistic scenario was developed where a majority of operating hours were from the use of natural gas and 168 hours of ULSD.

3.5 Data Review and Quality Procedures

After running the AERMOD model, output files were generated according to specific instructions on the required format as defined in the NSECC Guidance (NSECC 2023).

For each air contaminant, with the exception of $PM_{2.5}$, concentration results affected by meteorological anomalies were excluded in accordance with the NSECC Guidance (NSECC 2023); for the 24-hour period, the initial highest predicted 24-hour average concentration for each individual meteorological year was excluded, and for the 1-hour averaging period, the top eight hours of predicted concentrations for each meteorological year were also excluded. The maximum predicted GLCs were reported for the annual averaging concentrations.

The $PM_{2.5}$, concentration results were processed in accordance with the CAAQS statistical methods for comparison to the CAAQS criterion. The 24-hour average concentration was calculated using the 3-year average of the annual 98^{th} percentile of the daily 24-hour average concentrations. The annual averaging concentration was calculated using the 3-year average of the daily 24-hour average concentrations to correspond with the CAAQS criterion.

The maximum predicted GLCs for each averaging period (after processing meteorology according to the Guidance), and the background concentrations were added, were compared against relevant standards.

Input file source parameters, building widths and heights, meteorological data, receptor grid, and topographical data were reviewed and verified by Stantec against the raw data prior to running the model. The quality assurance and control checks performed on the model input data were:

- The sources, and buildings and receptor locations were plotted on a map by Stantec to verify that the locations were correct; these were reviewed and confirmed by Wattbridge.
- The terrain data were plotted by Stantec for comparison with topographical maps to verify the terrain used in the model.

- The source input information and emission rates were independently peer reviewed by Stantec; these were reviewed and confirmed by Wattbridge.
- The meteorological data were checked using the AERMET output files by Stantec, to confirm that the meteorological parameters used for the modelling were acceptable and within allowable limits.

3.6 Background Concentrations

The potential cumulative effects on air quality are typically assessed by adding the background (or baseline) air contaminant concentrations; representative of existing air quality to the model predicted values; representative of the additional contribution from the Facility. The sum of these are compared with the regulated ambient air quality standards. Background concentrations are usually based on measured ambient air quality data from a nearby, representative monitoring station.

There are no monitoring stations located in Centre Village, New Brunswick. Regional monitoring data from the ECCC Moncton station (located 34 km northwest of the Project) for NO_2, $PM_{2.5}$, and CO, as well as SO_2 data from the Miramichi station (145 km northwest), were analyzed as these are the closest monitoring stations. These concentrations were used to assess baseline conditions, following the methodology outlined in the Alberta Air Quality Model Guideline (AQMG; AEP 2021), as recommended in NSECC's Guidance document.

The ambient concentrations of TSP were not measured at either of the nearby monitoring stations; therefore, they were estimated using a correlation proposed by Brook et al. (1997). Based on their study of the measured spatial and temporal variations of TSP, PM_{10} and $PM_{2.5}$ concentrations at 19 monitoring sites across Canada, Brook et al. (1997) determined that the average PM_{10} and $PM_{2.5}$ fractions of TSP were 44 percent and 21.6 percent, respectively. The measured $PM_{2.5}$ concentrations from the ECCC Moncton monitoring station were used to estimate equivalent TSP concentrations using those ratios.

Since no data is available for Ammonia (NH_3) to be assessed in the study, the baseline concentrations will be assumed as negligible (i.e., = 0 for modeling purposes).

These stations are operated as part of the Environment and Climate Change Canada (ECCC) NAPS network (ECCC 2025) and industry-run stations (NBDELG 2025).

The methodologies used and the resulting background concentrations are provided in Table 3-5. The relevant air quality standards are also provided for comparison.

Table 3-5 Background Concentrations

Air Contaminant	Averaging Period	Background Concentration (µg/m³)	Ambient Air Criteria (µg/m³) [A]	Methodology
NO_2	1-hour	7.67	400	3-year average of the annual 90th percentile of the daily hourly concentrations (2020–2022) measured at the Moncton, Thanet Street station.
	24-hour	5.78	200	Maximum of the 24-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Moncton, Thanet Street station.
	Annual	3.55	100	Maximum annual average over the 3 years of measured data (2020–2022) measured at the Moncton, Thanet Street station.
SO_2	1-hour	0.52	900	3-year average of the annual 90th percentile of the daily hourly concentrations (2020–2022) measured at the Miramichi, Rockcliff station.
	24-hour	0.38	300	Maximum of the 24-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Miramichi, Rockcliff station.
	Annual	0.84	60	Maximum annual average over the 3 years of measured data (2020–2022) measured at the Miramichi, Rockcliff station.
CO	1-hour	279	35,000	3-year average of the annual 90th percentile of the daily maximum hourly concentrations (2020–2022) measured at the Moncton, Thanet Street station.
	8-hour	273	15,000	Maximum of the 8-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Moncton, Thanet Street station.
$PM_{2.5}$	24-hour	8.87	27[B]	Maximum of the 24-hour averages of the hourly measured concentrations less than the 90th percentile of the hourly data covering the three-year period of (2020–2022) measured at the Moncton, Thanet Street station.
	Annual	5.55	8.8[B]	Maximum annual average over the 3 years of measured data (2020–2022) measured at the Moncton, Thanet Street station.
TSP	24-hour	42.2	120	TSP concentrations were calculated using the $PM_{2.5}$ data from the Moncton, Thanet Street Station, based on a correlation proposed by Brook et al. (1997), which estimates the $PM_{2.5}$ fraction of total suspended particulates (TSP) at 21.6%
	Annual	25.9	70	

Notes:
[A] Schedule B NB Air Quality Regulation 97-133 – Clean Air Act (NBDELG 2018)
[B] CAAQS

3.7 Conversion of NO to NO_2

Releases of NO_x from the combustion of fuel consist mainly of NO and a small amount of NO_2. In ambient air, NO is oxidized to form NO_2 at rates dependent on atmospheric conditions (primarily driven by the presence of ozone). Since NO_2 has adverse health effects at much lower concentrations than NO, AAQS exist for NO_2 and not NO. To convert the predicted values of NO to NO_2, Stantec applied a published method to the NO_X predictions to estimate the conversion of NO to NO_2.

In the NSECC Guidance, there are four approaches that can be applied for conversion of NO to NO_2:

- Total conversion method (100% conversion of NO to NO_2 is assumed)
- Ambient Ratio Method (ARM)
- Plume Volume Molar Ratio Method (PVMRM)
- Ozone Limiting Method (OLM)

These methods are based on the US EPA three-tiered screening approach for consideration of conversion of NO to NO_2 (US EPA 2012). The US EPA tiered approach is as follows:

- Tier 1 – assume complete conversion of emitted NO to NO_2
- Tier 2 – multiply Tier 1 results by a representative equilibrium NO_2/NO_X ratio (e.g., ambient ratio method - ARM)
- Tier 3 – perform detailed analysis on a case-by-case basis (e.g., OLM or PVMRM)

The Tier 1 approach is the most conservative method (i.e., will overestimate NO_2 in the atmosphere) and was applied in this modelling study, as part of the screening analysis to determine if any predicted values would exceed the applicable air quality criteria.

4 Dispersion Modelling Results and Discussion

Predictions of ground-level concentrations are made at each receptor location for each hour of the five-year period of the meteorological data (2020 to 2024) for the scenarios modelled (discussed in Section 3).

The maximum predicted GLCs and their locations are presented in Table 4-1.

Table 4-1 Dispersion Modelling Results

Contaminant	CAS	Modelled Scenario	Fuel Type	Averaging Period	Ambient Air Criteria	UTM Coordinates of Max. Prediction		Background Concentration	Maximum Predicted Concentration	Modelled + Background	% Criteria (without Background)	% Criteria (with Background)
					(µg/m³)	X [m]	Y [m]	(µg/m³)	(µg/m³)	(µg/m³)		
Carbon Monoxide	630-08-0	Base/Stress Case	Natural Gas	1-hour	35,000	402,609	5,099,651	278.91	215.92	494.83	0.62%	1.41%
		Base/Stress Case	Natural Gas	8-hour	15,000	402,709	5,099,801	273.42	98.57	371.99	0.66%	2.48%
Nitrogen Oxides (NO_x) as Nitrogen Dioxide (NO_2)	10102-44-0	Base/Stress Case	Diesel	1-hour	400	402,609	5,099,651	7.67	215.15	222.82	53.79%	55.70%
		Base Case	Diesel	24-hour	200	402,242	5,098,879	5.78	40.51	46.28	20.25%	23.14%
		Stress Case	-	Annual	100	402,609	5,099,801	3.55	0.39	3.94	0.39%	3.94%
Total Suspended Particulate (TSP)	NA-1	Base Case	Diesel	24-hour	120	402,242	5,098,879	41.7	37.61	37.61	33.1%	66.1%
		Stress Case	-	Annual	70	402,608	5,099,801	25.9	0.24	0.24	0.34%	37.4%
Particulate Matter ≤ 2.5 microns in aerodynamic diameter ($PM_{2.5}$)	NA-2	Base Case	Diesel	24-hour[C]	27[B]	402,659	5,099,851	9	15.40	24.40	57.03%	90.36%
		Stress Case	-	Annual[D]	8.8[B]	402,609	5,099,751	5.6	0.23	5.83	2.60%	66.24%
Ammonia (NH_3)	766-41-7	Base/Stress Case	Natural Gas	24-hour	100	402,242	5,098,879	ND	15.61	15.61	15.61%	15.61%
Sulphur Dioxide (SO_2)	7446-09-5	Base/Stress Case	Diesel	1-hour	900	402,609	5,099,651	0.52	3.76	4.28	0.42%	0.48%
		Base/Stress Case	Diesel	24-hour	300	402,242	5,098,879	0.38	1.74	2.12	0.58%	0.71%
		Stress Case	-	Annual	60	402,609	5,099,801	0.84	0.03	0.87	0.04%	1.44%

Notes:
CAS -Chemical Abstracts Service Registry Number
ND- No Data
[A] NSECC proposed standards
[B] CAAQS
[C] 3-year average of the annual 98th percentile of the daily 24-hour average concentrations
[D] 3-year average of the annual average concentrations

The ADM study results, as summarized in Table 4-1, indicate that the maximum predicted GLCs of each air contaminant modeled were below the respective regulatory criteria, including at the sensitive receptors.

Contaminants with dispersion modelling results that were above 50% (excluding contribution from background) of their respective regulatory criteria are described below. In reviewing these results, consider the conservative approach used for 1-hour and 24-hour emission rates which assumed diesel usage continuously for the 5-year model period where as the Facility is expected to only consume diesel approximately 7 days a year. For hours while the units are burning natural gas (most of the time), the expected GLCs would be much less.

Nitrogen Dioxide (NO_2) dispersion modelling results exceeded 50% of the ambient air quality criteria (excluding background concentrations) for the 1-hour (400 (µg/m^3) averaging period while consuming ULSD.

- The maximum predicted ground-level concentrations for NO_2 (excluding background concentrations) were 53.8%, 20.3%, and 0.4% of the ambient air quality objectives for the 1-hour, 24-hour, and annual averages, respectively.
- The maximum predicted ground-level concentrations for NO_2 (including background concentrations) were 55.7%, 23.1%, and 3.9% of the ambient air quality objective for the 1-hour, 24-hour, and annual averages, respectively.
- Actual 1-hour, 24-hour average concentrations over the year will be much less when consuming natural gas.

Particulate Matter ≤ 2.5 microns in aerodynamic diameter ($PM_{2.5}$) were compared to the Canadian Ambient Air Quality Standards (CAAQS). It is understood that model predictions should not be directly compared to the CAAQS because these are intended to be compared with measured ambient air quality data and are not considered directly applicable to industrial fence-line concentrations. Therefore, the results presented are only presented for comparative purposes. The ambient air quality criteria for $PM_{2.5}$ is 27 µg/m^3 and 8.8 µg/m^3 for the 24-hour and annual averaging period, respectively.

The $PM_{2.5}$ dispersion modelling results exceeded 50% of the ambient air quality criteria (excluding background concentrations) for the 24-hour (27 µg/m^3) averaging period while consuming ULSD.

- The maximum predicted ground-level concentrations for PM2.5 (excluding background concentrations) were 57.0% and 2.6% of the ambient air quality objective for the 24-hour (3-year average of the annual 98th percentile of the daily 24-hour average concentrations) and annual (3-year average of the daily 24-hour average concentrations) averages, respectively.
- The maximum predicted ground-level concentrations for PM2.5 (including background concentrations) were 90.4% and 66.2% of the ambient air quality objective for the 24-hour (3-year average of the annual 98th percentile of the daily 24-hour average concentrations) and annual (3-year average of the daily 24-hour average concentrations) averages, respectively.
- Actual 24-hour average concentrations over the year will be much less when consuming natural gas.

Figures were developed for the contaminants and averaging periods that exceeded 50% of the ambient air quality objective to illustrate the extent of dispersion of maximum emission rates (excluding background concentrations). The 24-hour averaging period for $PM_{2.5}$ and 1-hour averaging period for NO_2 are presented graphically in Appendix A, Figures A-1 and A-2, respectively. Each figure provides a spatial reference to the sources at the Facility and the predicted concentration contours near the Facility. The modelling results are reported at receptor locations that are located along the property boundary (the fence line) and outward to an approximate distance of 5 km.

Generally, the highest concentrations are predicted to occur along the facility fence line (approximately 150 m away), or immediately adjacent to the fence line northeast of the site. Concentration contributions are close to negligible approximately 1.5 km from the facility fence line.

5 Closure

This report has been prepared for the sole benefit of WattBridge Energy LLC (WattBridge). This report may not be relied upon by any other person or entity without the express written consent of Stantec and WattBridge. This report was undertaken exclusively for the purpose outlined herein and was limited to the scope and purpose specifically expressed in this report. This report cannot be used or applied under any circumstances to another location or situation or for any other purpose without further evaluation of the data and related limitations. Any use of this report by a third party, or any reliance on decisions made based upon it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

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Stantec reserves the right to modify the contents of this report, in whole or in part, to reflect the any new information that becomes available. If any conditions become apparent that differ significantly from our understanding of conditions as presented in this report, we request that we be notified immediately to reassess the conclusions provided herein.

6 References

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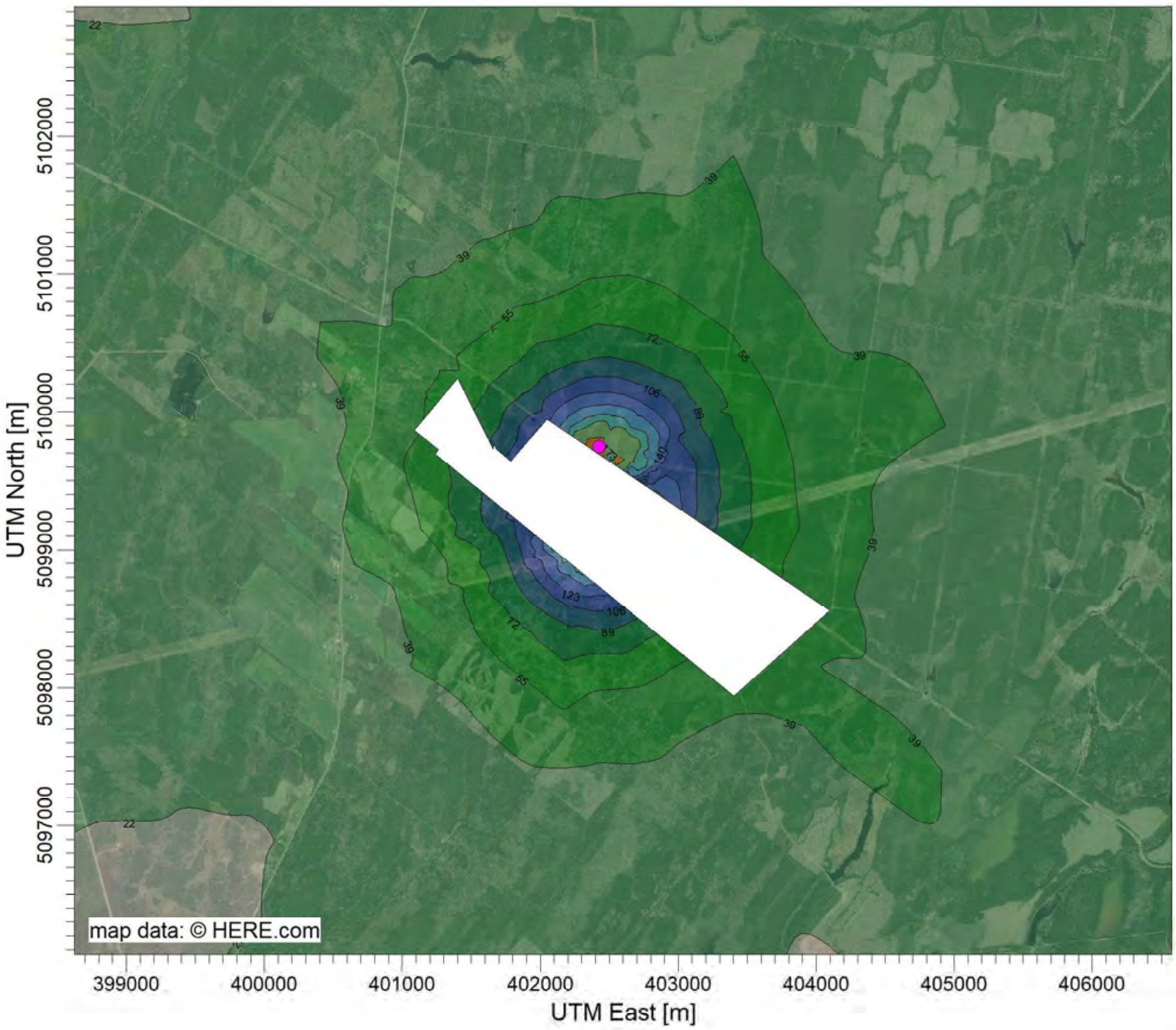
Appendices

Appendix A Concentration Isopleth Plots

PROJECT TITLE:

Maximum Predicted 1-hour NO2 Concentrations (µg/m³)



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

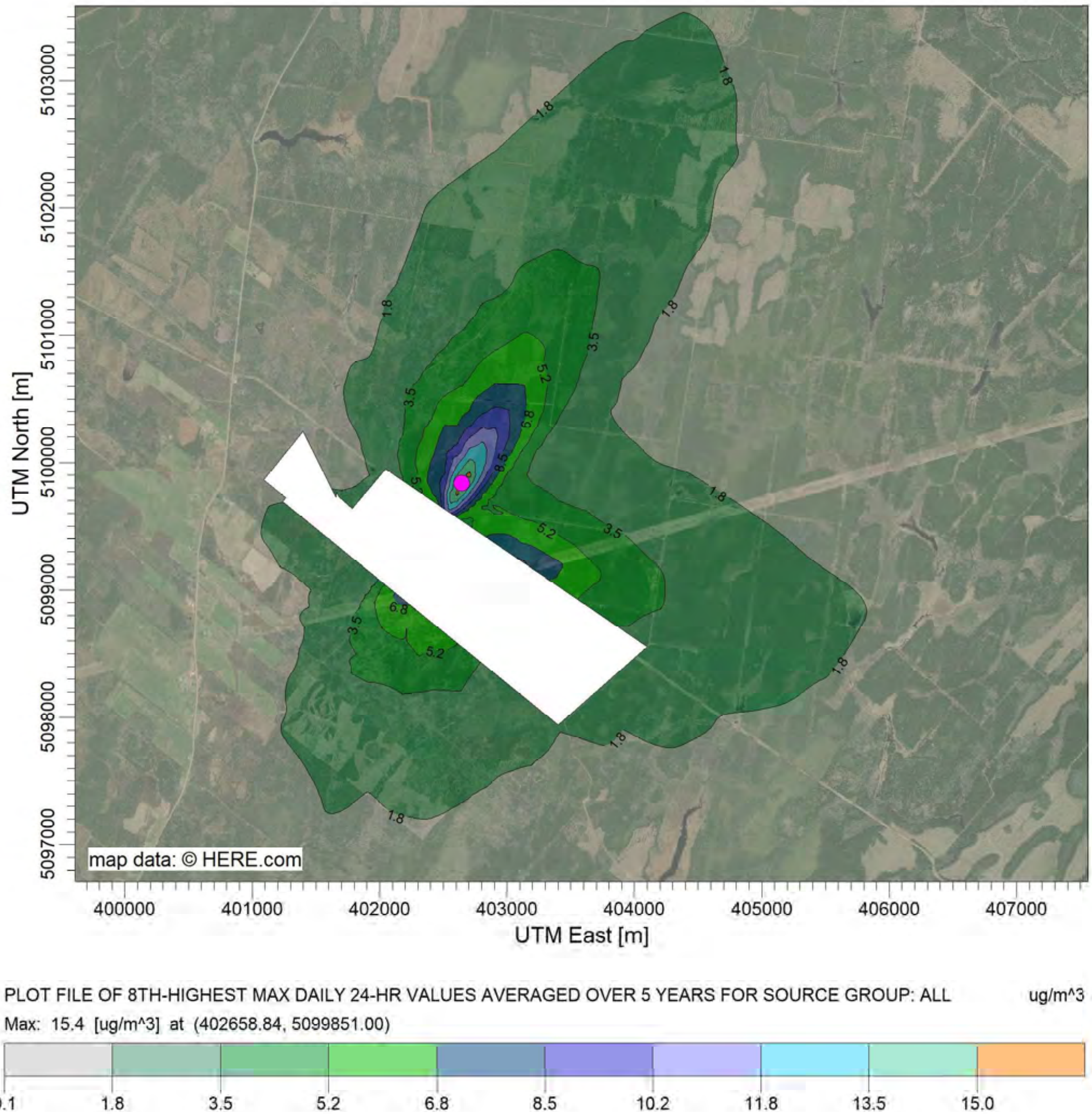
Max: 262 [ug/m^3] at (402395.44, 5099710.81)

5 22 39 55 72 89 106 123 140 156 173 215

COMMENTS:	SOURCES:	COMPANY NAME:	
Background Concentration 1-hour NO2: 7.7 µg/m³ Maximum concentration excluding background and met anomaly removal: 215 µg/m³ (pink circle) NB Ambient Air Criteria : 400 µg/m³	**10**	**Stantec**	
	RECEPTORS: **4222**	MODELER: **MA**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:50,000 0 — 2 km	
	MAX: **262 ug/m^3**	DATE: **4/22/2025**	PROJECT NO.:

PROJECT TITLE:

Maximum Predicted 24-hour PM2.5 Concentrations (µg/m³)



COMMENTS:	SOURCES:	COMPANY NAME:	
Background Concentration 24-hour PM2.5: 9µg/m³	**10**	**Stantec**	
Maximum concentration (without background): 15.4 µg/m³ (pink circle).	RECEPTORS: **4222**	MODELER: **MA**	
CAAQS 24-hour criteria: 27 µg/m³	OUTPUT TYPE: **Concentration**	SCALE: 1:50,000 (0 — 2 km)	
	MAX: **15.4 ug/m^3**	DATE: **4/22/2025**	PROJECT NO.:

Appendix B Detailed Emissions Inventory

Summary of emission rates
All emission rates presented are based on one unit.

Modelled scenario (per one unit)								
Contaminant	Averaging Period	NB AQ Reg (µg/m3)	Modelled Scenario	Fuel Type	Emission Rate (g/s) Revised	Emission Rate (g/s) Original	Difference	Comments
Nitrogen Dioxide (NO_2)	1 hour	400	Base/Stress Case	Diesel	5.15	5.51	-0.36	The 1-hour emissions are the same for both the base and stress case.
	24 hour	200	Base Case	Diesel	2.10	3.76	-1.66	Base case is modelled as there are more start-up/shut-downs per operating hours when compared to the stress case. Therefore resulting in a higher emission rate.
	Annual (7 Days of Diesel)	100	Stress Case	-	0.31	0.32	-0.01	This is the realistic scenario in which a majority of the fuel usage is natural gas with 7 days of diesel
Sulphur Dioxide (SO_2)	1 hour	900	Base/Stress Case	Diesel	0.09	0.09	0.00	The 1-hour emissions are the same for both the base and stress case.
	24 hour	300	Base/Stress Case	Diesel	0.09	0.09	0.00	Same as 1-hr emission rate
	Annual (7 Days of Diesel)	60	Stress Case	-	0.02	0.02	0.00	This is the realistic scenario in which a majority of the fuel usage is natural gas with 7 days of diesel
Total Suspended Particulate (TSP)	24 hour	120	Base Case	Diesel	1.95	1.95	0.00	The emission rate is consistent for start-up/shut-down/normal operations.
	Annual (7 Days of Diesel)	70	Stress Case	-	0.19	0.19	0.00	This is the realistic scenario in which a majority of the fuel usage is natural gas with 7 days of diesel
Carbon Monoxide (CO)	1 hour	35000	Base/Stress Case	Natural Gas	5.17	5.35	-0.18	The 1-hour emissions are the same for both the base and stress case.
	8 hour	15000	Base/Stress Case	Natural Gas	5.17	5.35	-0.18	Same as 1-hr emission rate
Ammonia (NH3)	24 hour	100	Base/Stress Case	Natural Gas	0.81	0.81	0.00	The emission rate is consistent for start-up/shut-down/normal operations.

Base Case (per one unit)										
			Emission Rate (g/s)						Description of Scenario	
			Natural Gas			Diesel				
Contaminant	Averaging Period	NB AQ Reg (µg/m3)	Revised	Original	Difference	Revised	Original	Difference	Revised	Original
Nitrogen Dioxide (NO_2)	1 hour	400	2.62	2.80	-0.18	5.15	5.51	-0.36	30 minutes start-up emissions and 30 minutes of normal operations	10 minutes start-up emissions and 50 minutes of normal operations
	24 hour	200	1.09	1.98	-0.89	2.10	3.76	-1.66	4 hours of start-up emission rate, 4 hours of shut-down emission rate, and 16 hours of normal operations rate	10 hours of start-up emission rate, 10 hours of shut-down emission rate, and 4 hours of normal operations rate
	Annual	100	0.11	0.12	0.00	0.22	0.22	-0.01	Same operating hours as Original - Revised hourly emission start-up/shutdown emission rate that fed into annual rate	Based on 100% usage of natural gas or diesel fuel usage Assumes 537 operating hours, with 215.5 hours with start-ups, 215 hours with shut-down, and 106 hours of normal operations.
	Annual (7 Days of Diesel)	100	0.15	0.15	-0.01	0.15	0.15	-0.01	Same operating hours as Original - Revised hourly emission start-up/shutdown emission rate that fed into annual rate	Mostly natural gas usage with 7 days reserved for diesel fuel usage. Assumes 537 operating hours, with 215.5 hours with start-ups, 215 hours with shut-down, and 106 hours of normal operations.
Sulphur Dioxide (SO_2)	1 hour	900	0.06	0.06	0.00	0.09	0.09	0.00	Same as Original	Emission rate is consistent with provided operational emission rate as there is no transient emissions
	24 hour	300	0.06	0.06	0.00	0.09	0.09	0.00	Same as Original	Emission rate is consistent with hourly rate as there is no transient emissions
	Annual	60	0.004	0.004	0.00	0.006	0.006	0.00	Same as Original	Based on 100% usage of natural gas or diesel fuel usage Assumes 537 operating hours, with 215.5 hours with start-ups, 215 hours with shut-down, and 106 hours of normal operations.
	Annual (7 Days of Diesel)	60	0.004	0.004	0.00	0.004	0.004	0.00	Same as Original	Mostly natural gas usage with 7 days reserved for diesel fuel usage. Assumes 537 operating hours, with 215.5 hours with start-ups, 215 hours with shut-down, and 106 hours of normal operations.
Total Suspended Particulate (TSP)	24 hour	120	0.51	0.51	0.00	1.95	1.95	0.00	Same as Original	Emission rate is consistent with provided operational emission rate as there is no transient emissions
	Annual	70	0.03	0.03	0.00	0.12	0.12	0.00	Same as Original	Mostly natural gas usage with 7 days reserved for diesel fuel usage. Assumes 537 operating hours, with 215.5 hours with start-ups, 215 hours with shut-down, and 106 hours of normal operations.
	Annual (7 Days of Diesel)	70	0.06	0.06	0.00	0.06	0.06	0.00	Same as Original	Mostly natural gas usage with 7 days reserved for diesel fuel usage
Carbon Monoxide (CO)	1 hour	35000	5.17	5.35	-0.18	4.85	5.03	-0.18	30 minutes start-up emissions and 30 minutes of normal operations	10 minutes start-up emissions and 50 minutes of normal operations
	8 hour	15000	5.17	5.35	-0.18	4.85	5.03	-0.18	30 minutes start-up emissions and 30 minutes of normal operations	Assumed the same as 1-hr emission rate
Ammonia (NH3)	24 hour	100	0.81	0.81	0.00	0.79	0.79	0.00	Same as Original	Emission rate is consistent with provided operational emission rate as there is no transient emissions

Stress Case (per one unit)										
			Emission Rate (g/s)						Description of Scenario	
			Natural Gas			Diesel				
Contaminant	Averaging Period	NB AQ Reg (µg/m3)	Revised	Original	Difference	Revised	Original	Difference	Revised	Original
Nitrogen Dioxide (NO_2)	1 hour	400	2.62	2.80	-0.18	5.15	5.51	-0.36	30 minutes start-up emissions and 30 minutes of normal operations	10 minutes start-up emissions and 50 minutes of normal operations
	24 hour	200	1.09	0.98	0.11	2.10	1.89	0.21	4 hours of start-up emission rate, 4 hours of shut-down emission rate, and 16 hours of normal operations rate	3 hours of start-up emission rate, 3 hours of shut-down emission rate, and 18 hours of normal operations rate
	Annual	100	0.29	0.30	-0.01	0.56	0.58	-0.01	Same operating hours as Original - Revised hourly emission start-up/shutdown emission rate that fed into annual rate	Based on 100% usage of natural gas or diesel fuel usage Assumes 2727 operating hours, with 325 hours with start-ups, 325 hours with shut-down, and 2077 hours of normal operations.
	Annual (7 Days of Diesel)	100	0.31	0.32	-0.01	0.31	0.32	-0.01	Same operating hours as Original - Revised hourly emission start-up/shutdown emission rate that fed into annual rate	Mostly natural gas usage with 7 days reserved for diesel fuel usage. Assumes 2727 operating hours, with 325 hours with start-ups, 325 hours with shut-down, and 2077 hours of normal operations.
Sulphur Dioxide (SO_2)	1 hour	900	0.06	0.06	0.00	0.09	0.09	0.00	Same as Original	Emission rate is consistent with provided operational emission rate as there is no transient emissions
	24 hour	300	0.06	0.06	0.00	0.09	0.09	0.00	Same as Original	Emission rate is consistent with hourly rate as there is no transient emissions
	Annual	60	0.02	0.02	0.00	0.03	0.03	0.00	Same as Original	Based on 100% usage of natural gas or diesel fuel usage Assumes 2727 operating hours, with 325 hours with start-ups, 325 hours with shut-down, and 2077 hours of normal operations.
	Annual (7 Days of Diesel)	60	0.02	0.02	0.00	0.02	0.02	0.00	Same as Original	Mostly natural gas usage with 7 days reserved for diesel fuel usage. Assumes 2727 operating hours, with 325 hours with start-ups, 325 hours with shut-down, and 2077 hours of normal operations.
Total Suspended Particulate (TSP)	24 hour	120	0.51	0.51	0.00	1.95	1.95	0.00	Same as Original	Emission rate is consistent with provided operational emission rate as there is no transient emissions
	Annual	70	0.16	0.16	0.00	0.61	0.61	0.00	Same as Original	Based on 100% usage of natural gas or diesel fuel usage Assumes 2727 operating hours, with 325 hours with start-ups, 325 hours with shut-down, and 2077 hours of normal operations.
	Annual (7 Days of Diesel)	70	0.19	0.19	0.00	0.19	0.19	0.00	Same as Original	Mostly natural gas usage with 7 days reserved for diesel fuel usage. Assumes 2727 operating hours, with 325 hours with start-ups, 325 hours with shut-down, and 2077 hours of normal operations.
Carbon Monoxide (CO)	1 hour	35000	5.17	5.35	-0.18	4.85	5.03	-0.18	30 minutes start-up emissions and 30 minutes of normal operations	10 minutes start-up emissions and 50 minutes of normal operations
	8 hour	15000	5.17	5.35	-0.18	4.85	5.03	-0.18	30 minutes start-up emissions and 30 minutes of normal operations	Assumed the same as 1-hr emission rate
Ammonia (NH3)	24 hour	100	0.81	0.81	0.00	0.79	0.79	0.00	Same as Original	Emission rate is consistent with provided operational emission rate as there is no transient emissions

Emissions Data

BASE CASE

Air Contaminant : Nitrogen Dioxide (NO2)

Natural Gas			
Scenario	**Emission Rate**		**Reference**
Normal Operations Emission Rate	4.37	lb/hr	Case 7 - Gas Fuels Tab
	0.07	lb/min	
	0.55	g/s	
Startup Operations Emission Rate	18.59	lb/event	Transients Tab
	30	minutes/event	
Shutdown Operations Emission Rate	10.38	lb/event	Transients Tab
	15	minutes/event	

Diesel			
Scenario	**Emission Rate**		**Reference**
Normal Operations Emission Rate	8.65	lb/hr	Case 7 - Diesel Fuels Tab
	0.14	lb/min	
	1.09	g/s	
Startup Operations Emission Rate	36.53	lb/event	Transients Tab
	30	minutes/event	
Shutdown Operations Emission Rate	17.88	lb/event	Transients Tab
	15	minutes/event	

1- hour Emission Rates

Description	**The 1-hour emission rate was calculated by taking the transient emission rates for start-up and shutdown and were converted to determine the emissions on a g/s basis** **It is assumed that start-up will take 30-minutes as noted by ProEnergy** **It is assumed that shut-down will take 15-minutes as described in the conditions** **Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7**

Natural Gas

Start-up emissions in the 1-hour =	18.59	lb	+	0.0729	lb	x	30	minutes
		event (30 min)			minute			
Start-up emissions in the 1-hour =	20.78	lbs						
		hour						
Start-up emissions in the 1-hour =	20.78	lbs	x	1	hour	x	453.592	g
		hour		3600	s		1	lb
Start-up emissions in the 1-hour =	2.62	g						
		s						
1-hour start-up emission rate =	2.62	g						
		s						
1-hour normal emission rate =	0.55	g						
		s						

Shut-down emissions in the 1-hour =	10.38	lb	+	0.0729	lb	x	45	minutes
		event (15 min)			minute			
Shut-down emissions in the 1-hour =	13.66	lbs						
		hour						
Shut-down emissions in the 1-hour =	13.66	lbs	x	1	hour	x	453.592	g
		hour		3600	s		1	lb
Shut-down emissions in the 1-hour =	1.72	g						
		s						
1-hour shut-down emission rate =	1.72	g						
		s						

Diesel Fuel

Start-up emissions in the 1-hour =	36.53	lb	+	0.14	lb	x	30	minutes
		event (30 min)			minute			
Start-up emissions in the 1-hour =	40.85	lbs						
		hour						
Start-up emissions in the 1-hour =	40.85	lbs	x	1	hour	x	453.592	g
		hour		3600	s		1	lb
Start-up emissions in the 1-hour =	5.15	g						
		s						
1-hour start-up emission rate =	5.15	g						
		s						
1-hour normal emission rate =	1.09	g						
		s						

Shut-down emissions in the 1-hour =	17.88	lb	+	0.14	lb	x	45	minutes
		event (15 min)			minute			
Shut-down emissions in the 1-hour =	24.37	lbs						
		hour						
Shut-down emissions in the 1-hour =	24.37	lbs	x	1	hour	x	453.592	g
		hour		3600	s		1	lb
Shut-down emissions in the 1-hour =	3.07	g						
		s						
1-hour shut-down emission rate =	3.07	g						
		s						

24-hour Emission Rates

Description	**The start-up, shut-down, and normal operations emission rates were blended to calculate a 24-hour emission rate.** **Assume for every start-up there is a shut-down** **As per Year 2 of the NB Operations Scenario (worst case)** **Operating Hours: 5,370 Hours (for 10 units) or 537 hours (for one unit)** **Unit Starts: 2,155 (for 10 units) or 215.5 (for one unit)** **Assuming 4 start-up and 4 shut-down per 24-hour period of each of the 10 units, remaining hours are normal operations as discussed in the March 3, 2025 call with WattBridge, ProEnergy, and NB Power.**

Start-ups in 24-hour	4
Shut-downs in 24-hour	4
Normal operating hours in 24-hour	16

Natural Gas

24-hour emission rate =	1-hour start-up emission rate	g	x	Instances of start-up	hour	+	1-hour shut-down emission rate	g	x	Instances of Shut-down	hour	+	1-hour normal emission rate	g	x	Normal Operating Hours	hours
		s		24	hours			s		24	hours			s		24	hours
24-hour emission rate =	2.62	g	x	4	hour	+	1.72	g	x	4	hour	+	0.55	g	x	16	hours
		s		24	hours			s		24	hours			s		24	hours
24-hour emission rate =	1.09	g															
		s															

Diesel Fuel

24-hour emission rate =	5.15	g	x	4	hour	+	3.07	g	x	4	hour	+	1.09	g	x	16	hours
		s		24	hours			s		24	hours			s		24	hours
24-hour emission rate =	2.10	g															
		s															

Annual Emission Rates

Description	**The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.** **The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.** **It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).** **It is assumed in a 1-hour period, you cannot start-up twice.** **It is assumed that all 10 units start up at the same time (e.g., within the same hour)**

Base Case Scenario (worst case)	Year 2
Start-ups in a year (aggregated value of 10 units)	2155
Start-ups in a year (single unit)	215.5

Base Case was determined by reviewing the NBP Operations Scenarios Spreadsheet

Shut-downs in a year (aggregated value of 10 units)	2155
Shut-downs in a year (single unit)	215.5
Operating Hours (aggregated value of 10 units))	5370
Operating Hours (single unit)	537
Operating Hours on Diesel (single unit)	168
Operating Hours on Natural Gas (single unit)	369

*based on 7-days able to run per year on diesel

Natural Gas (if 100% NG throughout the year)

annual emission rate = ([1-hour start-up emission rate] g/s x [Amount of start-ups per year] hours/unit + [1-hour shut-down emission rate] g/s x [Amount of shut-downs per year] hours/unit + [1-hour normal emission rate] g/s x [Amount of operating hours] hours/unit) x 1 year / 8760 hours

annual emission rate = (2.62 g/s x 215.5 hours with start-up/unit + 1.72 g/s x 215.5 hours with shut-down/unit + 0.55 g/s x 106 hours of normal operation/unit) x 1 year / 8760 hours

annual emission rate = 0.11 g/s

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate = (5.15 g/s x 215.5 hours with start-up/unit + 3.07 g/s x 215.5 hours with shut-down/unit + 1.09 g/s x 106 hours of normal operation/unit) x 1 year / 8760 hours

annual emission rate = 0.22 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = [Natural gas Annual Emission Rate] g/s x [Operating Hours for Natural GAS / Total Operating Hours] + [Diesel Fuel Annual Emission Rate] g/s x [Operating Hours for Diesel Fuel / Total Operating Hours]

annual emission rate = 0.11 g/s x 369/537 + 0.22 g/s x 168/537

annual emission rate = 0.15 g/s

Emissions Data
STRESS CASE
Air Contaminant : Nitrogen Dioxide (NO_2)

Natural Gas

Scenario	Emission Rate		Reference
Normal Operations Emission Rate	4.37	lb/hr	Case 7 - Gas Fuels Tab
	0.07	lb/min	
	0.55	g/s	
Startup Operations Emission Rate	18.59	lb/event	Transients Tab
	30	minutes/event	
Shutdown Operations Emission Rate	10.38	lb/event	Transients Tab
	15	minutes/event	

Diesel

Scenario	Emission Rate		Reference
Normal Operations Emission Rate	8.65	lb/hr	Case 7 - Diesel Fuels Tab
	0.14	lb/min	
	1.09	g/s	
Startup Operations Emission Rate	36.53	lb/event	Transients Tab
	30	minutes/event	
Shutdown Operations Emission Rate	17.88	lb/event	Transients Tab
	15	minutes/event	

1- hour Emission Rates

Description

The 1-hour emission rate was calculated by taking the transient emission rates for start-up and shutdown and were converted to determine the emissions on a g/s basis
It is assumed that start-up will take 30-minutes as noted by ProEnergy
It is assumed that shut-down will take 15-minutes as described in the conditions
Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

Start-up emissions in the 1-hour = 18.59 lb / event (30 min) + 0.0729 lb / minute x 30 minutes

Start-up emissions in the 1-hour = 20.78 lbs / hour

Start-up emissions in the 1-hour = 20.78 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Start-up emissions in the 1-hour = 2.62 g / s

1-hour start-up emission rate = 2.62 g / s

1-hour normal emission rate = 0.55 g / s

Shut-down emissions in the 1-hour = 10.38 lb / event (15 min) + 0.0729 lb / minute x 45 minutes

Shut-down emissions in the 1-hour = 13.66 lbs / hour

Shut-down emissions in the 1-hour = 13.66 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Shut-down emissions in the 1-hour = 1.72 g / s

1-hour shut-down emission rate = 1.72 g / s

Diesel Fuel

Start-up emissions in the 1-hour = 36.53 lb / event (30 min) + 0.14 lb / minute x 30 minutes

Start-up emissions in the 1-hour = 40.85 lbs / hour

Start-up emissions in the 1-hour = 40.85 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Start-up emissions in the 1-hour = 5.15 g / s

1-hour start-up emission rate = 5.15 g / s

1-hour normal emission rate = 1.09 g / s

Shut-down emissions in the 1-hour = 17.88 lb / event (15 min) + 0.14 lb / minute x 45 minutes

Shut-down emissions in the 1-hour = 24.37 lbs / hour

Shut-down emissions in the 1-hour = 24.37 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Shut-down emissions in the 1-hour = 3.07 g / s

1-hour shut-down emission rate = 3.07 g / s

24-hour Emission Rates

Description

The start-up, shut-down, and normal operations emission rates were blended to calculate a 24-hour emission rate.
Assume for every start-up there is a shut-down
As per Year 2 of the NB Operations Scenario (worst case)
Operating Hours: 27,270 Hours (for 10 units) or 2,720 hours (for one unit)
Unit Starts: 3,250 (for 10 units) or 325 (for one unit)

Assuming 4 start-up and 4 shut-down per 24-hour period of each of the 10 units, remaining hours are normal operations as discussed in the March 3, 2025 call with WattBridge, ProEnergy, and NB Power.

Start-ups in 24-hour	4
Shut-downs in 24-hour	4
Normal operating hours in 24-hour	16

Natural Gas

24-hour emission rate = 1-hour start-up emission rate g / s x Instances of start-up hour / 24 hours + 1-hour shut-down emission rate g / s x Instances of Shut-down hour / 24 hours + 1-hour normal emission rate g / s x Normal Operating Hours hours / 24 hours

24-hour emission rate = 2.62 g / s x 4 hour / 24 hours + 1.72 g / s x 4 hour / 24 hours + 0.55 g / s x 16 hours / 24 hours

24-hour emission rate = 1.09 g / s

Diesel Fuel

24-hour emission rate = 5.15 g / s x 4 hour / 24 hours + 3.07 g / s x 4 hour / 24 hours + 1.09 g / s x 16 hours / 24 hours

24-hour emission rate = 2.10 g / s

Annual Emission Rates

Description

The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.
The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.
It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).
It is assumed in a 1-hour period, you cannot start-up twice.
It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Stress Case Scenario (worst case)	Year 2	Stress Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	3250	
Start-ups in a year (single unit)	325.0	

Shut-downs in a year (aggregated value of 10 units)	3250
Shut-downs in a year (single unit)	325.0
Operating Hours (aggregated value of 10 units))	27270
Operating Hours (single unit)	2727
Operating Hours on Diesel (single unit)	168
Operating Hours on Natural Gas (single unit)	2559

*based on 7-days able to run per year on diesel

Natural Gas (if 100% NG throughout the year)

annual emission rate =	(	1-hour start-up emission rate	g	x	Amount of start-ups per year	hours	+	1-hour shut-down emission rate	g	x	Amount of shut-downs per year	hours	+	1-hour normal emission rate	g	x	Amount of operating hours	hours	)	x 1 year
			s			unit			s			unit			s			unit		8760 hours

annual emission rate =	(	2.62	g	x	325.0	hours with start-up	+	1.72	g	x	325.0	hours with shut-down	+	0.55	g	x	2077	hours of normal operation	)	x 1 year
			s			unit			s			unit			s			unit		8760 hours

annual emission rate =	0.29	g
		s

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate =	(	5.15	g	x	325.0	hours with start-up	+	3.07	g	x	325.0	hours with shut-down	+	1.09	g	x	2077	hours of normal operation	)	x 1 year
			s			unit			s			unit			s			unit		8760 hours

annual emission rate =	0.56	g
		s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate =	Natural gas Annual Emission Rate	g	x	Operating Hours for Natural GAS	+	Diesel Fuel Annual Emission Rate	g	x Operating Hours for Diesel Fuel
		s		Total Operating Hours			s	Total Operating Hours

annual emission rate =	0.29	g	x	2559	+	0.56	g	x 168
		s		2727			s	2727

annual emission rate =	0.31	g
		s

Emissions Data
BASE CASE
Air Contaminant : Sulphur Dioxide (SO_2)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	0.48	lb/hr	Case 7 - Gas Fuels Tab
	0.01	lb/min	
	0.06	g/s	

Diesel			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	0.73	lb/hr	Case 7 - Diesel Fuels Tab
	0.01	lb/min	
	0.09	g/s	

1- hour Emission Rates

Description	Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

1-hour normal emission rate = $0.06 \frac{g}{s}$

Diesel Fuel

1-hour normal emission rate = $0.09 \frac{g}{s}$

24-hour Emission Rates

Description	Assuming Transient Emissions (start-up/shut-down) are the same as Normal Emissions Assuming 1-hour emission rate is the same as 24-hour emission rate

Natural Gas

24-hour emission rate = $0.06 \frac{g}{s}$

Diesel Fuel

24-hour emission rate = $0.09 \frac{g}{s}$

Annual Emission Rates

Description	The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours. The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate. It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down). It is assumed in a 1-hour period, you cannot start-up twice. It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Base Case Scenario (worst case)	Year 2	Base Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	2155	
Start-ups in a year (single unit)	215.5	
Shut-downs in a year (aggregated value of 10 units)	2155	
Shut-downs in a year (single unit)	215.5	
Operating Hours (aggregated value of 10 units))	5370	
Operating Hours (single unit)	537	
Operating Hours on Diesel (single unit)	168	*based on 7-days able to run per year on diesel
Operating Hours on Natural Gas (single unit)	369	

Natural Gas (if 100% NG throughout the year)

annual emission rate = $\left(\text{1-hour emission rate} \frac{g}{s} \times \text{Amount of operating hours} \frac{hours}{unit} \right) \times \frac{1}{8760} \frac{year}{hours}$

annual emission rate = $\left(0.06 \frac{g}{s} \times 537.0 \frac{hours}{unit} \right) \times \frac{1}{8760} \frac{year}{hours}$

annual emission rate = $0.004 \frac{g}{s}$

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate = $\left(0.09 \frac{g}{s} \times 537.0 \frac{hours}{unit} \right) \times \frac{1}{8760} \frac{year}{hours}$

annual emission rate = $0.006 \frac{g}{s}$

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = $\text{Natural gas Annual Emission Rate} \frac{g}{s} \times \frac{\text{Operating Hours for Natural GAS}}{\text{Total Operating Hours}} + \text{Diesel Fuel Annual Emission Rate} \frac{g}{s} \times \frac{\text{Operating Hours for Diesel Fuel}}{\text{Total Operating Hours}}$

annual emission rate = $0.004 \frac{g}{s} \times \frac{369}{537} + 0.006 \frac{g}{s} \times \frac{168}{537}$

annual emission rate = $0.004 \frac{g}{s}$

Emissions Data
Stress CASE
Air Contaminant : Sulphur Dioxide (SO_2)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	0.48	lb/hr	Case 7 - Gas Fuels Tab
	0.01	lb/min	
	0.06	g/s	

Diesel			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	0.73	lb/hr	Case 7 - Diesel Fuels Tab
	0.01	lb/min	
	0.09	g/s	

1- hour Emission Rates

Description

Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

1-hour normal emission rate = 0.06 g/s

Diesel Fuel

1-hour normal emission rate = 0.09 g/s

24-hour Emission Rates

Description

Assuming Transient Emissions (start-up/shut-down) are the same as Normal Emissions
Assuming 1-hour emission rate is the same as 24-hour emission rate

Natural Gas

24-hour emission rate = 0.06 g/s

Diesel Fuel

24-hour emission rate = 0.09 g/s

Annual Emission Rates

Description

The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.
The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.
It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).
It is assumed in a 1-hour period, you cannot start-up twice.
It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Stress Case Scenario (worst case)	Year 2	Stress Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	3250	
Start-ups in a year (single unit)	325.0	
Shut-downs in a year (aggregated value of 10 units)	3250	
Shut-downs in a year (single unit)	325.0	
Operating Hours (aggregated value of 10 units))	27270	
Operating Hours (single unit)	2727	
Operating Hours on Diesel (single unit)	168	*based on 7-days able to run per year on diesel
Operating Hours on Natural Gas (single unit)	2559	

Natural Gas (if 100% NG throughout the year)

annual emission rate = (1-hour emission rate $\frac{g}{s}$ x Amount of operating hours $\frac{hours}{unit}$) x $\frac{1}{8760}$ $\frac{year}{hours}$

annual emission rate = (0.06 $\frac{g}{s}$ x 2727.0 $\frac{hours}{unit}$) x $\frac{1}{8760}$ $\frac{year}{hours}$

annual emission rate = 0.02 g/s

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate = (0.09 $\frac{g}{s}$ x 2727.0 $\frac{hours}{unit}$) x $\frac{1}{8760}$ $\frac{year}{hours}$

annual emission rate = 0.03 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = Natural gas Annual Emission Rate $\frac{g}{s}$ x $\frac{\text{Operating Hours for Natural GAS}}{\text{Total Operating Hours}}$ + Diesel Fuel Annual Emission Rate $\frac{g}{s}$ x $\frac{\text{Operating Hours for Diesel Fuel}}{\text{Total Operating Hours}}$

annual emission rate = 0.02 $\frac{g}{s}$ x $\frac{2559}{2727}$ + 0.03 $\frac{g}{s}$ x $\frac{168}{2727}$

annual emission rate = 0.02 g/s

Emissions Data

BASE CASE

Air Contaminant : Ammonia (NH_3)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	6.47	lb/hr	Case 7 - Gas Fuels Tab
	0.11	lb/min	
	0.81	g/s	

Diesel			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	6.25	lb/hr	Case 7 - Diesel Fuels Tab
	0.10	lb/min	
	0.79	g/s	

1- hour Emission Rates

Description	Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

1-hour normal emission rate = 0.81 g/s

Diesel Fuel

1-hour normal emission rate = 0.79 g/s

24-hour Emission Rates

Description	Assuming Transient Emissions (start-up/shut-down) are the same as Normal Emissions Assuming 1-hour emission rate is the same as 24-hour emission rate

Natural Gas

24-hour emission rate = 0.81 g/s

Diesel Fuel

24-hour emission rate = 0.79 g/s

Annual Emission Rates

Description	The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours. The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate. It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down). It is assumed in a 1-hour period, you cannot start-up twice. It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Base Case Scenario (worst case)	Year 2	Base Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	2155	
Start-ups in a year (single unit)	215.5	
Shut-downs in a year (aggregated value of 10 units)	2155	
Shut-downs in a year (single unit)	215.5	
Operating Hours (aggregated value of 10 units))	5370	
Operating Hours (single unit)	537	
Operating Hours on Diesel (single unit)	168	*based on 7-days able to run per year on diesel
Operating Hours on Natural Gas (single unit)	369	

Natural Gas (if 100% NG throughout the year)

$$\text{annual emission rate} = \left(\text{1-hour emission rate} \frac{g}{s} \times \text{Amount of operating hours} \frac{hours}{unit} \right) \times \frac{1}{8760} \frac{year}{hours}$$

$$\text{annual emission rate} = \left(0.81 \frac{g}{s} \times 537.0 \frac{hours}{unit} \right) \times \frac{1}{8760} \frac{year}{hours}$$

annual emission rate = 0.05 g/s

Diesel Fuel (if 100% diesel throughout the year)

$$\text{annual emission rate} = \left(0.79 \frac{g}{s} \times 537.0 \frac{hours}{unit} \right) \times \frac{1}{8760} \frac{year}{hours}$$

annual emission rate = 0.05 g/s

Actuals (Natural Gas with 7 Days Diesel)

$$\text{annual emission rate} = \text{Natural gas Annual Emission Rate} \frac{g}{s} \times \frac{\text{Operating Hours for Natural GAS}}{\text{Total Operating Hours}} + \text{Diesel Fuel Annual Emission Rate} \frac{g}{s} \times \frac{\text{Operating Hours for Diesel Fuel}}{\text{Total Operating Hours}}$$

$$\text{annual emission rate} = 0.050 \frac{g}{s} \times \frac{369}{537} + 0.000 \frac{g}{s} \times \frac{168}{537}$$

annual emission rate = 0.034 g/s

Emissions Data

STRESS CASE

Air Contaminant : Ammonia (NH_3)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	6.47	lb/hr	Case 7 - Gas Fuels Tab
	0.11	lb/min	
	0.81	g/s	

Diesel				
Scenario	Emission Rate		Comments/Assumptions	Reference
Normal Operations Emission Rate	6.25	lb/hr		Case 7 - Diesel Fuels Tab
	0.10	lb/min		
	0.79	g/s		

1- hour Emission Rates

Description	Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

1-hour normal emission rate = 0.81 g/s

Diesel Fuel

1-hour normal emission rate = 0.79 g/s

24-hour Emission Rates

Description	Assuming Transient Emissions (start-up/shut-down) are the same as Normal Emissions Assuming 1-hour emission rate is the same as 24-hour emission rate

Natural Gas

24-hour emission rate = 0.81 g/s

Diesel Fuel

24-hour emission rate = 0.79 g/s

Annual Emission Rates

Description	The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours. The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate. It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down). It is assumed in a 1-hour period, you cannot start-up twice. It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Stress Case Scenario (worst case)	Year 2	Stress Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	3250	
Start-ups in a year (single unit)	325.0	
Shut-downs in a year (aggregated value of 10 units)	3250	
Shut-downs in a year (single unit)	325.0	
Operating Hours (aggregated value of 10 units))	27270	
Operating Hours (single unit)	2727	
Operating Hours on Diesel (single unit)	168	*based on 7-days able to run per year on diesel
Operating Hours on Natural Gas (single unit)	2559	

Natural Gas (if 100% NG throughout the year)

annual emission rate = ([1-hour emission rate] g/s x [Amount of operating hours] hours/unit) x 1 year / 8760 hours

annual emission rate = (0.81 g/s x 2727.0 hours/unit) x 1 year / 8760 hours

annual emission rate = 0.25 g/s

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate = (0.79 g/s x 2727.0 hours/unit) x 1 year / 8760 hours

annual emission rate = 0.25 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = [Natural gas Annual Emission Rate] g/s x [Operating Hours for Natural GAS / Total Operating Hours] + [Diesel Fuel Annual Emission Rate] g/s x [Operating Hours for Diesel Fuel / Total Operating Hours]

annual emission rate = 0.25 g/s x 2559 / 2727 + 0.25 g/s x 168 / 2727

annual emission rate = 0.25 g/s

Emissions Data

BASE CASE

Air Contaminant : Total Suspended Particulate (TSP)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	4.08	lb/hr	Case 7 - Gas Fuels Tab
	0.07	lb/min	
	0.51	g/s	

Diesel			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	15.45	lb/hr	Case 7 - Diesel Fuels Tab
	0.26	lb/min	
	1.95	g/s	

1- hour Emission Rates

Description

Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

1-hour normal emission rate = 0.51 g/s

Diesel Fuel

1-hour normal emission rate = 1.95 g/s

24-hour Emission Rates

Description

Assuming Transient Emissions (start-up/shut-down) are the same as Normal Emissions
Assuming 1-hour emission rate is the same as 24-hour emission rate

Natural Gas

24-hour emission rate = 0.51 g/s

Diesel Fuel

24-hour emission rate = 1.95 g/s

Annual Emission Rates

Description

The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.
The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.
It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).
It is assumed in a 1-hour period, you cannot start-up twice.
It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Base Case Scenario (worst case)	Year 2	Base Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	2155	
Start-ups in a year (single unit)	215.5	
Shut-downs in a year (aggregated value of 10 units)	2155	
Shut-downs in a year (single unit)	215.5	
Operating Hours (aggregated value of 10 units))	5370	
Operating Hours (single unit)	537	
Operating Hours on Diesel (single unit)	168	*based on 7-days able to run per year on diesel
Operating Hours on Natural Gas (single unit)	369	

Natural Gas (if 100% NG throughout the year)

annual emission rate = (1-hour emission rate g/s x Amount of operating hours hours/unit) x 1/8760 year/hours

annual emission rate = (0.51 g/s x 537.0 hours/unit) x 1/8760 year/hours

annual emission rate = 0.03 g/s

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate = (1.95 g/s x 537.0 hours/unit) x 1/8760 year/hours

annual emission rate = 0.12 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = Natural gas Annual Emission Rate g/s x (Operating Hours for Natural GAS / Total Operating Hours) + Diesel Fuel Annual Emission Rate g/s x (Operating Hours for Diesel Fuel / Total Operating Hours)

annual emission rate = 0.03 g/s x 369/537 + 0.12 g/s x 168/537

annual emission rate = 0.06 g/s

Emissions Data

STRESS CASE

Air Contaminant : Total Suspended Particulate (TSP)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	4.08	lb/hr	Case 7 - Gas Fuels Tab
	0.07	lb/min	
	0.51	g/s	

Diesel			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	15.45	lb/hr	Case 7 - Diesel Fuels Tab
	0.26	lb/min	
	1.95	g/s	

1- hour Emission Rates

Description

Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

1-hour normal emission rate = 0.51 g/s

Diesel Fuel

1-hour normal emission rate = 1.95 g/s

24-hour Emission Rates

Description

Assuming Transient Emissions (start-up/shut-down) are the same as Normal Emissions

Assuming 1-hour emission rate is the same as 24-hour emission rate

Natural Gas

24-hour emission rate = 0.51 g/s

Diesel Fuel

24-hour emission rate = 1.95 g/s

Annual Emission Rates

Description

The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.

The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.

It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).

It is assumed in a 1-hour period, you cannot start-up twice.

It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Stress Case Scenario (worst case)	Year 2	Stress Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	3250	
Start-ups in a year (single unit)	325.0	
Shut-downs in a year (aggregated value of 10 units)	3250	
Shut-downs in a year (single unit)	325.0	
Operating Hours (aggregated value of 10 units))	27270	
Operating Hours (single unit)	2727	
Operating Hours on Diesel (single unit)	168	*based on 7-days able to run per year on diesel
Operating Hours on Natural Gas (single unit)	2559	

Natural Gas (if 100% NG throughout the year)

annual emission rate = (1-hour normal emission rate (g/s) x Amount of start-ups per year (hours/unit) + 1-hour normal emission rate (g/s) x Amount of shut-downs per year (hours/unit) + 1-hour normal emission rate (g/s) x Amount of operating hours (hours/unit)) x 1 year / 8760 hours

annual emission rate = (0.51 g/s x 325.0 hours with start-up/unit + 0.51 g/s x 325.0 hours with shut-down/unit + 0.51 g/s x 2077 hours of normal operation/unit) x 1 year / 8760 hours

annual emission rate = 0.16 g/s

Diesel Fuel (if 100% diesel throughout the year)

annual emission rate = (1.95 g/s x 325.0 hours with start-up/unit + 1.95 g/s x 325.0 hours with shut-down/unit + 1.95 g/s x 2077 hours of normal operation/unit) x 1 year / 8760 hours

annual emission rate = 0.61 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = Natural gas Annual Emission Rate (g/s) x Operating Hours for Natural GAS / Total Operating Hours + Diesel Fuel Annual Emission Rate (g/s) x Operating Hours for Diesel Fuel / Total Operating Hours

annual emission rate = 0.16 g/s x 2559 / 2727 + 0.61 g/s x 168 / 2727

annual emission rate = 0.19 g/s

Emissions Data
BASE CASE
Air Contaminant : Carbon Monoxide (CO)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	4.26	lb/hr	Case 7 - Gas Fuels Tab
	0.07	lb/min	
	0.54	g/s	
Startup Operations Emission Rate	38.9	lb/event	Transients Tab
	30	minutes/event	
Shutdown Operations Emission Rate	28.3	lb/event	Transients Tab
	15	minutes/event	

Diesel			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	4.32	lb/hr	~~Case 7 - Diesel Fuels Tab~~
	0.07	lb/min	
	0.54	g/s	
Startup Operations Emission Rate	36.32	lb/event	~~Transients Tab~~
	30	minutes/event	
Shutdown Operations Emission Rate	26.3	lb/event	~~Transients Tab~~
	15	minutes/event	

1- hour Emission Rates

Description

The 1-hour emission rate was calculated by taking the transient emission rates for start-up and shutdown and were converted to determine the emissions on a g/s basis
It is assumed that start-up will take 30-minutes as noted by ProEnergy
It is assumed that shut-down will take 15-minutes as described in the conditions
Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

Start-up emissions in the 1-hour = 38.9 lb / event (30 min) + 0.071013333 lb / minute x 30 minutes

Start-up emissions in the 1-hour = 41.03 lbs / hour

Start-up emissions in the 1-hour = 41.03 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Start-up emissions in the 1-hour = 5.17 g / s

1-hour start-up emission rate = 5.17 g / s

1-hour normal emission rate = 0.54 g / s

Shut-down emissions in the 1-hour = 28.3 lb / event (15 min) + 0.071013333 lb / minute x 45 minutes

Shut-down emissions in the 1-hour = 31.50 lbs / hour

Shut-down emissions in the 1-hour = 31.50 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Shut-down emissions in the 1-hour = 3.97 g / s

1-hour shut-down emission rate = 3.97 g / s

Diesel Fuel

Start-up emissions in the 1-hour = 36.32 lb / event (30 min) + 0.07 lb / minute x 30 minutes

Start-up emissions in the 1-hour = 38.48 lbs / hour

Start-up emissions in the 1-hour = 38.48 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Start-up emissions in the 1-hour = 4.85 g / s

1-hour start-up emission rate = 4.85 g / s

1-hour normal emission rate = 0.54 g / s

Shut-down emissions in the 1-hour = 26.3 lb / event (15 min) + 0.07 lb / minute x 45 minutes

Shut-down emissions in the 1-hour = 29.54 lbs / hour

Shut-down emissions in the 1-hour = 29.54 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Shut-down emissions in the 1-hour = 3.72 g / s

1-hour shut-down emission rate = 3.72 g / s

24-hour Emission Rates

Description

The start-up, shut-down, and normal operations emission rates were blended to calculate a 24-hour emission rate.
Assume for every start-up there is a shut-down
As per Year 2 of the NB Operations Scenario (worst case)
Operating Hours: 5,370 Hours (for 10 units) or 537 hours (for one unit)
Unit Starts: 2,155 (for 10 units) or 215.5 (for one unit)

Assuming 4 start-up and 4 shut-down per 24-hour period of each of the 10 units, remaining hours are normal operations as discussed in the March 3, 2025 call with WattBridge, ProEnergy, and NB Power.

Start-ups in 24-hour	4
Shut-downs in 24-hour	4
Normal operating hours in 24-hour	16

Natural Gas

24-hour emission rate = [1-hour start-up emission rate g / s x Instances of start-up hour / 24 hours] + [1-hour shut-down emission rate g / s x Instances of Shut-down hour / 24 hours] + [1-hour normal emission rate g / s x Normal Operating Hours hours / 24 hours]

24-hour emission rate = 5.17 g / s x 4 hour / 24 hours + 3.97 g / s x 4 hour / 24 hours + 0.54 g / s x 16 hours / 24 hours

24-hour emission rate = 1.88 g / s

Diesel Fuel

24-hour emission rate = 4.85 g / s x 4 hour / 24 hours + 3.72 g / s x 4 hour / 24 hours + 0.54 g / s x 16 hours / 24 hours

24-hour emission rate = 1.79 g / s

Annual Emission Rates

Description

The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.
The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.
It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).
It is assumed in a 1-hour period, you cannot start-up twice.
It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Base Case Scenario (worst case)	Year 2	Base Case was determined by reviewing the NBP Operations Scenarios Spreadsheet
Start-ups in a year (aggregated value of 10 units)	2155	
Start-ups in a year (single unit)	215.5	
Shut-downs in a year (aggregated value of 10 units)	2155	

Shut-downs in a year (single unit)	215.5
Operating Hours (aggregated value of 10 units))	5370
Operating Hours (single unit)	537
Operating Hours on Diesel (single unit)	168
Operating Hours on Natural Gas (single unit)	369

annual emission rate = ([1-hour start-up emission rate] g/s x [Amount of start-ups per year] hours + [1-hour shut-down emission rate] g/s x [Amount of shut-downs per year] hours + [1-hour normal emission rate] g/s x [Amount of operating hours] hours) x 1 year / 8760 hours

annual emission rate = (5.17 g/s x 215.5 hours with start-up / unit + 3.97 g/s x 215.5 hours with shut-down / unit + 0.54 g/s x 106 hours of normal operation / unit) x 1 year / 8760 hours

annual emission rate = 0.23 g/s

Diesel Fuel

annual emission rate (per unit) = (4.85 g/s x 215.5 hours with start-up / unit + 3.72 g/s x 215.5 hours with shut-down / unit + 0.54 g/s x 106 hours of normal operation / unit) x 1 year / 8760 hours

annual emission rate (per unit) = 0.22 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate (per unit) = [Natural gas Annual Emission Rate] g/s x [Operating Hours for Natural GAS / Total Operating Hours] + [Diesel Fuel Annual Emission Rate] g/s x [Operating Hours for Diesel Fuel / Total Operating Hours]

annual emission rate (per unit) = 0.23 g/s x 369/537 + 0.22 g/s x 168/537

annual emission rate (per unit) = 0.23 g/s

[redacted]

Emissions Data

STRESS CASE

Air Contaminant : Carbon Monoxide (CO)

Natural Gas			
Scenario	Emission Rate		Reference
Normal Operations Emission Rate	4.26	lb/hr	Case 7 - Gas Fuels Tab
	0.07	lb/min	
	0.54	g/s	
Startup Operations Emission Rate	38.9	lb/event	Transients Tab
	30	minutes/event	
Shutdown Operations Emission Rate	28.3	lb/event	~~Transients Tab~~
	15	minutes/event	

Diesel			
Scenario	Emission Rate		~~Reference~~
Normal Operations Emission Rate	4.32	lb/hr	~~Case 7 - Diesel Fuels Tab~~
	0.07	lb/min	
	0.54	g/s	
Startup Operations Emission Rate	36.32	lb/event	~~Transients Tab~~
	30	minutes/event	
Shutdown Operations Emission Rate	26.3	lb/event	~~Transients Tab~~
	15	minutes/event	

1- hour Emission Rates

Description

The 1-hour emission rate was calculated by taking the transient emission rates for start-up and shutdown and were converted to determine the emissions on a g/s basis
It is assumed that start-up will take 30-minutes as noted by ProEnergy
It is assumed that shut-down will take 15-minutes as described in the conditions
Normal operations emission rate was taken from the Emissions Estimate Gas and Diesel Fuel tab - Case 7

Natural Gas

Start-up emissions in the 1-hour = 38.9 lb / event (30 min) + 0.071013333 lb / minute x 30 minutes

Start-up emissions in the 1-hour = 41.03 lbs / hour

Start-up emissions in the 1-hour = 41.03 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Start-up emissions in the 1-hour = 5.17 g / s

1-hour start-up emission rate = 5.17 g / s

1-hour normal emission rate = 0.54 g / s

Shut-down emissions in the 1-hour = 28.3 lb / event (15 min) + 0.071013333 lb / minute x 45 minutes

Shut-down emissions in the 1-hour = 31.50 lbs / hour

Shut-down emissions in the 1-hour = 31.50 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Shut-down emissions in the 1-hour = 3.97 g / s

1-hour shut-down emission rate = 3.97 g / s

Diesel Fuel

Start-up emissions in the 1-hour = 36.32 lb / event (30 min) + 0.07 lb / minute x 30 minutes

Start-up emissions in the 1-hour = 38.48 lbs / hour

Start-up emissions in the 1-hour = 38.48 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Start-up emissions in the 1-hour = 4.85 g / s

1-hour start-up emission rate = 4.85 g / s

1-hour normal emission rate = 0.54 g / s

Shut-down emissions in the 1-hour = 26.3 lb / event (15 min) + 0.07 lb / minute x 45 minutes

Shut-down emissions in the 1-hour = 29.54 lbs / hour

Shut-down emissions in the 1-hour = 29.54 lbs / hour x 1 hour / 3600 s x 453.592 g / 1 lb

Shut-down emissions in the 1-hour = 3.72 g / s

1-hour shut-down emission rate = 3.72 g / s

24-hour Emission Rates

Description

The start-up, shut-down, and normal operations emission rates were blended to calculate a 24-hour emission rate.
Assume for every start-up there is a shut-down
As per Year 2 of the NB Operations Scenario (worst case)
Operating Hours: 5,370 Hours (for 10 units) or 537 hours (for one unit)
Unit Starts: 2,155 (for 10 units) or 215.5 (for one unit)

Assuming 4 start-up and 4 shut-down per 24-hour period of each of the 10 units, remaining hours are normal operations as discussed in the March 3, 2025 call with WattBridge, ProEnergy, and NB Power.

Start-ups in 24-hour	4
Shut-downs in 24-hour	4
Normal operating hours in 24-hour	16

Natural Gas

24-hour emission rate = [1-hour start-up emission rate g / s x Instances of start-up hour / 24 hours] + [1-hour shut-down emission rate g / s x Instances of Shut-down hour / 24 hours] + [1-hour normal emission rate g / s x Normal Operating Hours hours / 24 hours]

24-hour emission rate = 5.17 g / s x 4 hour / 24 hours + 3.97 g / s x 4 hour / 24 hours + 0.54 g / s x 16 hours / 24 hours

24-hour emission rate = 1.88 g / s

Diesel Fuel

24-hour emission rate = 4.85 g / s x 4 hour / 24 hours + 3.72 g / s x 4 hour / 24 hours + 0.54 g / s x 16 hours / 24 hours

24-hour emission rate = 1.79 g / s

Annual Emission Rates

Description

The annual-hour emission rate takes into consideration the amount of starts, shutdown, operating hours.
The start-up, shut-down, and normal operations emission rates were blended to calculate a annual-hour emission rate.
It is assumed that operating hours includes start-up and shut-down (30 minutes for start-up and 15 minutes for shut-down).
It is assumed in a 1-hour period, you cannot start-up twice.
It is assumed that all 10 units start up at the same time (e.g., within the same hour)

Base Case Scenario (worst case)	Year 2
Start-ups in a year (aggregated value of 10 units)	3250
Start-ups in a year (single unit)	325.0
Shut-downs in a year (aggregated value of 10 units)	3250
Shut-downs in a year (single unit)	325.0
Operating Hours (aggregated value of 10 units))	27270
Operating Hours (single unit)	2727
Operating Hours on Diesel (single unit)	168
Operating Hours on Natural Gas (single unit)	2559

Base Case was determined by reviewing the NBP Operations Scenarios Spreadsheet

annual emission rate = ([1-hour start-up emission rate] g/s x [Amount of start-ups per year] hours + [1-hour shut-down emission rate] g/s x [Amount of shut-downs per year] hours + [1-hour normal emission rate] g/s x [Amount of operating hours] hours) x 1 year / 8760 hours

annual emission rate = (5.17 g/s x 325.0 hours with start-up/unit + 3.97 g/s x 325.0 hours with shut-down/unit + 0.54 g/s x 2077 hours normal operating of 1 units/unit) x 1 year / 8760 hours

annual emission rate = 0.47 g/s

Diesel Fuel

annual emission rate = (4.85 g/s x 325.0 hours with start-up/unit + 3.72 g/s x 325.0 hours with shut-down/unit + 0.54 g/s x 2077 hours normal operating of 1 units/unit) x 1 year / 8760 hours

annual emission rate = 0.45 g/s

Actuals (Natural Gas with 7 Days Diesel)

annual emission rate = [Natural gas Annual Emission Rate] g/s x [Operating Hours for Natural GAS / Total Operating Hours] + [Diesel Fuel Annual Emission Rate] g/s x [Operating Hours for Diesel Fuel / Total Operating Hours]

annual emission rate = 0.47 g/s x 2559/2727 + 0.45 g/s x 168/2727

annual emission rate = 0.47 g/s

	Units	Gas	Diesel
CASE #		7	7
Ambient Dry Bulb Temperature	°F	36	36
Altitude	ft	545	545
Barometric Pressure	psia	14.409	14.409
Relative Humidity	%	49	49
Inlet Conditioning Fogging		OFF	OFF
Estimated Power Output - Gross	kW	51,150.00	49,210.00
Total Heat Input, HHV	MMBtu/hr-HHV	482.487	456.362
Exhaust (stack) Flow	acfm	604436	592945
Exhaust (Stack) temperature	°F	842	829.8
NO2/Nox Ratio		0.40	N/A

[Natural Gas] Emissions Data for Operating Scenarios

CASE #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
% Load	%	100%	80%	50%	100%	80%	50%	100%	80%	50%	100%	100%	80%	50%	100%	100%	80%
Ambient Dry Bulb Temperature	°F	-18.4	-18.4	-18.4	10	10	10	36	36	36	59	105	105	105	59	105	105
Altitude	ft	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
Barometric Pressure	psia	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409
Relative Humidity	%	95	95	95	40	40	40	49	49	49	60	20	20	20	60	20	20
Inlet Conditioning Fogging		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
Estimated Power Output - Gross	kW	48,342.00	38,673.60	24,171.00	49,160.00	39,724.00	24,580.00	51,150.00	40,920.00	25,575.00	48,619.00	35,273.00	28,217.00	17,638.00	49,494.00	44,619.00	35,696.00
Total Heat Input, HHV	MMBtu/hr-HHV	453.294	380.287	274.700	460.964	386.722	279.348	482.487	397.883	285.973	462.787	360.379	307.731	231.128	469.377	429.352	360.981
Exhaust (stack) Flow	acfm	580765	509999	416251	590592	523851	423294	604436	534737	432603	585639	498653	447352	**370594**	591773	560436	498827
Exhaust (Stack) temperature	°F	735	717	**655**	765.3	722.6	655.1	842	769	713	854	866	836	836	850	869	824
NO2/Nox Ratio		0.40	0.42	0.42	0.40	0.42	0.42	0.40	0.42	0.42	0.30	0.25	0.30	0.30	0.30	0.25	0.30

Engine Exhaust Flange Emissions (per engine)

NOx	ppm	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	lb/hr	41.056	34.075	24.820	41.751	35.001	25.240	43.741	36.029	25.857	41.959	32.651	27.863	20.912	42.560	38.924	32.699
CO	ppm	89	89	170	89	89	170	89	89	100	59	59	59	100	59	59	59
	lb/hr	99.962	82.966	90.647	101.653	85.219	92.181	94.785	78.074	62.955	60.275	46.904	40.026	50.916	61.138	55.915	46.973
VOC	ppm	9.2	9.2	13	8.2	8.2	9	2.46	2.58	3.06	2	2	2	2	2	2	2
	lb/hr	5.255	4.361	4.488	4.763	3.993	3.16	1.497	1.293	1.101	1.168	0.909	0.775	0.582	1.184	1.083	0.91
CO2	lb/hr	53032	44095	32255	53929	45293	32801	56459	46614	33575	54173	42226	36085	27145	54946	50278	42309
SO2	lb/hr	0.450	0.374	0.272	0.458	0.384	0.277	0.479	0.395	0.284	0.459	0.358	0.305	0.229	0.466	0.426	0.358
PM	lb/hr	3.397	2.802	2.014	3.455	2.878	2.048	3.595	2.964	2.130	3.448	2.685	2.293	1.722	3.497	3.199	2.689

Stack Emissions (per engine)

NOx	ppm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	lb/hr	4.134	3.405	2.444	4.204	3.498	2.485	4.374	3.603	2.586	4.196	3.265	2.786	2.091	4.256	3.892	3.270
CO	ppm	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	lb/hr	4.027	3.316	2.380	4.095	3.406	2.420	4.261	3.509	2.518	4.086	3.179	2.714	2.037	4.146	3.790	3.184
VOC	ppm	5.06	5.06	7.15	4.51	4.51	4.95	1.23	1.29	1.53	1	1	1	1	1	1	1
	lb/hr	0.707	0.611	0.520	0.719	0.628	0.529	0.749	0.647	0.550	0.584	0.454	0.388	0.291	0.592	0.542	0.455
CO2	lb/hr	53360	44055	31732	54262	45252	32269	56459	46614	33575	54173	42226	36085	27145	54946	50278	42309
SO2	lb/hr	0.453	0.373	0.268	0.460	0.383	0.273	0.479	0.395	0.284	0.459	0.358	0.305	0.229	0.466	0.426	0.358
PM	lb/hr	3.851	3.179	2.287	3.916	3.266	2.326	4.075	3.364	2.42	3.988	3.145	2.683	2.012	4.047	3.739	3.139
NH3	ppm	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	lb/hr	6.111	5.034	3.612	6.214	5.170	3.673	6.466	5.326	3.822	6.203	4.827	4.119	3.091	6.291	5.754	4.834

Annual Emissions	2000	hours per year		8	units												
NOx	ton/year	33.07	27.24	19.55	33.63	27.98	19.88	34.99	28.82	20.69	33.57	26.12	22.29	16.73	34.05	31.14	26.16
CO	ton/year	32.22	26.53	19.04	32.76	27.25	19.36	34.09	28.07	20.15	32.69	25.43	21.71	16.29	33.16	30.32	25.47
VOC	ton/year	5.66	4.89	4.16	5.76	5.02	4.23	5.99	5.17	4.40	4.67	3.63	3.10	2.33	4.74	4.33	3.64
CO2	ton/year	426,876	352,440	253,855	434,100	362,013	258,150	451,672	372,912	268,600	433,384	337,808	288,680	217,160	439,568	402,224	338,472
SOx	ton/year	3.62	2.99	2.15	3.68	3.07	2.18	3.83	3.16	2.27	3.67	2.86	2.44	1.83	3.73	3.41	2.86
PM	ton/year	30.81	25.43	18.30	31.33	26.13	18.61	32.60	26.91	19.36	31.90	25.16	21.46	16.10	32.38	29.91	25.11
NH3	ton/year	48.89	40.27	28.90	49.72	41.36	29.39	51.73	42.61	30.58	49.62	38.62	32.95	24.73	50.33	46.03	38.67

[Diesel] Emissions Data for Operating Scenarios

CASE #		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
% Load		100%	80%	50%	100%	80%	50%	100%	80%	50%	100%	100%	80%	50%	100%	100%	80%
Ambient Dry Bulb Temperature	°F	-18.4	-18.4	-18.4	10	10	10	36	36	36	59	105	105	105	59	105	105
Altitude	ft	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545	545
Barometric Pressure	psia	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409
Relative Humidity	%	95	95	95	40	40	40	49	49	49	60	20	20	20	60	20	20
Inlet Conditioning Fogging		OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
Estimated Power Output - Gross	kW	48,342.00	38,673.60	24,171.00	49,195.00	39,356.00	24,598.00	49,210.00	39,442.00	24,605.00	46,632.00	35,384.00	28,570.00	17,692.00	47,738.00	42,390.00	34,015.00
Total Heat Input, HHV	MMBtu/hr-HHV	442.0912504	371.33967	269.1085495	449.892	377.892	273.857	456.362	380.42	280.3	438.154	352.211	302.135	228.219	446.53	405.405	343.894
Exhaust (stack) Flow	acfm	578979.836	512984.334	416527.7057	589196	522036	423886	592945	525468	426847	574065	497511	447480	**370358**	580698	547231	488790
Exhaust (Stack) temperature	°F	735	717	**655**	775.2	733.7	660.5	829.8	764.6	717.5	842.1	879.2	847.2	845.1	838.5	859.5	819.5

Engine Exhaust Flange Emissions (per engine)

NOx	ppm	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
	lb/hr	75.000	62.951	45.536	76.323	64.062	46.340	77.610	64.616	46.584	74.502	59.912	51.207	38.400	75.696	68.870	58.315
CO	ppm	100	100	120	100	100	120	89	89	100	59	59	59	100	59	59	59
	lb/hr	108.694	91.234	79.193	110.612	92.844	80.592	100.106	83.346	67.514	63.704	51.229	43.785	56.338	64.725	58.889	49.864
VOC	ppm	11.2	13.5	28.9	10	12	20	8	8	8	8	8	8	8	8	8	8
	lb/hr	6.969	7.018	10.894	6.321	6.366	7.675	5.142	4.281	3.086	4.936	3.969	3.393	2.544	5.015	4.563	3.864
CO2	lb/hr	75400	63376	45992	76730	64494	46804	77942	65012	47007	74806	60194	51509	38707	76007	69151	59636
SO2 @ 15 ppm Sulfur in fuel (ULSD)	lb/hr	0.706	0.593	0.429	0.718	0.603	0.437	0.73	0.608	0.439	0.701	0.564	0.482	0.362	0.712	0.647	0.549
PM	lb/hr	13.757	11.792	8.352	14.0	12.0	8.5	14.0	12.0	8.5	13.5	11.0	9.5	7.0	14.0	12.5	10.5
PM accounting for ULSD	lb/hr	12.816	11.002	7.780	13.042	11.196	7.917	13.027	11.189	7.915	12.566	10.249	8.857	6.518	13.051	11.637	9.768

Stack Emissions (per engine)

NOx	ppm	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	lb/hr	8.50	7.18	5.19	8.65	7.31	5.28	8.65	7.32	5.29	8.45	6.79	5.81	4.36	8.58	7.81	6.61
CO	ppm	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	lb/hr	4.24	3.45	2.51	4.32	3.51	2.56	4.320	3.520	2.560	4.160	3.360	2.880	2.080	4.160	3.840	3.200
VOC	ppm	6.2	7.4	15.9	5.5	6.6	11.0	3.8	4.1	4.2	3.7	3.3	3.5	3.3	3.7	3.6	3.7
	lb/hr	2.26	2.06	1.47	2.30	2.10	1.50	2.300	2.100	1.500	2.200	1.600	1.400	1.000	2.200	1.900	1.700
CO2	lb/hr	76567	63745	46178	77918	64870	46994	77942	65012	47007	74806	60194	51509	38707	76007	69151	59636
SO2 @ 15 ppm Sulfur in fuel (ULSD)	lb/hr	0.72	0.60	0.43	0.73	0.61	0.44	0.73	0.608	0.439	0.701	0.564	0.482	0.362	0.712	0.647	0.549
PM	lb/hr	15.18	12.71	9.12	15.45	12.93	9.28	15.45	12.96	9.28	15.10	13.31	11.81	9.57	15.45	14.20	12.06
NH3	ppm	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	lb/hr	6.14	5.72	4.91	6.25	5.82	5.00	6.249	5.833	5.000	5.971	5.060	4.666	3.898	6.057	5.598	5.148

Annual Emissions	20	hours per year		8	units												
NOx	ton/year	0.68	0.57	0.42	0.69	0.58	0.42	0.69	0.59	0.42	0.68	0.54	0.46	0.35	0.69	0.62	0.53
CO	ton/year	0.34	0.28	0.20	0.35	0.28	0.20	0.35	0.28	0.20	0.33	0.27	0.23	0.17	0.33	0.31	0.26
VOC	ton/year	0.18	0.16	0.12	0.18	0.17	0.12	0.18	0.17	0.12	0.18	0.13	0.11	0.08	0.18	0.15	0.14
CO2	ton/year	6,125	5,100	3,694	6,233	5,190	3,759	6,235	5,201	3,761	5,984	4,816	4,121	3,097	6,081	5,532	4,771
SOx	ton/year	0.06	0.05	0.03	0.06	0.05	0.04	0.06	0.05	0.04	0.06	0.05	0.04	0.03	0.06	0.05	0.04
PM	ton/year	1.21	1.02	0.73	1.24	1.03	0.74	1.24	1.04	0.74	1.21	1.06	0.94	0.77	1.24	1.14	0.96
NH3	ton/year	0.49	0.46	0.39	0.50	0.47	0.40	0.50	0.47	0.40	0.48	0.40	0.37	0.31	0.48	0.45	0.41

ESTIMATED GAS FUEL SU/SD Emissions

Gas turbine emissions during START-UP shall not exceed

Pollutant	lb/event
NOx (as NO2)	18.59
CO	38.9
VOC (as CH4)	2.9

Conditions for Start-Up Emissions

Start-up shall not exceed 30 minutes
10-minutes start-up to full load
Stack emissions compliance will be achieved in 30 minutes

Gas turbine emissions during SHUT-DOWN shall not exceed

Pollutant	lb/event
NOx (as NO2)	10.38
CO	28.3
VOC (as CH4)	1.5

Conditions for Shut-Down Emissions

Shut-Down shall not exceed 15 minutes

ESTIMATED DIESEL FUEL SU/SD Emissions

Gas turbine emissions during START-UP shall not exceed

Pollutant	lb/event
NOx (as NO2)	36.53
CO	36.32
VOC (as CH4)	4.1

Conditions for Start-Up Emissions

Start-up shall not exceed 30 minutes
10-minutes start-up to full load
Stack emissions compliance will be achieved in 30 minutes

Gas turbine emissions during SHUT-DOWN shall not exceed

Pollutant	lb/event
NOx (as NO2)	17.88
CO	26.3
VOC (as CH4)	3.1

Conditions for Shut-Down Emissions

Shut-Down shall not exceed 15 minutes

Appendix D Acoustic Assessment Report

Stantec

Centre Village Renewables Integration and Grid Security Project – Acoustic Assessment Report

Final Report

June 24, 2025

Prepared for:
WattBridge Energy, LLC

Prepared by:
Stantec Consulting Ltd.
845 Prospect St
Fredericton, NB E3B 2T7

File Number:
121418392

Limitations and Sign-off

The conclusions in the Report titled Centre Village Renewables Integration and Grid Security Project – Acoustic Assessment Report are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Digitally signed by MacFarlane, Catherine
Date: 2025.06.24 15:55:08 -03'00'

Prepared by: ______________________
Signature

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Environmental Scientist

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Date: 2025.06.24 15:53:37 -03'00'

Reviewed by: ______________________
Signature

Brian Bylhouwer, M.R.M.
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Chui, Jonathan
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Approved by: ______________________
Signature

Jonathan Chui, P.Eng.
Senior Associate, Acoustic Engineer

Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by WattBridge Energy LLC (WattBridge) to conduct an acoustic assessment of the proposed Centre Village Renewables Integration and Grid Security Project (the Project). The Project is a proposed 500 MW natural gas fired combustion turbine facility, located in Centre Village, New Brunswick (the Project). The purpose of this acoustic assessment was to estimate the potential change in sound levels at the nearby receptor locations due to the operation of the Project.

Stantec's assessment predicted that noise emissions during the operation of the Project comply with New Brunswick Noise Guidelines. Heath Canada Noise Guidance related to nuisance were exceeded at one receptor location, and so mitigation measures were recommended as the Project continues through detailed design.

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Acronyms / Abbreviations

%HA	percent highly annoyed
dB	decibel
dBA	A-weighted dB scale
kHz	kilohertz
Hz	Hertz
L_d	daytime equivalent sound levels
L_{eq}	equivalent sound pressure level
L_{dn}	day-night average sound level
L_n	nighttime equivalent sound levels
MW	megawatt
NB	New Brunswick
NB Power	New Brunswick Power Inc.
Wattbridge	WattBridge Energy LLC

Glossary

Term	Definition
Attenuation	The reduction of sound intensity by various means (e.g., air, humidity and porous materials).
A-Weighting	The weighting network used to account for changes in level sensitivity as a function of frequency. The A-weighting network de-emphasizes the high (i.e., 6.3 kHz and above) and low (i.e., below 1 kHz) frequencies, and emphasizes the frequencies between 1 kHz and 6.3 kHz, in an effort to simulate the relative response of the human ear. See also frequency weighting.
Decibel	A logarithmic measure of any measured physical quantity and commonly used in the measurement of sound. The decibel (dB) provides the possibility of representing a large span of signal levels in a simple manner. The difference between the sound pressure for silence versus a loud sound is a factor of 1,000,000:1 or more, therefore it is less cumbersome to use a small range of equivalent values: 0 to 130 dB. A tenfold increase in sound power is equal to +10 dB.
Decibel, A-weighted	A-weighted decibels (dBA). Most common units for expressing sound levels since they approximate the response of the human ear.
Frequency	The number of times per second that the sine wave of sound repeats itself. It can be expressed in cycles per second, or Hertz (Hz). Frequency equals Speed of Sound / Wavelength.
Noise	Any unwanted sound. "Noise", “noise level” and "sound" are used interchangeably in this document.
Noise level	Same as sound level.
Octave	The interval between two frequencies having a ratio of two to one. For acoustic measurements, the octaves start a 1,000 Hz centre frequency and go up or down from that point, at the 2:1 ratio. From 1,000 Hz, the next filter’s centre frequency is 2,000 Hz, the next is 4,000 Hz, or 500 Hz, 250 Hz, etc. Octave filtering is usually referred to as the class of octave filters typically 1, 3 or 12, thus creating full octaves, one-third octaves, or one-twelfth octaves.

Term	Definition
Sound	A wave motion in air, water, or other media. It is the rapid oscillatory compression changes in a medium that propagate to distant points. It is characterized by changes in density, pressure, motion, and temperature as well as other physical properties. Not all rapid changes in the medium are due to sound (e.g., wind distortion on a microphone diaphragm).
Sound Level	Generally, sound level refers to the weighted sound pressure level obtained by frequency weighting, usually A- or C-weighted, and expressed in decibels
Sound Power Level	The total sound energy radiated by a source per unit time. The unit of measurement is the Watt. The acoustic power radiated from a given sound source as related to a reference power level (i.e., typically 1E 12 watts, or 1 picowatt) and expressed as decibels. A sound power level of 1 watt = 120 decibels relative to a reference level of 1 picowatt.
Sound Pressure	The root-mean-square of the instantaneous sound pressures during a specified time interval in a stated frequency band.
Sound Pressure Level	Logarithmic ratio of the root mean square sound pressure to the sound pressure at the threshold of human hearing (i.e., 20 micropascals).
Weighting	Adjustment of sound level data to achieve a desired measurement. A-weighting is used to account for changes in human hearing sensitivity as a function of frequency. The A-weighting network de-emphasizes the high (i.e., 6,300 Hz and above) and low (i.e., below 1,000 Hz) frequencies, and emphasizes the frequencies between 1,000 Hz and 6,300 Hz, in an effort to simulate the relative response of human hearing. C-Weighting is linear over the mid frequency range from 200 Hz to 1,600 Hz, and de-emphasizes the low (i.e., below 200 Hz) and high (i.e., above 1,600 Hz) frequencies.

1 Introduction

WattBridge Energy LLC (WattBridge) proposes to construct and operate a combustion turbine facility, located in Centre Village, New Brunswick (the Project, Figure 1). The Project, which is a 500 megawatt (MW) power generating station comprising ten natural gas fired combustion turbine generators (CTGs), is intended to fulfill the need identified by New Brunswick Power Inc. (NB Power) to secure additional power generating capacity and maintain system reliability while accommodating the increasing supply of variable renewable energy sources to the power grid.

Stantec Consulting Ltd. (Stantec) was retained to conduct an acoustic assessment of the proposed Project. The purpose of this acoustic assessment was to estimate the potential change in sound levels at the nearby receptor locations due to the operation of the Project.

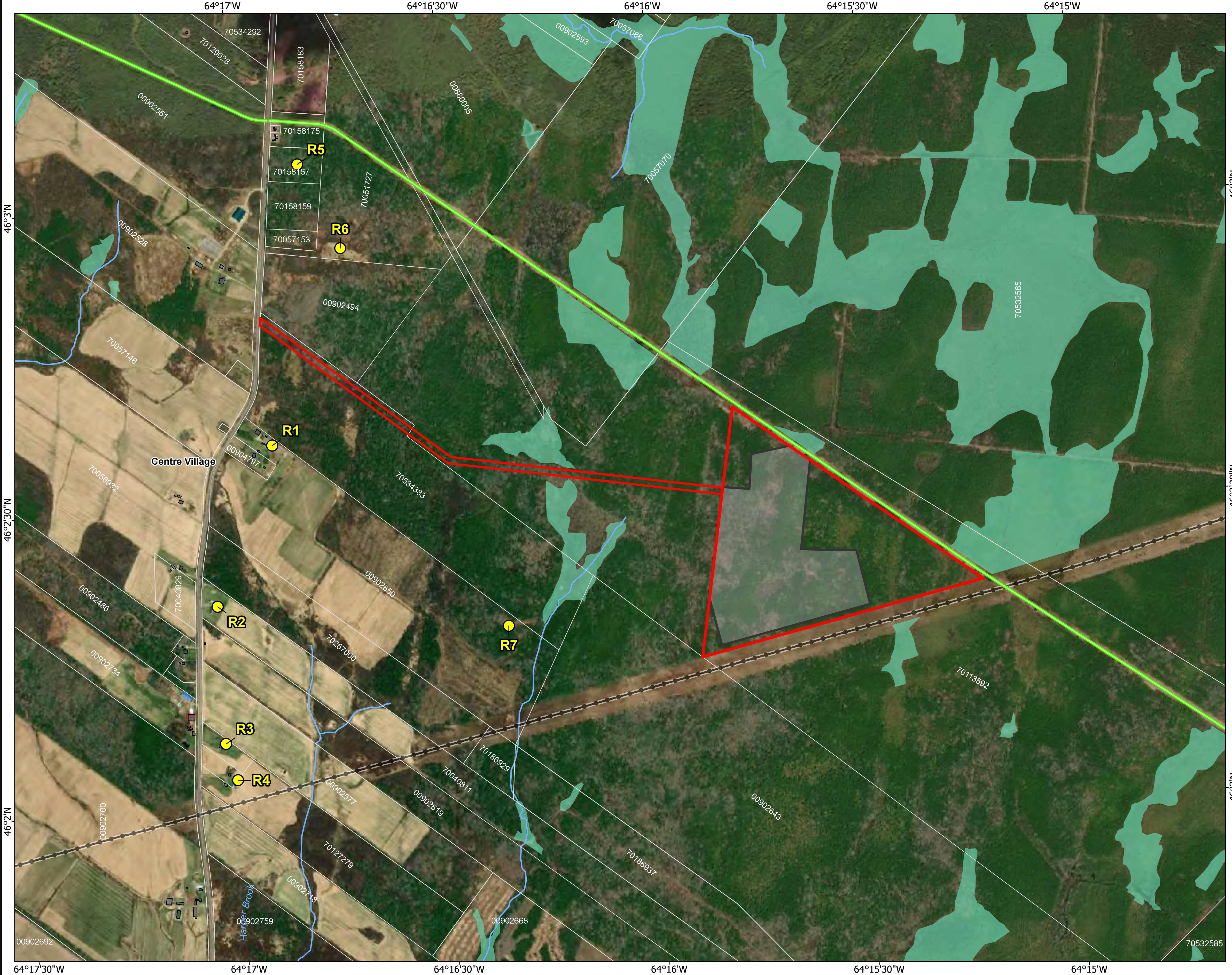
2 Receptors Locations

Receptors are noise-sensitive locations, such as homes, schools, and hospitals located outside of a facility fence line. Receptors do not include industrial or commercial locations. Receptors near the Project were identified from site plans and aerial photos. A total of seven receptors were considered in the acoustic assessment and are listed in Table 1, and graphically presented in Figure 1.

Table 1 Receptors Near the Project

Receptor ID	UTM Coordinates*	
	Easting	Northing
R1	400822.14	5099683.88
R2	400632.88	5099196.07
R3	400640.08	5098774.15
R4	400672.08	5098661.07
R5	400936.65	5100543.65
R6	401054.40	5100281.11
R7	401530.51	5099100.13

Note:
*Coordinate reference system: NAD 1983 CSRS UTM Zone 20N



Stantec

Legend

- Noise Receptor
- Project Area
- Development Footprint (Approximate)

Built Infrastructure

- Road
- Transmission Line (Existing)
- Pipeline (Existing)
- Building

Land Use

- Property Boundary

Wetlands and Waterways

- Waterbody
- Watercourse
- Wetland (NBELG)

N

0 100 200 300 400 500 m

(At original document size of 11x17)
1:12,000

Notes

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
2. Data Sources: NB Power; Stantec; GeoNB (NBHN, NBRN); NB Natural Resources and Energy Development; NB Environment and Local Government; NB Agriculture, Aquaculture and Fisheries; Service NB.
3. Background: Esri, USGS, Maxar

Project Location:

Project Location
Centre Village, NB

Prepared by AC on 2025-06-06

Client/Project 121418452
WattBridge Energy LLC
RIGS-Centre Village

Figure No.
1

Title
Acoustic Modelling Receptor Locations

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3 Applicable Regulations and Guidelines

Sound pressure levels are most commonly measured in decibels (dB). For assessments where the effect of sound on humans is the focus, an A-weighted dB scale (dBA) is used to report sound pressure levels, since the A-weighting accounts for the sensitivity of the human ear to different frequencies.

The New Brunswick *Noise Compliant Response Guidelines* (NBDELG 2023) provide a procedure to address noise complaints from industrial facilities whose noise impacts off-site noise receptors. The guidelines only apply to sites regulated by an Approval to Operate issued under the *Clear Air Act* or the *Clean Environment Act*. The guidelines do not supersede existing approval conditions or apply to impulse noise such as blasting. If a regulated facility exceeds the noise levels in the guidelines during a one-hour survey, the facility must self-rectify the noise issue or will be required to conduct a noise impact assessment (NBDELG 2023). The suggested noise limits in the provincial guidelines are as follows:

- 60 dBA or lower between 7 a.m. and 7 p.m.
- 55 dBA or lower between 7 p.m. and 11 p.m.
- 50 dBA or lower between 11 p.m. and 7 a.m.

Health Canada's *Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise* document (Health Canada 20123) also provides guidance for assessing noise impacts, and relies on internationally recognized exposure thresholds established through the World Health Organization's (WHO) *Guidelines for Community Noise* (1999) and *Night Noise Guidelines for Europe* (2009).

Health Canada recommends using a guideline level related to annoyance called percent highly annoyed (%HA). The %HA is an estimate of the percentage of people who are potentially annoyed by noise emissions. The daytime equivalent sound levels (or L_d, a 15-hour time average of sound levels over the daytime period from 7:00 AM to 10:00 PM) and nighttime equivalent sound levels (or L_n, a 9-hour time average over the nighttime period from 10:00 PM to 7:00 AM) are combined to calculate an adjusted day-night average sound level (or L_{dn}). In the L_{dn} calculation, the L_n value is increased by 10-dB to account for higher sensitivity to noise emissions at night. The L_{dn} value is used to calculate the %HA value.

A %HA value is calculated for the existing environment (i.e., the baseline conditions). A second %HA is calculated for the total sound levels from baseline conditions and Project-related noise emissions. The difference between the values of %HA is then compared with guideline criteria. Health Canada recommends that mitigation measures be considered for projects where the change in %HA due to Project activities is greater than 6.5%.

4 Baseline Sound Levels

While baseline noise levels were not available, the area surrounding the Project is considered to be rural with a low population density. Health Canada has issued guidance that recommends 45 dBA during the day and 35 dBA during the night for areas that may be considered a “Quiet Rural” community type (Health Canada 2023). The baseline sound pressure levels for nearby receptors were therefore assumed to be 45 dBA during the day and 35 dBA at night.

5 Acoustic Modelling

During operation, the Project will generate noise from the start-up and steady operation of the ten CTGs. Acoustic modelling was completed to predict sound levels at nearby receptors due to Project operation.

Acoustic modelling was completed using CADNA/A, a commercially available environmental acoustic model that complies with the algorithms described in the ISO 9613-1 and 9613-2 standards for acoustic modelling (DataKustik, 2025). The CADNA/A model takes into account distance attenuation, barrier effects due to intervening structures, ground effects, atmospheric absorption, and topography. Wind direction can change noise attenuation through the air, and therefore wind direction is always assumed to be blowing from each source location to each receptor.

Sound power levels for the equipment, during start-up and operation, were based on equipment information provided by WattBridge.

The sound power levels for the Project equipment are shown in Table 2.

Table 2 Sound Power Levels used for the Acoustic Model of Project Noise Sources

Source	Sound Power Level (dB) by Octave Band (Hz)									Total Sound Power Level	
	31.5	63	125	250	500	1000	2000	4000	8000	dB	dBA
Turbine Enclosure Surfaces	101	103	101	100	97	89	87	87	84	108	98
Generator Enclosure Surfaces	100	97	100	102	90	91	84	75	65	106	96
Intake Silencer Shell	92	80	95	103	86	89	88	86	79	104	97
Filter House Intake and Surface	109	108	100	109	104	99	92	89	82	114	105
Turbine Vent Exhaust	103	105	97	94	79	77	76	69	60	108	88
Turbine Vent Motor and Fan Surfaces	100	93	97	98	92	92	94	92	86	105	99
Generator Motor and Fan Surfaces	98	89	98	114	97	97	92	84	75	114	106
Generator Ventilation Exhaust	97	98	121	87	78	75	79	81	78	121	105
Generator Enclosure Ventilation Exhaust Duct	110	116	110	100	97	101	94	104	68	118	107
Water Injection Skid	84	95	96	94	98	94	92	87	83	103	100
Sprint Skid	80	78	79	79	81	80	76	70	62	88	84
Lube Oil Cooler	96	98	98	94	91	88	80	76	72	103	93
Ammonia Skid	102	100	104	103	105	101	96	92	88	111	106
Exhaust Expansion Joint 1	109	101	95	93	90	79	75	73	62	110	90
Selective Catalytic Reduction (SCR) Transition Duct	116	112	101	96	89	75	73	66	49	117	92
SCR Body	117	113	102	97	90	76	74	67	49	119	94
Exhaust Expansion Joint 2	103	95	89	87	84	73	68	65	53	104	84
Exhaust Stack – Lower Section	102	104	104	106	99	82	77	68	50	111	100
Exhaust Stack – Silencer Section	94	94	91	91	81	59	61	55	37	99	84
Exhaust Stack – Upper Section	98	96	90	87	75	52	56	53	37	101	81
Exhaust Stack Exit	116	116	114	113	104	97	97	99	96	121	109
Variable Bleed Valves (During Startup)	122	128	126	109	98	99	116	129	130	133	135

Note:
Sound power levels shown are for each of the ten combustion turbine generators

WattBridge indicated that all ten CTGs can operate simultaneously and can operate at any time of day. Therefore, the noise modelling assumed that all ten CTGS operate simultaneously.

CTG startup will also involve the use of Variable Bleed Valves (VBVs) which can be an additional noise source. WattBridge indicated that all ten CTGs can start simultaneously as a worst-case scenario. The startup sequence for this scenario is expected to occur as follows:

- Up to two CTGs initiate startup. No more than two CTGs are expected to startup at a time so that unnecessary strain is not imposed on the natural gas pipeline supplying the facility.
- The VBVs are anticipated to be in use for no more than 2 minutes during startup.
- Once the first two CTGs have started, another two CTGs are started.
- Startup continues with two CTGs at a time until all ten CTGs are running.

This startup sequence results in noise emissions from 2 VBVs for a total of 10 minutes. During this time, the other components of the CTGs might also be operating. Therefore, the startup scenario was also assumed to include noise from the operation of all 10 CTGs.

6 Results

The predicted Project-related 1-hour equivalent sound levels ($L_{eq,1hr}$) during CTG steady-state operation and startup is shown in Table 3. The worst case noise effect during startup is predicted to comply with the New Brunswick Noise Guideline levels of 50 dBA at night.

Table 3 Modelling Results – Sound Levels at Nearby Receptors from Project Noise

Receptor Location	Steady-state Operation, $L_{eq,1hr}$ (dBA)	VBV Startup, $L_{eq,1hr}$ (dBA)	Steady-state Operation and VBV Startup, $L_{eq,1hr}$ (dBA)
R1	41.1	37.1	42.6
R2	40.3	36.4	41.8
R3	40.7	36.2	42.0
R4	40.2	36.2	41.7
R5	39	35.7	40.7
R6	41.7	37.8	43.2
R7	48.1	43.7	49.5

The total (i.e., Project plus baseline) day-night sound levels (L_{dn}) at each Receptor location are shown in Table 4. The area around the Project is considered a quiet rural area, which may have heightened sensitivities to changes in noise levels. One way to account for this heightened sensitivity that is recommended by Health Canada is to add 10 dB to both the baseline and Project-related L_{dn} so that the change in %HA is increased. This 10 dB increase was therefore incorporated into the calculation of the total L_{dn} shown in Table 4.

Table 4 Modelling Results – Day-Night Sound Levels (L_{dn}) at Nearby Receptors from Project and Baseline Noise

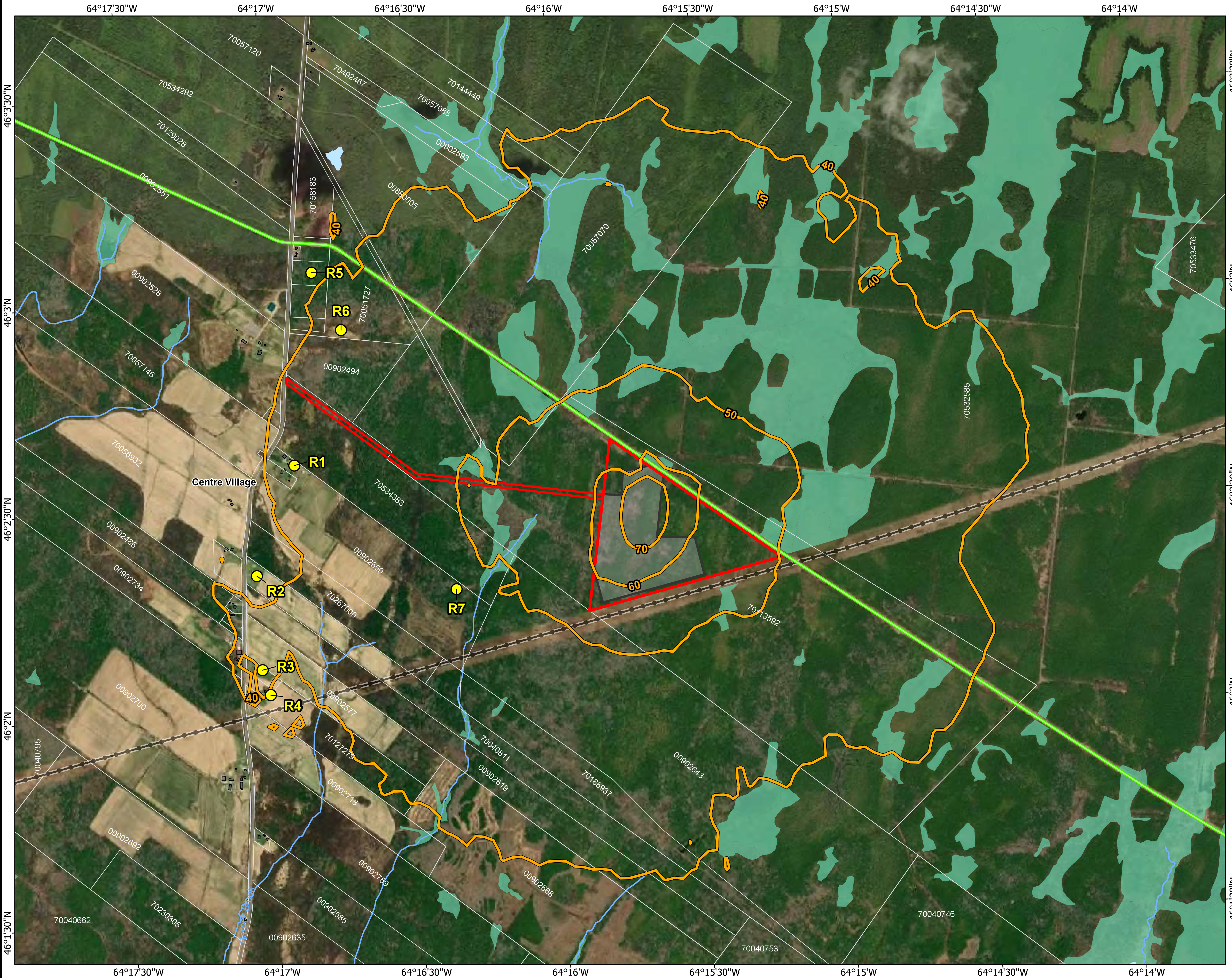
Receptor Location	Baseline L_{dn} (dBA)	Baseline plus Quiet Rural Area Adjustment* L_{dn} (dBA)	Baseline plus Project L_{dn} (dBA)	Total (Baseline plus Project plus Quiet Rural Area Adjustment*) L_{dn} (dBA)
R1	45.0	55.0	50.4	60.4
R2	45.0	55.0	49.9	59.9
R3	45.0	55.0	50.1	60.1
R4	45.0	55.0	49.8	59.8
R5	45.0	55.0	49.2	59.2
R6	45.0	55.0	50.9	60.9
R7	45.0	55.0	56.2	66.2

The predicted change in %HA is shown in Table 5. The change in %HA was less than 6.5 % at all receptors except for R7, indicating that additional mitigation measures should be considered for the Project.

Table 5 Modelling Results – Sound Levels and % Highly Annoyed at Nearby Receptors

Receptor ID	Baseline plus Quiet Rural Area Adjustment		Total (Baseline plus Project plus Quiet Rural Area Adjustment)		Change in %HA (Between Total and Baseline)
	L_{dn} (dBA)	%HA	L_{dn} (dBA)*	%HA	
R1	55.0	4.15	60.4	8.15	4.00
R2	55.0	4.15	59.9	7.63	3.48
R3	55.0	4.15	60.1	7.78	3.63
R4	55.0	4.15	59.8	7.55	3.40
R5	55.0	4.15	59.2	6.99	2.84
R6	55.0	4.15	60.9	8.61	4.46
R7	55.0	4.15	66.2	15.96	11.81

Figure 2 and 3 shows the sound level isopleths (contour lines) predicted for steady-state operation and during start-up from the VBVs.



Stantec

Legend

- Noise Receptor
- Sound Pressure Level (dBA)
- Project Area
- Development Footprint (Approximate)

Built Infrastructure

- Road
- Transmission Line (Existing)
- Pipeline (Existing)
- Building

Land Use

- Property Boundary

Wetlands and Waterways

- Waterbody
- Watercourse
- Wetland (NBELG)

N

0 100 200 300 400 500 m

(At original document size of 11x17)
1:17,500

Notes

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
2. Data Sources: NB Power; Stantec; GeoNB (NBHN, NBRN); NB Natural Resources and Energy Development; NB Environment and Local Government; NB Agriculture, Aquaculture and Fisheries; Service NB.
3. Background: Esri, USGS, Maxar

Project Location:

Project Location
Centre Village, NB

Prepared by AC on 2025-06-06

Client/Project
WattBridge Energy LLC
RIGS-Centre Village

121418452

Figure No.
2

Title
Predicted Sound Pressure Levels (dBA) from Project Operations

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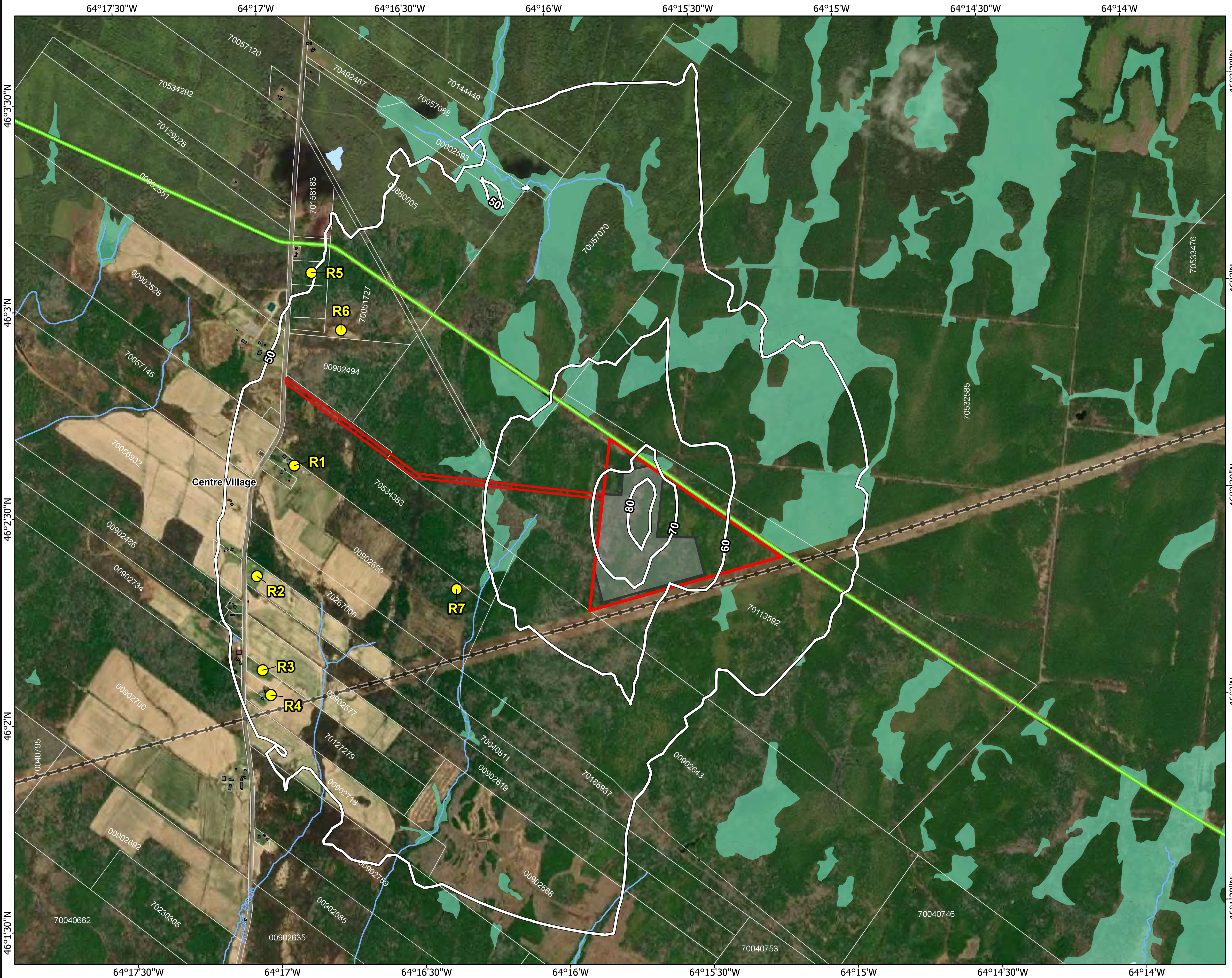

![Stantec]

Legend

- Noise Receptor
- Sound Pressure Level (dBA)
- Project Area
- Development Footprint (Approximate)

Built Infrastructure

- Road
- Transmission Line (Existing)
- Pipeline (Existing)
- Building

Land Use

- Property Boundary

Wetlands and Waterways

- Waterbody
- Watercourse
- Wetland (NBELG)

N

0 100 200 300 400 500 m

(At original document size of 11x17)
1:17,500

Notes
1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
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3. Background: Esri, USGS, Maxar

Project Location:

Project Location
Centre Village, NB

Prepared by AC on 2025-06-06

Client/Project
WattBridge Energy LLC
RIGS-Centre Village

121418452

Figure No.
3

Title
Predicted Sound Pressure Levels (dBA) from Variable Bleed Valves (VBVs) Only

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7 Noise Mitigation Options

During worst-case conditions, the Project was predicted to exceed Health Canada noise guidelines levels at one receptor (R7). The main contributors to noise levels from Project activities were:

- Operation of the VBVs during startup
- Generator vent exhausts
- Generator vent enclosures
- Generator motor fans
- Exhaust stack outlets
- Water injection skids
- Filter house enclosures

Since the Project is still going through detailed design, this noise assessment made conservative assumptions related to the noise emissions from the Project, including:

- The use of standard components without specific noise mitigation measures in place.
- The sequential startup of all 10 CTGs at one time, and subsequent operation of all 10 CTGs during the nighttime period.
- The noise emissions from the CTGs during startup would be at the 100% load condition. In reality, the CTGs would only be at partial load during startup and so noise emissions would likely be lower.

It was also assumed that receptor R7 is a residential receptor with nighttime occupancy.

Given the noise assessment approach and the assumptions described above, the following noise mitigation measures are recommended for the Project:

- Engage with landowners associated with R7 to confirm the nature of the land use at R7.
- Update the noise model once more detailed engineering has been completed to confirm the noise emissions from the Project-related components and activities.
- Review the possibility for noise mitigation to dominant noise sources.
- Develop a noise mitigation plan to respond to potential noise complaints at R7.

8 Conclusions

Stantec was retained by WattBridge to conduct an acoustic assessment of the Centre Village Renewables Integration and Grid Security Project (the Project). Stantec's assessment predicted that noise emissions during the operation of the Project comply with New Brunswick Noise Guidelines. Heath Canada Noise Guidance criteria related to nuisance were exceeded at one receptor location, and so mitigation measures were recommended as the Project continues through detailed design.

9 Closure

This report has been prepared for the sole benefit of WattBridge and their representatives. The report may not be used or relied upon by any other person or entity without the express written consent of Stantec and WattBridge.

Any use which a third party makes of this report, or any reliance on decisions made based on it, is the responsibilities of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

10 References

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