Appendix E

First Nation and Aboriginal Communities Consultation Records

Appendix E1.
First Nation and Aboriginal Communities Correspondence Records

Letter from the Ministry of the Environment and Climate Change Listing First Nation and Aboriginal Communities to Consult

Ministry of the Environment and Climate Change

Environmental Approvals Access and Service Integration Branch

135 St. Clair Avenue West
1st Floor
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax: 416 314-8452

Ministère de l'Environnement et de l'Action en matière de changement climatique

Direction de l'accès aux autorisations environnementales et de l'intégration des services

135, avenue St. Clair Ouest
Rez-de-chaussée
Toronto ON M4V 1P5
Tél : 416 314-8001
Téléc. : 416 314-8452

Ontario

May 15, 2015

Ms. Jody Law, Project Developer
Pattern Development
100 Simcoe Street
Toronto, ON
M5H 3G2

Dear Ms. Law:

RE: Notification of Proposed Renewable Energy Project – North Kent Wind

---

The Ontario Ministry of the Environment (Ministry) has reviewed the information provided in the Draft of the Project Description Report (PDR) received for the North Kent Wind Project. The Ministry has reviewed the anticipated environmental effects of the project (as described in the PDR) relative to its current understanding of the interests of Aboriginal communities in the area.

In accordance with section 14 of Ontario Regulation 359/09 "*Renewable Energy Approvals under Part V.0.1 of the Act*" (O. Reg. 359/09) made under the *Environmental Protection Act*, please find below the list of aboriginal communities who, in the opinion of the Director:

i) have or may have constitutionally protected aboriginal or treaty rights that may be adversely impacted by the project (s.14(b)(i)):

Aboriginal Community Common Name: Contact Information
Chief Dan Miskokomon Bkejwanong Territory Walpole Island First Nation RR 3 Wallaceburg ON N8A 4K9
Chief Chris Plain Aamjiwnaang First Nation 978 Tashmoo Avenue Sarnia ON N7T 7H5

Chief Sheri Lynn Doxtator Oneida Nation of the Thames RR 2 Southwold ON N0L 2G0
Chief Richard "Joe" Miskokomon Chippewas of the Thames First Nation RR 1 Muncey ON N0L 1Y0
Chief Thomas Bressette Chippewas of Kettle and Stony Point 6247 Indian Line Forest ON N0N 1J1
Chief Louise Hillier Caldwell First Nation 14 Orange Street Leamington ON N8H 1P5

OR

i) otherwise may be interested in any negative environmental effects of the project (s.14(b)(ii)):

Aboriginal Community Common Name: Contact Information
Chief Greg Peters Moravian of the Thames RR 3 Thamesville ON N0P 2K0
Chief Roger Thomas Munsee-Delaware Nation RR 1 Muncey ON N0L 1Y0

NOTE: None of the foregoing should be taken to imply approval of this project or the contents of the PDR. This letter only addresses the requirement of the Director to provide a list of aboriginal communities to you as required pursuant to section 14 of O. Reg. 359/09. You should also be aware that information upon which the above list of Aboriginal communities is based is subject to change. Aboriginal communities can make assertions at any time, and other developments, for example the discovery of Aboriginal archaeological resources, can occur that may require additional aboriginal communities to be notified. Should this happen, the Ministry will contact you. Similarly, if you receive any feedback from any Aboriginal communities not included in this list, as part of your consultation, the Ministry would appreciate being notified.

Please contact John Arciuch, Aboriginal Consultation Advisor at 416-326-9608 or John.Arciuch@ontario.ca should you have any questions or require additional information.

Yours sincerely,

SPaul

Sarah Paul
Director
Environmental Approvals Access and Service Integration Branch

c: Ariel Bautista, Project Developer, Samsung Renewable Energy Inc, 2050 Derry Road West, 2nd floor, Mississauga, ON L5N 0B9
Zeljko Romic, Senior Program Support Coordinator, Ministry of the Environment and Climate Change
John Arciuch, Aboriginal Consultation Advisor, Ministry of the Environment and Climate Change

JA/

Ministry of the Environment and Climate Change

Environmental Approvals Access and Service Integration Branch

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Ontario

May 15, 2015

Mr. Ariel Bautista, Project Developer
Samsung Renewable Energy Inc
2050 Derry Road West, 2nd floor
Mississauga, ON
L5N 0B9

Dear Mr. Bautista:

RE: Notification of Proposed Renewable Energy Project – North Kent Wind

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The Ontario Ministry of the Environment (Ministry) has reviewed the information provided in the Draft of the Project Description Report (PDR) received for the North Kent Wind Project. The Ministry has reviewed the anticipated environmental effects of the project (as described in the PDR) relative to its current understanding of the interests of Aboriginal communities in the area.

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Please contact John Arciuch, Aboriginal Consultation Advisor at 416-326-9608 or John.Arciuch@ontario.ca should you have any questions or require additional information.

Yours sincerely,

Sarah Paul
Director
Environmental Approvals Access and Service Integration Branch

c: Jody Law, Project Developer, Pattern Development, 100 Simcoe St, Toronto, Ontario M5H 3G2
Zeljko Romic, Senior Program Support Coordinator, Ministry of the Environment and Climate Change
John Arciuch, Aboriginal Consultation Advisor, Ministry of the Environment and Climate Change

JA/

First Nation and Aboriginal Communities Correspondence Records

Haudenosaunee Development Institute

June 5, 2015

Jody Law, Project Developer
Pattern Development
355 Adelaide Street West, Suite 100
Toronto, ON M5V 1S2

Ariel Bautista, Project Developer
Samsung Renewable Energy
2050 Derry Road West, 2nd Floor
Mississauga, ON L5N 0B9

Mark van der Woerd
Senior Environmental Planner
AECOM
45 Goderich Road
Hamilton, ON L8E 4W8

Dear Ms. Law, Mr. Bautista & Mr. Woerd:

Re: North Kent Wind 1 Project (the "Project")
Our File No.: 030-179

We wish to advise that the Haudenosaunee hold rights and interests in the area contemplated by your project including treaty rights documented in the 1701 Treaty of Albany. We also wish to advise that the Project will have a significant impact upon those rights and interests.

We are hereby asking that the North Kent Wind 1 Project commence a meaningful engagement process in relation to the proposed Project.

The process currently initiated by North Kent Wind 1 Project is not capable of upholding the Honour of the Crown and in particular does not provide the Ministry of the Environment and Climate Change (MOECC) with the opportunity to:

- make an assessment of the rights and interests of the Haudenosaunee;
- provide the Haudenosaunee with the opportunity to set out and clarify rights and interests such that the Province of Ontario can provide a complete and fulsome assessment of the rights and interests;
- frame the nature and scope of engagement obligations by way of reference to the assessment of Haudenosaunee rights and interests;

Six Nations of the Grand River Territory • Suite 407 - 16 Sunrise Court • P.O. Box 714 • Ohsweken, Ontario N0A 1M0
Telephone • 519.445.4222 Facsimile • 519.445.2389 • hdi2@bellnet.ca

- provide the Province of Ontario the opportunity to consider justification obligations for infringements of treaty rights;
- provide the Province of Ontario with the opportunity to consider what if any fiduciary obligations are invoked by way of an infringement of Haudenosaunee treaty rights;
- advise what if any procedural aspects of engagement can be delegated to North Kent Wind 1 Project which itself is to be informed by the nature and scope of the engagement required;

We have copied this correspondence to the MOECC and are asking MOECC withhold any approval until we advise that the engagement process with North Kent Wind 1 Project is completed.

Yours truly,

Hazel E. Hill
Director

cc: The Honourable Glen Murray, Minister of the Environment & Climate Change

From:	Van der Woerd, Mark
To:	cplain@aamjiwnaang.ca
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 11:42:02 AM

Dear Chief Plain,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

As a renewable energy facility, the Project is subject to the provisions of the *Environmental Protection Act* (the "Act") Part V.0.1 and Ontario Regulation 359/09 (the "Regulation") and requires a REA prior to construction. If approved, the Project would have a total maximum nameplate capacity of up to 100 megawatts.

The intent of this email is to follow-up with you to determine if you have any questions or comments on the Draft REA Reports for the North Kent Wind Project that were sent to you on September 2, 2015. In particular, please let us know if you have:

- Any information that should be considered in the final Project documentation;
- Any information about potential adverse impacts on your Aboriginal or treaty rights; and
- Any suggested measures for avoiding, minimizing or mitigating potential adverse impacts.

The second Public Meeting for the Project has been scheduled for November 5, 2015 from 5:00 p.m. to 8:00 p.m. at Country View Golf Course (25393 St. Clair Rd., RR 1, Dover Centre). The purpose of the meeting is to provide an opportunity to review and provide comments on the studies and investigations that have been conducted for the Project. We invite you and your community members to attend.

Sincerely,

Mark

Mark van der Woerd
Senior Consultant, Planning & Community Engagement
Impact Assessment and Permitting Practice - Environment
AECOM | www.aecom.com
mark.vanderwoerd@aecom.com | P: 905.390.2003 | C: 289.439.9803
45 Goderich Road, Suite 201, Hamilton, ON L8E 4W8

From:	Van der Woerd, Mark
To:	cfnchief@live.com
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 10:13:19 AM

Dear Chief Hillier,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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mark.vanderwoerd@aecom.com | P: 905.390.2003 | C: 289.439.9803
45 Goderich Road, Suite 201, Hamilton, ON L8E 4W8

From:	Van der Woerd, Mark
To:	lwhite-eye@cottfn.com
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 11:29:54 AM

Dear Chief White-eye,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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AECOM | www.aecom.com
mark.vanderwoerd@aecom.com | P: 905.390.2003 | C: 289.439.9803
45 Goderich Road, Suite 201, Hamilton, ON L8E 4W8

From:	Van der Woerd, Mark
To:	gcpeters@xplornet.ca
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 10:12:04 AM

Dear Chief Peters,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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mark.vanderwoerd@aecom.com | P: 905.390.2003 | C: 289.439.9803
45 Goderich Road, Suite 201, Hamilton, ON L8E 4W8

From:	Van der Woerd, Mark
To:	Hdi2@bellnet.ca
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 10:12:04 AM

Dear Chief Hill,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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45 Goderich Road, Suite 201, Hamilton, ON L8E 4W8

From:	Van der Woerd, Mark
To:	fdesk@kettlepoint.org
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 11:14:52 AM

Dear Chief Bressette,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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From:	Van der Woerd, Mark
To:	Chief.thomas@munsee-delaware.org
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 11:11:18 AM

Dear Chief Thomas,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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From:	Van der Woerd, Mark
To:	Sheri.Doxtator@oneida.on.ca
Cc:	"zAriel Bautista" (ariel.b@samsung.com); Jody Law
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 11:09:16 AM

Dear Chief Doxtator,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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From:	Van der Woerd, Mark
To:	info@bkejwanong.ca
Cc:	Jody Law; "zAriel Bautista" (ariel.b@samsung.com)
Subject:	North Kent Wind - Draft REA Reports
Date:	Friday, October 30, 2015 11:07:52 AM

Dear Chief Miskokomon,

As you know, North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. ("North Kent Wind"), a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada, ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy"), is planning to engage in a renewable energy project for which the issuance of a Renewable Energy Approval (REA) is required. The wind project is proposed to be located in the Municipality of Chatham-Kent.

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Appendix E2.
Summary of REA Technical Reports

North Kent Wind 1

Summary of REA Technical Reports

North Kent Wind 1 Project

Summary of REA Technical Reports

Prepared for:

North Kent Wind 1 LP
2050 Derry Road West, 2nd floor
Mississauga, ON L5N 0B9

Prepared by:

AECOM
215 – 55 Wyndham Street North
Guelph, ON, Canada N1H 7T8
www.aecom.com

Project Number:

60343599

Date:

September, 2015

Table of Contents

List of Figures

List of Tables

Acronyms and Abbreviations

EAAB	Environmental Assessment and Approvals Branch, Ontario Ministry of the Environment and Climate Change
ERCP	Emergency Response and Communication Plan
EIS	Environmental Impact Study
ESC	Erosion and Sediment Control Plan
GHGs	Greenhouse Gases
Hydro One	Hydro One Networks Inc.
km	Kilometres
kV	Kilovolts
LTVCA	Lower Thames Valley Conservation Authority
m	Metres
m^2	Metres squared
m/s	Metres per second
MBCA	*Migratory Birds Convention Act*
MNRF	Ontario Ministry of Natural Resources and Forestry
MOECC	Ontario Ministry of the Environment and Climate Change
MTCS	Ontario Ministry of Tourism, Culture and Sport
MW	Megawatts
North Kent Wind 1	North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc.
O. Reg.	Ontario Regulation
OASD	Ontario Archaeological Sites Database
Pattern Development	Pattern Renewable Holdings Canada ULC
PDR	Project Description Report
POI	Point of Interconnection
PoR	Point of Reception
Project	North Kent Wind 1 Project
PSA	Project Study Area
REA	Renewable Energy Approval
Samsung Renewable Energy	Samsung Renewable Energy Inc.
SCRCA	St. Clair Region Conservation Authority
SFL	Sustainable Forest Licence
SPRP	Spill Prevention and Response Plan
SWH	Significant Wildlife Habitat
VLR	Vacant Lot Receptor

1. Introduction

In May, 2009, the Government of Ontario passed the *Green Energy and Green Economy Act* and Ontario Regulation (O. Reg.) 359/09, as amended. Under the amended O. Reg. 359/09, the North Kent Wind 1 Project (Project) will require a Renewable Energy Approval (REA). The REA integrates previous requirements under the *Environmental Assessment Act* with provincial rules and standards under the *Environmental Protection Act*.

The North Kent Wind 1 Project is being proposed by North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. (North Kent Wind 1). North Kent Wind 1 is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada ULC (Pattern Development) and Samsung Renewable Energy Inc. (Samsung Renewable Energy). North Kent Wind 1 is proposing to develop a wind energy project located north of the City of Chatham in the Municipality of Chatham-Kent, Ontario.

The requirements for the Aboriginal Summary Report as defined under O. Reg. 359/09, as amended, are provided in the following table (**Table 1-1**) in addition to the corresponding report section.

Table 1-1: Adherence to Aboriginal Summary Report Requirements under O. Reg. 359/09, as Amended

Requirement	Corresponding Section
A written summary of each report (with the exception of the Consultation Report) that will be submitted as part of the REA application;	**Sections 2 to 10 of this report**
A written request to the community to provide any information (in writing) that, in the opinion of the community, should be considered in preparing any of the reports summarized above and in particular, any information the community may have about any adverse impacts that the project may have on constitutionally protected aboriginal or treaty rights and any measures for mitigating those adverse impacts.	**A letter to Aboriginal communities will accompany this report**

This report provides information for the reports and studies that have been completed for this Project and provides a summary of the following reports:

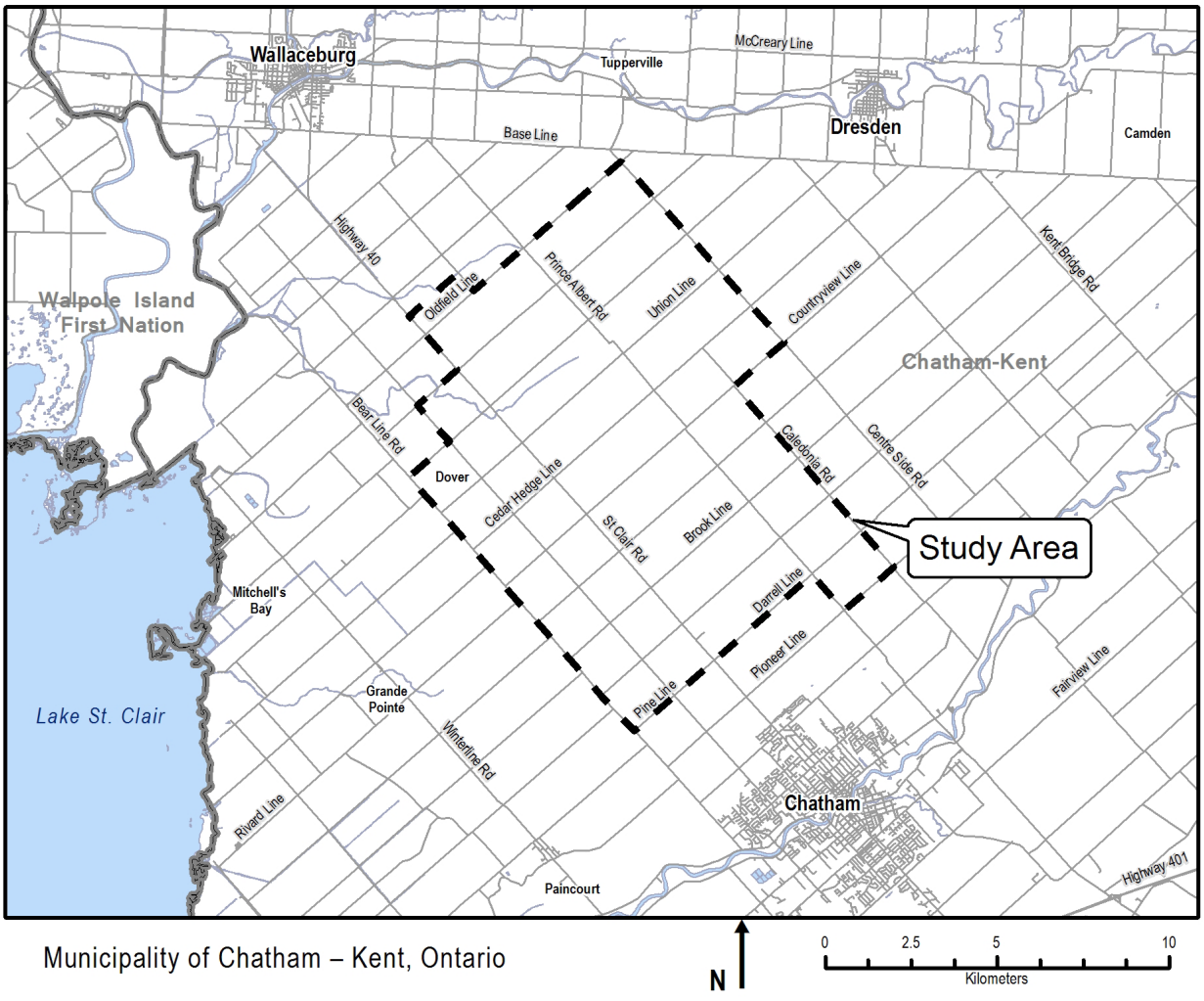
- Project Description Report;
- Construction Plan Report;
- Design and Operations Report;
- Decommissioning Plan Report;
- Wind Turbine Specifications Report;
- Water Assessment Reports;
- Archaeological Assessment Reports;
- Heritage Impact Assessment Report;
- Natural Heritage Assessment Reports; and
- Noise Impact Assessment Report.

1.1 Project Study Area

North Kent Wind 1 is proposing to develop a wind energy project located north of the City of Chatham in the Municipality of Chatham-Kent, Ontario. The Project will be located on both public and private lands. The location of the Project was developed based on interest expressed by local landowners, municipal support for the Project, the availability of wind resources, and the availability of existing infrastructure for connection to the electrical grid.

The Project is generally bounded by Oldfield Line to the north, Bear Line Road to the west, Pioneer Line and Pine Line / Darrell Line to the south and Centre Side road and Caledonia Road to the east. The area encompassed by these boundaries is referred to as the Project Study Area (PSA). **Figure 1-1**, below, shows a map of the PSA.

Figure 1-1: Project Study Area



1.2 Contact Information

Applicant:

As noted above, North Kent Wind 1 is a joint venture limited partnership owned by affiliates of Pattern Development and Samsung Renewable Energy. The contacts for the Project are as follows:

Ariel Bautista
Project Developer
Samsung Renewable Energy Inc.
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Jody Law
Project Developer
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North Kent Wind 1 Consultant:

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Senior Environmental Planner
AECOM
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Email: mark.vanderwoerd@aecom.com

Project:

Project email: info@northkentwind.com
Project website: www.northkentwind.com

2. Project Description Report Summary

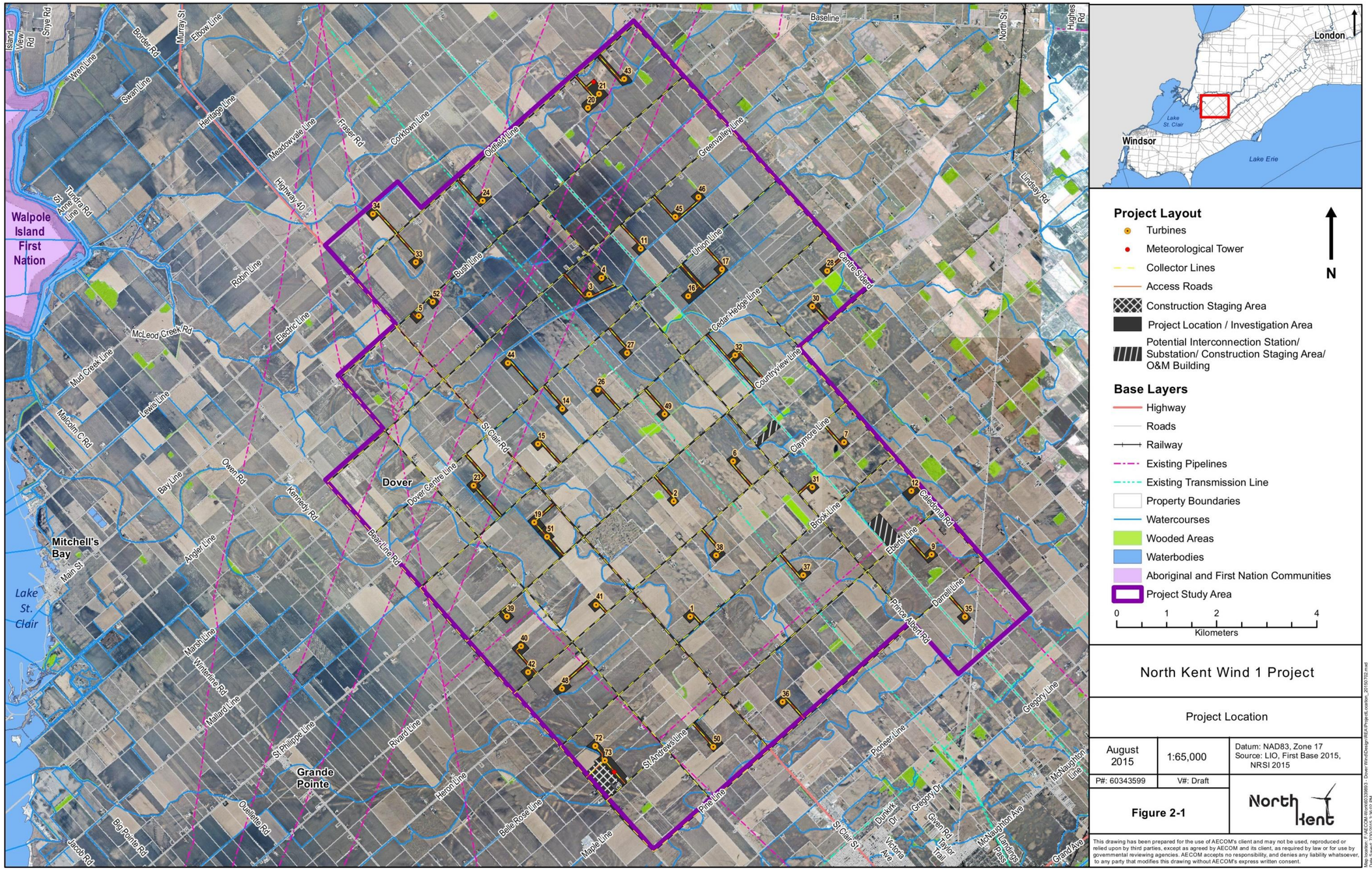
This section provides a summary of the Project Description Report (PDR) including a description of the location of infrastructure associated with the Project, development phases and potential impacts to the environment.

The Draft PDR was distributed to agencies, Aboriginal communities identified on the Ontario Ministry of the Environment and Climate Change (MOECC) Section 14 list, the Municipality of Chatham-Kent and to the Director of the Environmental Assessment and Approvals Branch (EAAB) of the MOECC on June 3, 2015. At the same time, notices indicating the locations where the Draft PDR could be reviewed both in person and on the Project's website were provided to the members of the public. On August 5, 2015 an updated version of the PDR was provided to the Municipality of Chatham-Kent.

2.1 Project Location

The Project Location is where site preparation and construction activities will occur (i.e., disturbance areas described below) and where permanent infrastructure will be located, including the air space occupied by turbine blades. Refer to **Figure 2-1** on the following page for a map of the Project Location.

Figure 2-1 Project Location



North Kent Wind 1 Project

Project Location

August 2015	1:65,000	Datum: NAD83, Zone 17 Source: LIO, First Base 2015, NRSI 2015
P#: 60343599	V#: Draft	

Figure 2-1

North Kent

Map location: P:\AECOM Work\60,336\60343599.3 - Dover Wind\Design AREA\Project\Location_20150702.mxd
Date Saved: 7/30/2015 3:36:02 PM

2.2 Description of Energy Source and Nameplate Capacity

The Project will use wind to generate energy through the use of commercial wind turbine technology. The proposed wind turbine technology for this Project is the Siemens SWT-3.2-113 turbine. Up to 50 turbine locations are currently being assessed for the Project, and the Project will provide 100 megawatts (MW) of nameplate capacity (or the maximum amount of power that a wind turbine or wind project can generate) once it is operating.

A summary of key Project information is presented in the table below.

Table 2-1: Summary of Key Project Information[1]

General	*Project Name*	North Kent Wind 1 Project
	Project Ownership and Operation	North Kent Wind 1 LP
	Project Lifespan (Commercial Operation)	20 Years
	Project Nameplate Capacity	Up to 100 MW
Project Area *(as shown in **Figure 2-1**)*	*Location of Project*	Public and privately-owned land and public road allowances in the Municipality of Chatham-Kent
	Total Project Study Area	30,400 acres[2]
	Estimated Total Permanent Area of Project Location:	140 acres
Wind Turbine Generators	*Make and Model*	Siemens SWT-3.2-113
	Total Number Permitted	50 turbines
	Approximate Number Constructed	36 turbines
	Nominal Turbine Power	2.772 to 3.2 MW
	Number of Blades	3
	Blade Length	55 metres (m)
	Hub Height	99.5 m
	Rotor Diameter	113 m
	Cut-in Wind Speed	3 to 5 metres per second (m/s)
	Cut-out Wind Speed	32 m/s
	Rated Wind Speed	12 to 13 m/s
	Swept Area	10,000 metres squared (m^2)
	Foundation Dimensions	25 m diameter
Access Roads	*Access Roads – Operations (includes shoulder, travel width and ditch)*	31 kilometres (km) x 8 to 12 m
	Access Roads – Construction (with shoulder)	31 km x 8 to 15 m
Collector Lines	*34.5 kilovolts (kV) Collector Lines in Public Right-of-way (total combined length of proposed underground and/or overhead)*	160 km x 2 to 6 m
	34.5 kV Collector Lines on Private Lands (underground)	30 km x 2 to 6 m
Other Project Structures and Facilities	*Collector Substation*	10 acres
	Operations and Maintenance Building	7 acres
	Interconnection Station	10 acres
	Meteorological Towers	Up to 2
	Microwave Tower	1
Temporary Land Use *(Construction Phase)*	*Construction Staging Areas*	10 to 15 acres
	Wind Turbine Laydown Area (each turbine)	1.5 acres
	Crane Pads	0.2 acres

1. *Dimensions are approximations.*
2. *Metric units are used throughout REA reports when describing the size of Project infrastructure, except in instances describing areas of land. When describing land size, acres (imperial) will be used rather than hectares (metric) because it is the measuring unit most commonly used by the local community. It is assumed that 1 hectare of land is equal to 2.47 acres of land.*

2.3 Project Schedule

The schedule below outlines the anticipated timelines for the Project:

Table 2-2: Project Milestones

Project Milestone	Date
Host Public Meeting #1	Summer, 2015
Complete Environmental Studies and Reporting	Summer, 2015
Host Public Meeting #2	Fall, 2015
Submit REA Application	Fall, 2015
Obtain Pre-Construction Permits	Spring/Summer, 2016
Start Construction	Summer/Fall, 2016
Commence Operations and Maintenance	Fall, 2017
Decommission Project	2037

2.4 Project Components

The major components of the Project include:

- Wind Turbine Generators;
- Wind Turbine Foundation;
- Pad-mounted Transformers;
- Wind Turbine Access Roads;
- Collector Lines;
- Collector Substation;
- Microwave Tower;
- Meteorological Towers;
- Interconnection Station (Connection to Electrical Grid); and
- Operations and Maintenance Building.

To construct the proposed Project, a number of temporary construction components are also required, including:

- Crane Pads;
- Wind Turbine Laydown Areas; and
- Construction Staging Area.

More information on these components can be found in **Section 3** for the Construction Plan Report Summary

2.5 Project Activities

2.5.1 Pre-Construction

Prior to construction, the primary activities include:

- Optioning of lands – confirming which lands will be used;
- Preliminary engineering – initial design work;
- Geotechnical assessment and site surveys of the final turbine locations – confirming the site conditions;
- Procurement of turbine and substation equipment – purchasing the Project components; and,
- Permitting and detailed design – more detailed design work and seeking approvals.

North Kent Wind 1 will continue to communicate with the landowners on the development of the site plans for the Project.

2.5.2 Approvals

The REA process is the main approval requirement in the pre-construction phase of the Project. For all permits and authorizations that apply, North Kent Wind 1 will work directly with the respective federal, provincial and municipal authorities to ensure all requirements are met. North Kent Wind 1 will also continue to work closely with Project engineers, environmental and cultural specialists, as well as local landowners and Aboriginal communities throughout the development of the Project.

2.5.3 Construction

Construction of the Project is scheduled to begin in the summer / fall of 2016 and is planned to be completed by the fall of 2017. During site preparation and construction of the proposed Project, the following key activities will be undertaken:

- Preparation of temporary work areas, including clearing and grubbing of vegetation;
- Upgrading of existing access roads and construction of new access roads;
- Site grading, as necessary;
- Preparation and establishment of construction staging areas;
- Preparation of the collector substation laydown area;
- Delivery of construction vehicles and equipment;
- Excavation and installation of wind turbine foundations;
- Installation of crane pads and turbine laydown areas;
- Erection of wind turbines;
- Installation of pad-mounted transformers;
- Installation of electrical collector lines on private lands and/or in municipal road allowances;
- Construction of collector substation;
- Installation of microwave tower, if required, and meteorological tower(s);
- Construction of an interconnection station on private lands;
- Construction of operations and maintenance building; and
- Reclamation of construction laydown and staging areas.

For further information regarding the Construction Phase of the Project, refer to **Section 3** for the Construction Plan Report Summary, as well as the full Construction Plan Report.

2.5.4 Operations and Maintenance

Operations of the proposed Project is expected to begin in late 2017 and will require up to 15 trained technical and administrative staff, including turbine maintenance technicians and a site supervisor. The operational lifespan of the Project is approximately 20 years, unless otherwise extended. During the operation of the proposed Project, on-site activities will be limited primarily to scheduled maintenance of the Project components.

During operations and maintenance of the proposed Project, the following key activities will be undertaken:

- Preventative and unplanned maintenance of Project components;
- North Kent Wind 1 staff transport;
- Natural heritage field monitoring;

- Field monitoring to evaluate the performance of the Project components and to conduct investigations / field visits to follow-up with any complaints received by North Kent Wind 1;
- Meter calibrations;
- Remote operation of the wind turbines; and
- Grounds maintenance in the vicinity of Project components.

For further information regarding the operational phase of the Project, refer to **Section 4** for the Design and Operations Report Summary, and the complete Design and Operations Report.

2.5.5 Decommissioning

If the Project is not extended past its current commercial operational life (20 years) the wind turbine structures will be removed to the base of the foundation and portions of the foundations will be excavated and backfilled with subsoil and topsoil to allow agricultural activities to continue. Access road removal will be dependent on the requirements and agreements in place with the individual landowner. Impacted lands will be restored to a state similar to pre-existing conditions. Decommissioning procedures will be similar, but in reverse order to those carried out in the construction phase.

For further information regarding decommissioning activities, refer to **Section 5** for the Decommissioning Plan Report Summary, and the full Decommissioning Plan Report.

3. Construction Plan Report Summary

This section summarizes the Construction Plan Report.

3.1 Pre-construction Activities

3.1.1 Surveying and Geotechnical Sampling Activities

Before starting construction, all access roads, collector lines, turbine locations, and all other foundations and work locations will be surveyed. Existing buried infrastructure located on public property will be identified using the Ontario One Call service. Buried infrastructure located on private property will be identified by private contractors prior to construction and updated throughout construction, as required.

3.2 Construction Activities

3.2.1 Site Preparation, Land Clearing

The construction of the access road will typically require clearing and grubbing of any vegetation, excavation of the topsoil layer and addition of a layer of compacted material. Prior to access road construction, topsoil from the access road footprint will be stripped and stockpiled for re-use following construction to reclaim the site. A geotextile or cement-stabilized soil may be used, where necessary.

3.2.2 Equipment Installation

- **Access Roads** – Access roads will be constructed to transport equipment to the construction sites. The construction of the access roads will result in disturbance areas up to approximately 15 m wide and will be sited in consultation with the landowner taking into consideration potential environmental effects.
- **Turbine Laydown Areas** – A site of approximately 1.5 acres will be constructed for the temporary storage of construction material. Following clearing and grubbing of any vegetation, the topsoil at the temporary laydown area will be removed and a layer of clean compacted crushed gravel will be imported, as needed. Following the construction phase, the gravel will be removed from the site or re-used, at the discretion of landowners. The stockpiled topsoil will then be redistributed throughout the temporary laydown area.
- **Crane Pads** – Temporary crane pads will be constructed at the same time as the access roads and will be located adjacent to the turbine locations. The crane pad dimensions will be approximately 0.2 acres.
- **Wind Turbine Foundations** – For typical foundations, the expected dimensions of the wind turbine foundation excavation are 0.2 acres with an excavated depth of up to 3 m. The foundation will be constructed of poured concrete and reinforced with steel rebar to provide strength. Each turbine tower is anticipated to have a concrete foundation up to 25 m wide and 2.5 m deep and an estimated 50 concrete truck loads will be required for each wind turbine foundation.
- **Construction Staging Areas** – Up to three potential temporary construction staging areas may be located within the PSA. The temporary construction staging areas will each be approximately 10 to 15 acres.
- **Wind Turbine Assembly and Installation** – Turbine components will arrive on-site using flatbed and other trucks and will be temporarily stored on-site in the immediate vicinity of the base prior to assembly. Following the erection of the wind turbine tower, the nacelle (which will be assembled prior to the delivery) will be lifted into place by a heavy-lift crane. The wind turbine rotor, which consists of three blades and the hub, will be lifted into place by a combination of two cranes.

- **Pad-Mounted Transformers** – A concrete transformer pad, approximately 6 m^2 in size, will be installed adjacent to each turbine at the same time as the turbine base installation.
- **Collector Lines** – Collector lines will carry electricity from each turbine to the collector substation. Similarly, fibre optics lines will be installed to allow for communications between the turbines and the substation. The collector lines may be a combination of underground lines on private lands and overhead and/or underground lines on public road allowances.

  All underground collector lines will be installed in a trench a minimum of 1.2 m deep and/or in conduits installed by directional drilling. Where two or more underground collector lines must be connected together, a junction box will be installed either below or aboveground. Overhead collector lines along public road allowances will require installation of wood, steel or concrete monopoles to a depth of approximately 5 to 6 m. Conductors will be strung from pole to pole in a manner similar to local electrical distribution circuits, and will be spaced approximately 45 to 60 m apart.
- **Construction of the Collector Substation** – The collector substation, including an acoustic barrier, will be constructed on an area of approximately 10 acres within a larger construction disturbance area that may include the operations and maintenance building.
- **Construction of the Operations and Maintenance Building** – The operations and maintenance building will be a structure constructed on a concrete foundation with a footprint of approximately 0.5 acres.
- **Construction of Permanent Meteorological Towers** – Permanent meteorological towers will be erected using cranes and secured with guy wires tied off to anchors or a monopole foundation. Access roads may be constructed to access meteorological tower locations and the site may be surrounded by a chain link fence.

3.2.2.1 Site Clean-up and Reclamation

Site clean-up will occur throughout the construction phase and site reclamation will occur after construction has been completed. Waste and debris generated during the construction activities will be collected by a licensed operator and disposed of at an approved facility. All reasonable efforts will be made to minimize waste generated and to recycle materials including returning packaging material to suppliers for re-use and/or recycling, where possible.

3.3 Temporary Uses of Land

Construction and installation activities will use temporary storage and laydown area adjacent to access roads, wind turbines, the collector substation, and the operations and maintenance building. Lands used for temporary storage and laydown areas will be converted from their current state to one appropriate for their use prior to construction.

3.3.1 Construction Schedule

Site work for the North Kent Wind 1 Project is expected to begin in 2016 and last for approximately 12 months. Construction and installation activities will generally occur at times of day when agricultural machinery would normally be in operation. **Table 3-1** presents the anticipated construction schedule and approximate order of construction activities for the proposed Project.

Table 3-1: Construction Schedule

Activity		Estimated Start Date	Estimated Duration
Surveying		"Prior to Construction" Summer / Fall 2015	2 to 3 months
Geotechnical Sampling		"Prior to Construction" Summer / Fall 2015	3 to 4 months
Delivery of Equipment		Summer / Fall / Winter 2016	As needed throughout construction phase
Site Preparations and Land Clearing		Summer / Fall 2016	2 to 3 months
Access Road Construction		Summer / Fall 2016	5 to 6 months
Construction of Laydown Area		Summer / Fall 2016	6 months
Turbine Site and Crane Pad Construction		Summer / Fall 2016	6 months
Turbine Foundations Construction		Summer / Fall 2016	8 months
Substation and Interconnect Station Construction		Summer / Fall / Winter 2016	12 months
Wind Turbine Assembly and Installation		Fall / Winter 2016	8 months
Electrical Collector System Construction	*Pad-Mounted Transformers*	Fall / Winter 2016	8 months
	Collector Lines	Fall / Winter 2016	8 months
Operations and Maintenance Building Construction		Fall / Winter 2016	8 months
Meteorological Towers and Microwave Tower Installation		Fall / Winter 2016	6 month
Turbine Testing and Commissioning		Winter / Spring 2017	4 months
Clean-up and Site Reclamation		Spring / Summer 2017	8 months

3.4 Materials / Waste Generation and Transportation

Materials and waste that will be brought to the Project during construction and installation will include equipment / component packaging, scraps, fuels and lubricants. These materials and waste products will be disposed of as follows:

- Packing frames for the wind turbine components and cabling spools will be returned to their respective vendors or will be recycled;
- Plastics from other containers and packaging will be disposed of through the local landfill and recycling facilities, where appropriate;
- Construction materials and scrap metals (e.g., copper wiring and conductor) will be removed and sold to a local scrap metal dealer;
- Oils, fuel and lubricants used in maintenance and operation of construction equipment will be stored temporarily in accepted containment systems and will subsequently be removed by a licensed contractor;
- Concrete wash out of empty cement trucks will adhere to applicable regulations;
- Sanitary sewage collected in portable toilets will be transported to an off-site facility by a licensed contractor responsible for waste removal; and
- Disposal and recycling of waste will occur throughout the construction and installation of the Project since there are no plans for long-term storage of waste in the PSA.

3.5 Description of Potential Environmental Effects and Proposed Mitigation Measures

The following section describes potential effects associated with the construction and installation of the Project. The potential effects described below are also presented in **Section 4** of the Construction Plan Report.

3.5.1 Archaeology

Stage 1 and 2 Archaeological Assessments were conducted to identify the presence of archaeological resources within the PSA and within the Project Location. The Stage 1 Archaeological Assessment consisted of an initial desktop archaeological study within 1 km of the Project Location which determined that there are known archaeological resources within the PSA as well as other properties which contain potential archaeological resources.

3.5.1.1 Potential Effects and Proposed Mitigation Measures

The Stage 2 archaeological assessment resulted in the identification of cultural material in 57 locations. Of these 57 locations:

- Pre-contact Aboriginal artifacts were found at 25 locations;
- A combination of pre-contact Aboriginal and historic Euro-Canadian artifacts were found at 7 locations; and
- Historic Euro-Canadian artifacts were found at the 25 locations.

Of the 57 archaeological locations within the PSA, ten locations were determined to exhibit cultural heritage value or interest and, as such, have been recommended for Stage 3 site-specific archaeological assessment. Only one location overlaps with the Project Location and may require Stage 3 archaeological assessment to support construction of this project. Mitigation efforts may include;

- To avoid the site, install a 20 m protective buffer zone (snow fence) for those sites located within the Project Location to clearly delineate their boundaries. If required, a licensed archaeologist must confirm and document the proper placing of the fencing;
- No ground alteration activities will take place inside of the 20 m protective zone. “No-go” instructions will be issued to all on-site personnel involved in day-to-day activities during construction;
- If construction activities are required within 70 m of a site, a 50 m construction monitoring buffering zone must be established surrounding the protective zone and a licensed archaeologist must be brought in to monitor construction activities within the monitoring area; and
- Where sites cannot be avoided, undertake a Stage 3 archaeological assessment (and Stage 4 where required) and submit the archaeological assessment report(s) to the Ontario Ministry of Tourism, Culture and Sport (MTCS) for review and approval. Following a Stage 4 assessment report, construction can proceed without any further documentation or monitoring.

Details on the recommendations for each archaeological site, as well as the rationale for the recommendations pertaining to each site, are outlined in **Section 5.0** of the Stage 2 Archaeological Assessment Report.

3.5.2 Cultural Heritage

A Heritage Impact Assessment was completed to identify heritage resources including cultural heritage and cultural heritage landscapes of cultural heritage value or interest.

3.5.2.1 Potential Effects and Proposed Mitigation Measures

The report identified 14 structures (11 houses and three barns) greater than 40 years of age within the Project Location. Eight of these structures were determined to have cultural heritage value or interest.

No anticipated impacts to the eight structures were identified for activities during the construction phase. Similarly, while one cemetery was determined to have some cultural heritage value or interest as a cultural heritage landscape, there are no adverse impacts anticipated to the cultural heritage landscape and no further work is recommended. For further information, refer to the Heritage Impact Assessment Report.

3.5.3 Natural Heritage

Natural heritage investigations were undertaken for this study to identify potential effects and mitigation measures related to the natural environment. The Natural Heritage investigations focused on potential effects during the installation and construction, operations, maintenance and decommissioning phases of the Project. For more information refer to the Natural Heritage Assessment reports.

3.5.3.1 Potential Effects and Proposed Mitigation Measures

The following provides examples of typical effects of the proposed Project on the natural environment that could be encountered during the site preparation and construction phase:

- Increased erosion and sedimentation into woodlands, wetlands and other natural features;
- Habitat degradation caused by sedimentation and erosion;
- Changes in soil moisture and compaction;
- Soil or water contamination;
- Disturbance and/or mortality to local wildlife;
- Sound disturbance / avoidance behaviour;
- Damage or removal (including accidental instances) of vegetation adjacent to the Project Location, road right-of-way;
- Accidental vegetation removal from significant woodlands;
- Habitat degradation caused by fugitive dust emissions and spills (i.e., oil, gasoline, grease, etc.);
- Accidental loss of habitat (damage to vegetation, including root zones);
- Accidental damage to bat maternity colony habitat;
- Increased species competition to plant species of conservation concern through introduction of invasive species;
- Reduced stream flow rate, increased water temperature, increased surface runoff and changes in surface water drainage;
- Reduced flood impacts and water quality in significant wetlands; and
- Reduced infiltration and groundwater discharge in significant wetlands.

The Natural Heritage Assessment Environmental Impact Study (EIS) Report describes the potential effects, mitigation measures, and net effects of constructing the Project on significant natural features. The findings of this report are summarized below.

- Develop and implement a sediment and erosion control plan;
- Re-vegetate cleared areas, and areas adjacent to wetlands as soon as reasonably possible;
- Store any stockpiled material more than 30 m from a wetland, woodland or water body;
- Minimize vehicle traffic on exposed soils during site clearing, grubbing, grading and top soil removal;
- Apply dust suppressants to unpaved areas when necessary to suppress dust, as determined by the environmental monitor. Application frequency will vary, but will be determined by site specific weather conditions, including recent precipitation, temperatures, and wind speeds;
- Schedule vegetation clearing and site grading outside of the core breeding period for migratory birds (May 1st – July 31st), wherever possible, in accordance with the *Migratory Birds Convention Act* (MBCA);
- Schedule all construction activities aside from vegetation clearing and site grading outside of the core breeding period for migratory birds (May 1st – July 31st), wherever possible, to limit disturbance to migratory birds or their nests;
- Schedule construction activities to occur outside of the most important period of staging waterfowl (March 1st – April 30th), whenever possible;
- Schedule construction and regular (non-critical) maintenance activities located within 30 m of significant butterfly species of conservation concern habitat to occur outside of the flight period for when this species is likely to be encountered (late June to early August), whenever possible;
- Schedule construction activities to occur outside of the critical bat maternity colony roosting period (June);
- Schedule construction activities to occur outside of the peak frog breeding season (April 15th-June 15th);
- If construction must occur during peak seasons have a biologist present to confirm birds, bats, butterflies, etc. will not be affected by construction activities;
- Where construction activity occurs within 30 m of a naturally vegetated feature (i.e. woodland, wetland, etc.), clearly delineate the construction area with protective fencing, such as silt fencing or other barrier, to avoid accidental damage to species to be retained;
- Clearly post construction speed limits;
- Minimize vehicle traffic on exposed soils during site clearing, grubbing, grading and top soil removal;
- Herbicides will not be used for Project related activities within significant woodlands during the construction, operation, and decommissioning phases;
- Restrict taking of groundwater and surface water during extreme low flow time periods;
- Document all trees (>10 centimetres diameter at breast height) to be removed and retained within the disturbance area limit, prior to construction;
- Prune damaged trees through implementation of proper arboricultural techniques;
- Maintain vegetative buffers around water bodies;
- Minimize grading activities to maintain existing drainage patterns as much as possible;
- Keep contact information for the MOECC Spills Action Centre in all vehicles as well as posted in a designated area on the construction site;
- Store hazardous materials in designated areas and dispose of waste material by authorized and approved off-site vendors; and
- Locate all maintenance activities, vehicle refuelling or washing, as well as the storage of chemical and construction equipment more than 30 m from significant features.

3.5.4 Surface and Groundwater

According to Section 1.1 of the O. Reg. 359/09, as amended, a water body is defined as a:

> *"A lake, permanent stream, intermittent stream and a seepage area but does not include:*
>
> *a) grassed waterways;*
> *b) temporary channels for surface drainage, such as furrows or shallow channels that can be tilled and driven through;*
> *c) rock chutes and spillways;*
> *d) roadside ditches that do not contain a permanent or intermittent stream;*
> *e) temporary ponded areas that are normally farmed;*
> *f) dugout ponds; and*
> *g) artificial bodies of water intended for storage, treatment or recirculation of runoff from animal yards, manure storage facilities and sites and outdoor confinement areas."*

Following the Records Review and Site Investigation, 62 water bodies were identified within 120 m of the Project Location. Of the 62 water bodies identified, 53 are overlapping with the Project Location while the remaining water bodies are located within 120 m of the Project Location. All of these water bodies are either permanent or intermittent watercourses, and are designated as warmwater fisheries or intermittent drainage features.

Potential effects to surface water resulting from locating a Project component close to water bodies are evaluated in the Water Assessment and Water Body Report. Similarly, the potential effects to groundwater are evaluated in the Hydrological Assessment and Effects Assessment Report (refer to **Appendix C** of the Design and Operations Report). The results of both reports are summarized below.

3.5.4.1 Potential Effects and Proposed Mitigation Measures

The following is a summary of the potential effects on Surface and Groundwater associated with the construction phase of the Project:

- Increased erosion, sedimentation, and turbidity resulting from removal of upland and riparian vegetation;
- Excess sediment suspended carried downstream by stream flow during the installation and removal of temporary structures;
- If blasting occurs, increased sedimentation resulting from dust and debris settling in water bodies;
- Increased surface runoff resulting from re-grading of land;
- Soil compaction as a result of heavy machinery and the stockpiling of heavy materials (i.e., soils) in the PSA;
- Decreased infiltration to key areas (e.g. areas of recharge) due to newly impervious cover leading to interruptions to the natural water cycle;
- Minor, isolated, short term dewatering of shallow groundwater from excavation areas;
- Completion of in-water work requiring in-stream dewatering and the construction of temporary dykes or cofferdams;
- Water contamination by oils, gasoline, grease and other materials;
- Contaminant spills due to the proximity of construction vehicles and machinery to water bodies; and
- Alteration to local drainage patterns, and risk of flooding due to stockpiles of construction related material.

The following mitigation measures are related to potential effects to surface and groundwater:

- Develop a Flood Response Plan to deal with on-site flooding as to mitigate any possible effects to the aquatic environment;
- Develop an Erosion and Sediment Control (ESC) Plan to minimize the potential for construction related sediment release into nearby watercourses;
- Confine construction equipment to designated, controlled vehicle access routes to minimize the potential for soil compaction;
- Remove construction debris from the site and stabilize it to prevent it from entering the nearby water bodies;
- Avoid construction during high volume rain events (20 millimetres in 24 hours) and significant snow melts / thaws, where possible, and resume only once soils have stabilized;
- Develop and implement an emergency frac-out response plan including steps to contain, monitor and clean-up in response to the event;
- Monitor water levels immediately before and during dewatering activities, to determine if dewatering activities are resulting in alteration of water levels within the water body;
- Schedule construction activities near water to take place within the low flow period in the late summer months where possible to avoid or minimize impacts;
- Operate construction equipment (i.e., cranes, back hoes etc.) in a manner that minimizes disturbance to the banks of the watercourse and stays outside of the watercourse and bank area;
- Implement riparian planting after construction as soon as weather permits to stabilize watercourse channel banks and encourage rapid re-vegetation of disturbed soils;
- Develop fish habitat compensation measures, as required, should serious harm to fish habitat be anticipated;
- During surface water dewatering, collect and relocate fish to a suitable location, preferably downstream and away from the construction area. This should be executed by a qualified fisheries biologist;
- Perform in-water work (if required) in the dry where possible. If this is not possible, short-term isolated dewatering will be required. Prior to dewatering, isolate the work area with the installation of a temporary water containment structure;
- Ensure machinery arrives on site in clean condition and is checked and maintained free of fluid leaks;
- Store fuel and other construction related materials securely away from any drainage features and locate construction staging areas 30 m away from any water body; and
- Develop a Spill Prevention and Response Plan (SPRP) prior to commencement of construction to provide a detailed response system to deal with events such as the release of petroleum, oils and lubricants or other hazardous liquids and chemicals. Keep a spill kit on site at all times and train on-site workers.

3.5.5 Air, Odour and Dust Emissions

3.5.5.1 Potential Effects and Proposed Mitigation Measures

Excavation activities, construction vehicle traffic, temporary generator operation and temporary exposure of soil stockpiles have the potential to generate short-term localized dust emissions that could result in nuisance effects.

Air emissions will be highest during land clearing and other activities that involve significant levels of material handling (e.g., aggregate laydown for access road construction and preparation for the installation of underground collector lines).

No emissions of odours are anticipated. Potential effects include:

- Dust and vehicle emissions, including greenhouse gases (GHGs); and
- Reduction in surface water quality as a result of dust emissions.

Proposed mitigation measures associated with potential effects from air, odour and dust emissions are described below.

- Implement a speed limit for construction equipment and trucks on access roads;
- Apply dust suppressants (e.g., water or environmental friendly dust suppressants) to unpaved areas at an environmental acceptable rate to minimize the release of dust;
- Re-vegetate cleared areas as soon as possible;
- Install wind fences, as required; and
- Limit unnecessary idling of vehicles.

3.5.6 Sound Emissions

3.5.6.1 Potential Effects and Proposed Mitigation Measures

The operation of heavy construction vehicles, potential blasting and temporary generators could also result in nuisance sound at nearby residents or businesses and disturbance to local wildlife. Like air emissions, sound levels will be highest during land clearing and other activities that involve significant levels of material handling (e.g., aggregate laydown for access road construction and preparation for the installation of underground collector lines). Potential effects include:

- Increased sound due to construction activity.

Proposed mitigation measures associated with potential sound effects are described below.

- Schedule activities to comply with noise by-laws, where possible;
- Ensure that construction equipment is frequently maintained and kept in good working condition;
- Ensure that noise emissions from construction equipment not exceed specified MOECC guidelines; and
- Implement construction speed limit on unpaved roads.

3.5.7 Local Interests, Land Use and Infrastructure

3.5.7.1 Potential Effects and Proposed Mitigation Measures

There will be a temporary loss of agricultural land during construction and installation activities as a result of the Project. Potential effects on local interests, land use and infrastructure, and local roads include:

- Reduction in available agricultural land;
- Damage to local infrastructure; and
- Increased congestion due to an increase in vehicular traffic and short-term lane closures on local roads during delivery of Project components.

Proposed mitigation measures associated with potential effects to local interests, land use and infrastructure are described below.

- Minimize length of access roads where possible;
- Consult with landowners to design access roads to minimize impacts to existing land use;
- Compensate landowners hosting Project infrastructure on their property as per land lease agreements;
- Adhere to best practices regarding the operation of construction equipment and delivery of construction materials;
- Undertake roads condition survey prior to construction and post-construction;
- Develop a traffic management plan for the construction phase and submit to the Municipality of Chatham-Kent prior to construction to determine if the roads and travel routes within the PSA are capable of accommodating the oversized vehicles and heavy loads prior to the delivery of Project components and equipment; and
- Notify the community in advance of construction delivery schedules and install signage to notify road users of construction activity, where appropriate.

3.5.8 Public Health and Safety

3.5.8.1 Potential Effects and Proposed Mitigation Measures

To minimize or avoid effects on public health and safety, the turbines are sited according to setback distances outlined in all pertinent Ontario regulations. Potential impacts include:

- Impacts on public health and safety from structural hazards, and/or ice throw; and
- Stray voltage effects to the public and livestock.

Proposed mitigation measures associated with public health and safety are described below.

- Adhere to setback requirements to limit likelihood of any impacts;
- Build and maintain the Project as prescribed by the Distribution System Code and the Electrical Safety Authority to minimize the risk of stray voltage;
- Ensure ongoing regular maintenance and monitoring of turbines; and
- Ensure that all electrical design conforms and complies with relevant electrical safety standards.

3.5.9 Other Resources

A search for landfills, aggregate resources, forest resources and petroleum resources was undertaken based upon data from the municipality, MOECC and Ontario Ministry of Natural Resources and Forestry (MNRF). Below are the details of these searches.

3.5.9.1 Landfills

There are no landfills within the PSA with the closest active landfill being approximately 21 km away. Therefore, no effects on landfills are anticipated.

3.5.9.2 Aggregate Resources

There are no authorized aggregate resources within the PSA; therefore, no effects on aggregate resources are anticipated. It is planned that local sources will be used to the greatest extent possible.

3.5.9.3 Forest Resources

There are no Sustainable Forest Licences (SFL)s within the PSA. Therefore, no effects on forest resources are anticipated.

3.5.9.4 Petroleum Resources

There are several active and non-active petroleum wells located throughout the PSA. Pipelines within in the municipality pass through the PSA in a number of locations, including:

- Four pipelines run northeast to southwest generally from Oldfield Line/ Centre Side Road to Bear Line;
- A pipeline runs east-west from Baldoon Road to Centre Side Road; and
- Two pipelines meander throughout the southern extent of the PSA, the first generally north-south near Baldoon Road and the second generally east-west near St. Andrews Line/ Eberts Line.

An assessment of petroleum resources is being conducted to determine the effects of the Project on these resources. The results of this assessment will be documented in a Petroleum Resources Report.

3.5.10 Areas Protected under Provincial Plans and Policies

The REA requires a determination as to whether the Project is being proposed in any of the following protected or plan areas:

- Protected Countryside or Natural Heritage Systems in the Greenbelt Plan;
- Oak Ridges Moraine Conservation Plan Areas;
- Niagara Escarpment Plan Area; or
- Lake Simcoe Watershed Plan Area.

The North Kent Wind 1 Project is not proposed in an area within the jurisdiction of the plans noted above. As such, there will be no effects on these areas as a result of the Project.

3.6 Summary and Conclusions

The conclusion of the Construction Plan Report is that this project can be constructed and installed without any significant adverse net effects.

4. Design and Operations Report Summary

The following summarizes the Design and Operation Report. The report describes the location, operation and maintenance for the wind turbines, as well as the potential environmental effects and health and safety concerns.

4.1 Site Plan

North Kent Wind 1 considered a variety of factors when siting wind turbines and other Project infrastructure as part of the planning stage for the Project. Mapping produced by the Project team was used to ensure all regulatory setbacks were adhered to. The mapping included natural environment (terrestrial and aquatic), geological, archaeological, socio-economic and land use factors. As the Project evolved, the following considerations influenced the design of the Project layout:

- Meteorological conditions and wind resources;
- Lands within in the PSA and under lease agreement with North Kent Wind 1;
- Landowner preferences and minimizing changes to existing land use and function;
- Comments and suggestions obtained through public, municipal, Aboriginal and First Nation communities and other stakeholder consultation;
- Site access;
- Minimizing the length of collector lines and access roads;
- Results from archaeological, built heritage and sound assessments;
- Proximity and predicted effects to significant natural heritage features;
- Minimizing watercourse crossings by access roads and collector lines;
- Determining a suitable point of interconnection (POI); and
- Potential electricity production of individual turbines within the Project.

Investigation Areas have been identified surrounding various Project components, which are depicted on **Figure 2-1** (pg. 5) as the “Project Location / Investigation Area”. The Project Location figure identifies the location of wind turbines, access roads, electrical collector system, collector substation options, operations and maintenance building and interconnection station. The figure also illustrates areas where temporary disturbance may occur as a result of construction of the Project, including crane pads, wind turbine laydown areas and construction staging areas.

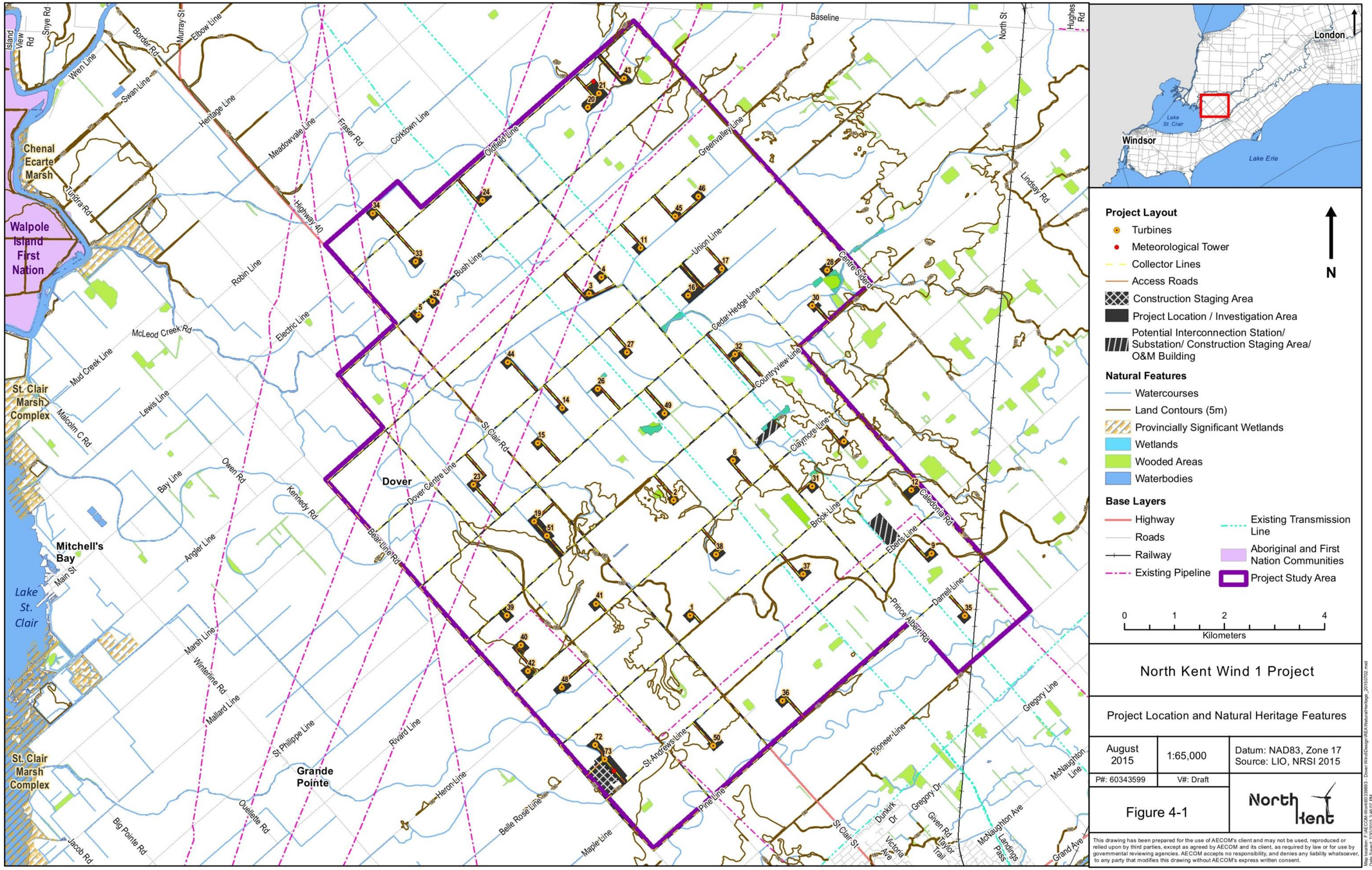
4.2 Natural Heritage Features and Water Bodies

Natural heritage features and location of water bodies within 120 m of the Project Location are shown on **Figure 4-1**. Detailed information on natural heritage features can be found in the Site Investigations Report which was submitted to the MNRF for review and approval. Additional information on water bodies can be found in the Water Body Report.

4.3 Project Operational Plan

The proposed Project will be in operation for 20 years, and is anticipated to require up to 15 trained technical and administrative staff, including turbine maintenance technicians and a site supervisor. During the operation of the proposed Project, on-site activities will be limited primarily to planned and un-planned maintenance of the Project components, natural heritage field monitoring, and field monitoring for evaluation of the Project.

Figure 4-1: Project Location and Natural Heritage Features



North Kent Wind 1 Project

Project Location and Natural Heritage Features

August 2015	1:65,000	Datum: NAD83, Zone 17 Source: LIO, NRSI 2015
P#: 60343599	V#: Draft	

Figure 4-1

North Kent

Map location: P:\AECOM Work\60343599.3 - Dover Wind\Design\REA\Natural Heritage_20150702.mxd
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4.4 Meteorological Data

Monitoring of meteorological data at an operations centre will allow staff to adapt wind turbine operation during climatic events that may include high winds and lightning strikes. Details of how the Siemens SWT-3.2-113 wind turbine generators are able to respond to meteorological conditions are described in the sections below.

4.4.1 Extreme Weather Conditions

The Siemens SWT-3.2-113 wind turbine generators are designed to operate above wind speeds of 3 m/s. However, at wind speeds of greater than 32 m/s, the wind turbine blades will feather out of the wind and the yaw system on the nacelle will rotate the wind turbine out of the prevailing wind direction. The wind turbine generators are also equipped with a secondary safety braking mechanism. The secondary braking mechanism will activate in the unlikely event that there are operational difficulties with the wind turbine blade pitching and yaw controls.

4.4.2 Lightning Strikes

The wind turbine generators are equipped with lightning safeguards which protect the wind turbines from the tip of the blades to the foundation. The safeguards enable the lightning current to by-pass all vital wind turbine components within the blade, nacelle and tower, limiting the potential for damage. An additional safeguard installed in each wind turbine includes a shielding system around the control units and processors that are located within the nacelle.

4.5 Description of Potential Environmental Effects and Proposed Mitigation Measures

The following section describes potential effects associated with the operations of the Project. The potential effects described below are also presented in **Section 6** of the Design and Operations Report.

4.5.1 Cultural Heritage (Archaeological and Heritage Resources, Protected Properties)

The Stage 2 archaeological assessment resulted in the identification of 57 locations producing cultural material. Ten of the 57 archaeological locations identified within the study area were determined to exhibit cultural heritage value or interest and, as such, are recommended for Stage 3 site specific archaeological assessment. Only one location overlaps with the Project Location and may require Stage 3 archaeological assessment to support construction of this project.

No effects to archaeological resources are anticipated as a result of the operational phase of the Project, as all resources will either be avoided or evaluated as part of a Stage 3 and Stage 4 archaeological assessment prior to construction.

Additionally, no effects to the eight structures with cultural heritage value or interest are anticipated, as the Project Location was designed to avoid these features. Therefore, no mitigation measures or monitoring are proposed.

4.5.2 Natural Heritage

The following provides a summary of potential effects and the proposed mitigation measures related to wetlands, woodlands and wildlife habitat that are "significant[3]" or have been treated as significant. For more information refer to the Natural Heritage Assessment reports.

3. *"Significance" (relating to wetlands, woodlands and wildlife habitat) is determined based on the results of environmental field studies according to criteria set out by the MNRF.*

4.5.2.1 Potential Effects and Proposed Mitigation Measures

Potential effects during the operational phase may include:

- Accidental vegetation removal;
- Sedimentation and erosion;
- Spills (i.e., oil, gasoline, grease, etc.) during operations ;
- Increased vegetation species competition through introduction of invasive vegetation species;
- Avoidance of habitat by wildlife during operations phase; and
- Direct mortalities through collisions with operational turbines.

Proposed mitigation measures associated with potential effects to natural heritage resources are included below.

- Herbicides will not be used for Project related activities within significant woodlands during the operational phase;
- Store any stockpiled material more than 30 m from a significant wetland during the construction, operation, and decommissioning phases;
- Develop a SPRP and train staff on appropriate procedures;
- Keep emergency spill kits on site;
- Keep contact information for the MOECC Spills Action Centre in a designated area on the site;
- Dispose of waste material by authorized and approved off-site vendors;
- Store hazardous materials in designated areas;
- Locate all maintenance activities, vehicle refuelling or washing, as well as storage of chemicals and equipment more than 30 m from significant habitats;
- Regularly clean vehicles and equipment;
- Vehicle use will occur primarily on access roads and in agricultural habitats, where invasive and non-native vegetation species are less likely to be concentrated;
- Implement on site speed limit;
- Schedule regular maintenance activities within 30 m of significant natural features to occur during daylight hours to avoid excessive sound and/or light disturbances to wildlife, wherever possible;
- If regular maintenance activities within 30 m of significant natural features must occur outside of daylight hours, spotlights will be directed downward and/or away from the natural feature to limit potential light disturbance;
- Schedule construction and regular (non-critical) maintenance activities to occur outside of the critical bat maternity colony roosting period (June), unless specifically required in accordance with manufacturer specifications;
- Avoid scheduling regular (non-critical) maintenance activities during the peak colonially-nesting bird breeding season (April-August), wherever possible;
- Avoid scheduling regular (non-critical) maintenance activities during the peak waterfowl nesting season (April-June), wherever possible;
- Schedule regular (non-critical) maintenance activities to occur outside of the peak marsh bird breeding season (mid-May to early July), wherever possible;

- Schedule regular (non-critical) maintenance activities located within 30 m of significant bird species of conservation concern habitat to occur outside of the peak breeding bird season (May 1st – July 31st), whenever possible; and
- If regular maintenance must occur during peak nesting / breeding seasons, a biologist will be present to confirm birds / bats will not be impacted by maintenance activities.

4.5.3 Surface Water and Groundwater

Potential effects to surface water resulting from locating a Project component close to water bodies are evaluated and described in more detail in the Water Body Assessment and Water Body Report. Similarly, the potential effects to groundwater are evaluated in the Hydrogeological Assessment and Effects Assessment Report (**Appendix C** of the Design and Operations report). The results of both reports are summarized below.

4.5.4 Water Bodies

4.5.4.1 Potential Effects and Proposed Mitigation Measures

During operation of the Project, impacts to water bodies will be limited and associated with increased traffic access within the PSA as well as ongoing maintenance activities. This includes:

- Increased erosion, sedimentation and turbidity resulting from removal of upland and riparian vegetation during maintenance activities;
- Water contamination by oils, gasoline and grease, which could result in a fish kill or serious harm to fish habitat; and
- Increase in surface runoff resulting from clearing of vegetation during maintenance activities.

Proposed mitigation measures associated with potential effects to surface water are summarized below.

- Develop an ESC plan that will minimize the potential for construction related sediment release into nearby watercourses, and prepare sediment and erosion control plan condition reports as part of the monitoring and maintenance plan;
- Store fuel and other maintenance related materials securely away from any drainage features;
- Implement a SPRP to provide a detailed response system to deal with events such as the release of petroleum, oils and lubricants or other hazardous liquids and chemicals;
- Keep a spill kit on site at all times and train on-site workers in the use of this kit and the SPRP; and
- Restrict vehicles to designated controlled access routes to minimize the potential for soil compaction.

4.5.5 Groundwater

4.5.5.1 Potential Effects and Proposed Mitigation Measures

Potential effects related to groundwater include:

- Contamination of groundwater resources due to accidental spills or releases of contaminants (i.e., fuel, lubricating oils and other fluids) during the refuelling, operation or maintenance of project equipment; and
- Reduction in groundwater quantity from an increase in impervious area created by turbine foundations and access roads resulting in reduced infiltration to unconfined aquifers.

Proposed mitigation measures associated with potential effects to groundwater are described below.

- Implement the SPRP and train staff on procedures and protocols;
- Refuel Project equipment and vehicles on spill collection pads and/or in designated areas;
- Dispose of any waste material by authorized and approved off-site vendors;
- Direct runoff from the constructed impervious surfaces to ground surface to prevent any decrease in infiltration and recharge; and
- Minimize equipment traffic on exposed soils to avoid compaction and a reduction of water infiltration.

Potential adverse effects on local groundwater users (landowners) and natural ecological features are not expected due to the limited volume of water (less than 4,500 litres per day) that will be used at the operations and maintenance building.

4.5.6 Air, Odour and Dust

During the operation of the proposed Project, maintenance activities have the potential to cause infrequent, localized and short-term dust and vehicle emissions. These emissions are expected to be considerably lower in magnitude than during construction, installation and decommissioning activities.

No emissions of odours are anticipated during the operations phase of the Project.

4.5.6.1 Potential Effects and Proposed Mitigation Measures

Potential effects related to air, odour and dust include:

- Dust and vehicle emissions, including GHGs.

Proposed mitigation measures associated with potential effects to air and dust are summarized below.

- Direct project staff to limit the idling of engines where possible;
- Implement and enforce speed limits for Project equipment and trucks;
- Apply dust suppressants to unpaved areas, when necessary, to suppress dust. Application frequency will vary, but will be determined by site-specific weather conditions, including recent precipitation, temperatures and wind speeds;
- Properly maintain all vehicles; and
- Direct project staff to limit the idling of engines, where possible.

4.5.7 Sound

The operation of wind turbines and the collector substation will generate sound that has the potential to affect local residents. A Noise Impact Assessment Report was prepared to confirm the sound levels associated with operating the turbines and the substation; the study and its results are presented in **Appendix B** of the Design and Operations Report.

Sound modelling conducted for the Noise Impact Assessment Report determined that the Project layout is in compliance with Provincial requirements. As part of the Noise Impact Assessment Report the combined sound effects of the Project and existing wind turbines within 5 kilometres (km) were modelled. Existing turbines within 5 km of the Project include:

- Lake St. Clair East Wind Farm; and
- Marsh Line Wind Farm.

4.5.7.1 Potential Effects and Proposed Mitigation Measures

Potential effects related to sound include:

- Increased sound levels experienced by people living near turbines or the collector substation; and

Proposed mitigation measures associated with potential effects to sound include:

- Monitor and assess the need for repair of equipment, as required.

4.5.8 Local Interests, Land Use and Infrastructure

Effects on agricultural use, adjacent businesses and properties, roads, the local airport and conservation areas were considered during the REA.

4.5.8.1 Potential Effects and Proposed Mitigation Measures

Agricultural Use

There are no impacts to agricultural land during operations as the facility design supports farming practices occurring directly adjacent to the Project Location.

Adjacent Businesses and Properties

Twenty-eight (28) turbines are located closer than 99.5 m (which is the distance equal to or less than the hub height of the turbine) from an adjacent property line, which may result in adverse impacts to damage to field crops as a result of turbine failure. However, this potential impact already exists at a 99.5 m setback and is not increased by a setback reduction.

Local Roads and Traffic

During the operation of the Project, the road capacity and local traffic could be affected if maintenance activities require the replacement of a major wind turbine generator component (e.g., rotor), since specialized equipment (e.g., cranes) may be required. The delivery of specialized equipment could result in a temporary increase in slower moving traffic on local roads. Any maintenance activities adjacent to or in road easements could also result in temporary disruptions to the flow of traffic on some local roads.

Local Airport

The Chatham-Kent Municipal Airport is located approximately 19.5 km away from the southern extent of the PSA. Consultation with the Chatham-Kent Municipal Airport is ongoing and will occur throughout the planning and development process of the Project.

Conservation Areas

The Municipality of Chatham-Kent is situated within two Conservation Authority regions: the Lower Thames Valley Conservation Authority (LTVCA) and the St. Clair Region Conservation Authority (SCRCA). No conservation areas are located within the PSA.

The following mitigation measures were considered for potential effects related to local interests, land use and infrastructure:

- Obtain appropriate road occupancy and traffic permits from provincial and municipal agencies prior to undertaking maintenance activities, if required; and
- Notify the community about major Project maintenance activities.

4.6 Emergency Response and Communication Plan

The purpose of the Emergency Response and Communication Plan is to propose how ongoing communication throughout the construction, operation and decommissioning phases of the Project will occur to ensure that members of the community, Aboriginal communities, local municipalities and other stakeholders are informed about Project activities, in addition to any emergencies in the unlikely event that one should occur.

The following sections outline North Kent Wind 1's communication commitments in relation to emergency response, ongoing communication and complaint management.

4.7 Emergency Response

Throughout the construction, operation and decommissioning phases of the Project, an up-to-date Emergency Response and Communication Plan (ERCP) will be maintained at the operations and maintenance building. The ERCP will contain current contact information for emergency responders including local police and fire departments and will outline communication protocols should an emergency situation should arise.

Depending on the nature of the incident, the community will be notified at the discretion of North Kent Wind 1 employees trained on the ERCP's procedures. The ERCP will be stored on-site and updated as required.

4.8 Non-Emergency Communications

Regulatory agencies, staff and Council from the Municipality of Chatham-Kent, aboriginal communities and local residents may be notified through mailings of updates on Project activities and changes to procedures. Examples of non-emergency communications that may be communicated through mailings include:

- Commencement of construction and installation activities for the Project;
- Maintenance activities that are considered outside of routine maintenance (e.g., wind turbine generator disassembly or replacement of collector lines);
- Commencement of decommissioning activities for the Project; and
- Any additional information about the Project that North Kent Wind 1 considers of interest to regulatory agencies, staff and Council from the Municipality of Chatham-Kent, aboriginal communities or local residents.

4.9 Complaints Resolution Process

North Kent Wind 1 acknowledges that some members of the community may have concerns regarding construction activities and long-term wind project operations. To address concerns in a collaborative manner, North Kent Wind 1 will follow the complaints resolution process outlined in **Section 5.3** in the Design and Operations Report. The Construction Manager will be responsible for the implementation of the complaints resolution process during the construction phase and the Operations Manager will take on this responsibility during the operations phase.

4.10 Summary and Conclusions

The Design and Operations Report concludes that this Project can be operated without any significant adverse net effects. Post-construction monitoring related to effects on wildlife, including birds and bats, will be undertaken to confirm this conclusion.

5. Decommissioning Plan Report Summary

5.1 Decommissioning Plan Report Summary

Following the anticipated 20 year operational phase of the Project, all components are expected to be decommissioned. The decommissioning process will involve removing the wind turbine, including the tower, generator, auxiliary equipment, above ground collector lines / poles and fixtures as well as restoring the property to conditions similar to what existed prior to construction of the Project. If it is agreed upon with the landowner, access roads and underground collector lines may be left in place. Foundations shall be removed to approximately 1 m below grade and replaced with topsoil. Within 16 months of initiating the decommissioning process, North Kent Wind 1 will have removed project components from the leased land. As with construction, a manager responsible for safety will be present on site for the duration of the work.

This summary describes the decommissioning process outlined in the Decommissioning Plan Report. These plans are explained in more detail within the full Decommissioning Plan Report.

5.2 Decommissioning During Construction

Although it is unlikely that the Project would be decommissioned before the operations phase, should this occur, the procedures for dismantling the Project would depend upon the state of construction. Dismantling would follow the steps outlined in **Section 2.2.1** of .the Decommissioning Plan Report. Mitigation measures as described in the Environmental Effects Management Plan (part of the Design and Operations Report) would also be implemented.

Once construction and installation activities cease, excavated soil will be replaced, if necessary, to restore the soil horizons and land uses to a state similar to pre-existing site conditions. Areas with disturbed soils or areas that are re-graded with topsoil will be re-seeded with an annual seed mix to help temporarily stabilize the soil and prevent erosion. Any disturbed field drains or tiling that was present at the commencement of construction will be repaired or replaced to restore field drainage and return the area to conditions similar to the previous land use (typically agriculture). The condition of the disturbed areas will be discussed with the landowner to address any potential concerns.

The mitigation strategies used during decommissioning will be the same as those used during construction and installation activities. Restoration of the Project would follow the procedures outlined in the Construction Plan Report for post-construction activities of the Project (see Construction Plan Report).

5.3 Decommissioning After Ceasing Operations

Many of the activities completed during decommissioning are similar to those completed during construction and installation activities, but would likely occur in the reverse sequence. Preliminary decommissioning activities will include equipment delivery, topsoil removal, and the creation of temporary staging and laydown areas (including field offices). For a detailed description of these activities, refer to the Construction Plan Report.

A summary of the general timing of Project decommissioning is provided in **Table 5-1**.

5.3.1 Project Component Dismantling and Removal

At the end of the Project's operational life, all components will be shut down and disconnected. Temporary staging and laydown areas will be constructed and all decommissioning activities will be carried out within these designated areas. During decommissioning activities, erosion and sedimentation control measures will be implemented, as required.

Table 5-1: Timing of Project Decommissioning Activities

	Project Phase and Activity	Duration*
Decommissioning Planning and Permitting	Planning and permitting	12 months
Aboveground Structure Decommissioning	Turbines including dismantling and removal	5 months
	Overhead collector system including dismantling and removal	2 months
	Collector substation including dismantling and removal	2 months
	Operations and maintenance building, including dismantling and removal	2 months
	Access roads including road bed removal and land reclamation	3 months
	Meteorological and microwave towers including dismantling and removal	1 month
	Watercourse crossings including removal and aquatic and riparian habitat reclamation	1 month
	Pad-mounted transformer including dismantling and removal	2 months
Belowground Structure Decommissioning	Turbine foundation removal (including concrete removal to approximately 1 m), transport and disposal of materials to suitable facility	4 months
	Underground collector lines, which will be terminated at connection points and removed to 1.2 m below surface	2 months

**Note: Some decommissioning activities will be completed concurrently and the outlined durations are approximate*

5.3.1.1 Aboveground and Underground Structure Decommissioning

Table 5-2 summarizes the activities that will be completed during decommissioning of aboveground and underground structures. A more detailed description of these activities is included in the Decommissioning Plan Report.

Table 5-2: Project Decommissioning Activities for Aboveground and Underground Structures

Structure	Description
Wind Turbines	• A crane pad and wind turbine laydown area will be constructed at each turbine location to accommodate the dismantling of the wind turbine generators. • Wind turbines will be dismantled into their component parts, including the hub, nacelle, blades, tower and pad-mounted transformers. • Before directing components to disposal or recycling facilities, efforts will be made to re-use equipment and salvage parts for existing wind farms with similar turbine technology. • Turbine components will be delivered to the appropriate landfill, scrap metal yard or industrial recycling areas by large truck and trailer combinations, requiring approximately ten loads per turbine. The total number of loads may decrease substantially if the materials are considered to be scrap and can be reduced to a smaller than original size (e.g., cutting turbine blades into pieces).
Wind Turbine Foundations	• Foundations, including any rebar or steel anchor bolts, will be removed to a depth of approximately 1 m below grade, so that pre-existing land uses can continue following soil restoration. • Excavated foundation areas will be backfilled with subsoil and topsoil to match the original soil layers and elevation, and the area will be graded and contoured.
Pad-mounted Transformers	• Pad-mounted transformers will be detached from the base of each wind turbine generator and foundation by a small crane. • If possible, the pad-mounted transformers from the Project will be recycled for future use.
Wind Turbine Access Roads	• Access roads will be widened up to 15 m to accommodate cranes and transportation equipment to remove wind turbine components. • Following decommissioning of select Project components, the granular base material and crushed gravel used to construct access roads will be removed from the site, by dump truck and delivered to an appropriate disposal facility, unless otherwise agreed upon with the landowner. • Culverts installed during construction and installation activities will also be removed unless requested by landowners. Any removal of culverts will be completed in consultation with necessary regulatory agencies, as required.

Table 5-2: Project Decommissioning Activities for Aboveground and Underground Structures

Structure	Description
Overhead and Underground Collector Lines	• Overhead cables and transmission poles that are not shared with Hydro One Network Inc. (Hydro One) or other utilities will be removed. • At the connection points, where the underground collector lines come to the surface, the collector lines will be cut and excavated to a depth of approximately 1.2 m below grade.
Collector Substation	• The collector substation, control building, electrical components and associated infrastructure will be dismantled and decommissioned in accordance with provincial regulatory standards at the time of decommissioning.
Operations and Maintenance Building	• An appropriate re-use or disposal of the building will be determined at time of decommissioning through consultation with the landowner.
Meteorological Towers and Microwave Tower	• The proposed meteorological towers may be left in place to be used by the Municipality of Chatham-Kent or local aviation groups, if agreed upon by North Kent Wind 1. If it is determined that the meteorological towers and/or the microwave tower need to be removed, they will be dismantled using a crane and the metal components will be recycled. Once removed, the meteorological and microwave towers will be dismantled and components will be re-used, recycled or disposed of in the appropriate waste facilities. The concrete foundations will be removed completely or to a depth of approximately 1 m to allow pre-existing land uses to continue.

5.3.2 Management of Waste and Excess Materials

5.3.2.1 Hazardous Materials

Machinery used to dismantle and remove Project components will require the use of oils, fuels and lubricants. In addition, waste lubricants will be recovered during the dismantling of Project components, including the collector substation, wind turbine generators and operations and maintenance building. These materials will be disposed of through conventional waste-oil and hazardous waste disposal streams in a manner outlined by regulatory agencies, if required, at the time of decommissioning.

Overhead collector lines, if required, for the Project may be constructed on a wooden, steel or concrete monopole structure. If wooden monopole structures are used, these poles typically use a chemical-treated exterior. North Kent Wind 1 will discuss the recycling of wooden poles with a licensed facility, which would likely involve stripping the chemically-treated exterior, disposing of this chemically-infused wood in a landfill, and re-milling the remaining wood core for alternative end uses.

5.3.2.2 Non-hazardous Materials

The major components of the wind turbines (tower, nacelle and blades) are modular items that allow for ease of construction and disassembly of the wind turbines during replacement or decommissioning. Dismantled wind turbines have a high salvage value due to the steel and copper components. These components are easily recyclable and there is a ready market for scrap metals. Transformers typically have a lifespan beyond 20 years so these items could be refurbished and sold for re-use.

5.4 Summary and Conclusions

The Decommissioning Plan Report concludes that this Project can be decommissioned without any significant adverse net effects.

6. Wind Turbine Specifications Report Summary

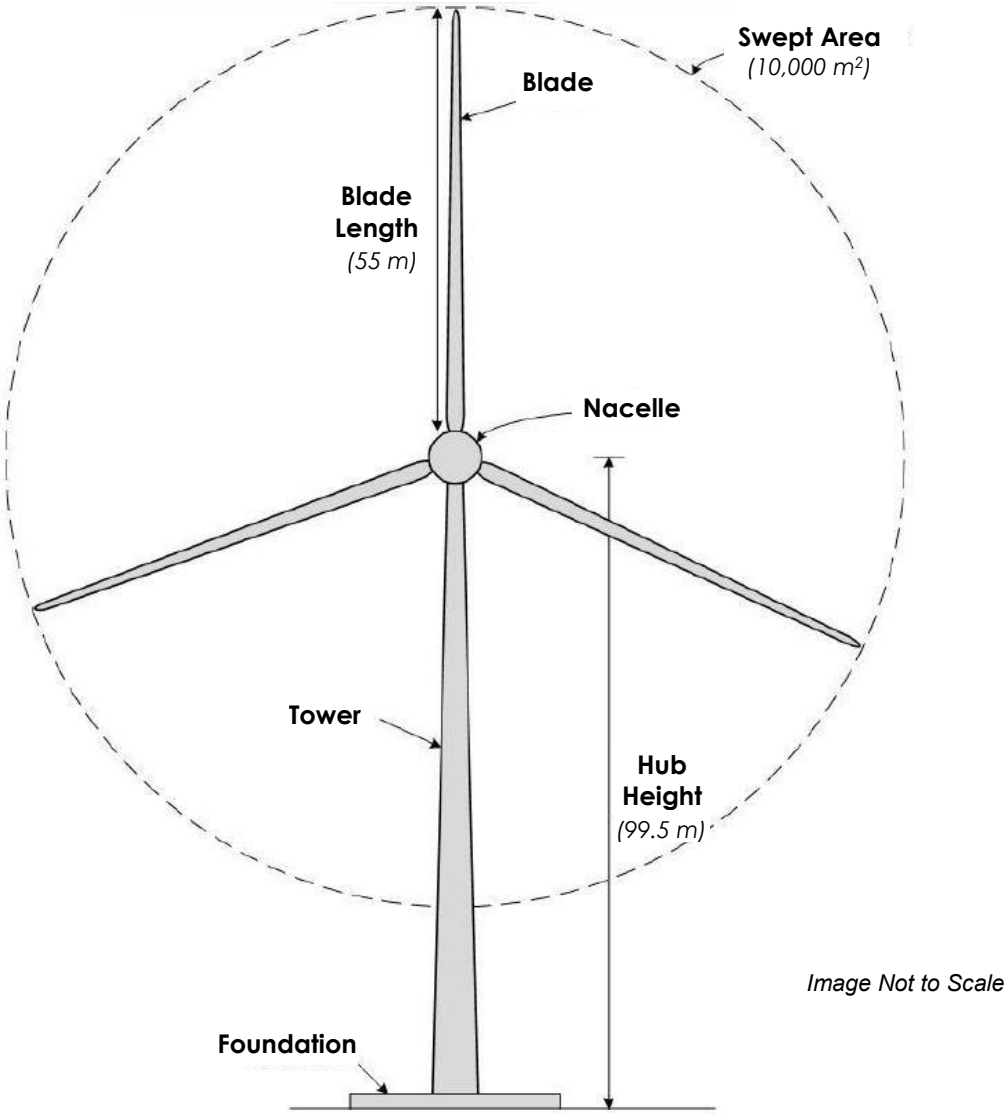
The following summarizes the Wind Turbine Specifications Report. The report describes the wind turbine technology proposed for use at the Project in detail.

6.1 Proposed Wind Turbines

The Project will use wind to generate electricity through a series of commercial wind turbines. **Figure 6-1** shows the proposed wind turbine technology for this Project: a Siemens SWT-3.2-113 turbine

With a total nameplate capacity of 100 MW, up to 36 turbines will be constructed. However, up to 50 turbines and associated infrastructure are being assessed and permitted for the Project.

Figure 6-1 Basic Wind Turbine Generator Specifications



6.2 Turbine Components

The Siemens SWT-3.2-113 wind turbine is made up of four main components: the foundation, tower, nacelle (hub) and blades. **Table 6-1** below outlines the components of the Siemens SWT-3.2-113 wind turbine.

Table 6-1: Summary of Wind Turbine Components

Wind Turbine Generators	*Make and Model:*	Siemens SWT-3.2-113
	Total Number Permitted:	50 turbines
	Approximate Number Constructed:	36 turbines
	Nominal Turbine Power:	2.772 to 3.2 MW
	Number of Blades:	3
	Blade Length:	55 metres (m)
	Hub Height:	99.5 m
	Rotor Diameter:	113 m
	Cut-in Wind Speed:	3 to 5 metres per second (m/s)
	Cut-out Wind Speed:	32 m/s
	Rated Wind Speed:	12 to 13 m/s
	Swept Area:	10,000 metres squared (m^2)
	Foundation Dimensions:	25 m diameter

6.2.1 Turbine Blades

The three 55 m blades of the Siemens SWT-3.2-113 wind turbine will generate electricity between the wind speeds of 3 to 5 m/s (i.e., the cut-in wind speed) and 32 m/s (i.e., the cut-out wind speed) and will reach its nameplate capacity of 3.2 MW when wind speeds reach approximately 12 to 13 m/s.

6.2.2 Lightning Protection

The wind turbine is equipped with lightning protection to protect from the effects of direct and nearby strikes. Refer to **Appendix B** of the Wind Turbine Specification Report for more information on lightning protection and other technical specifications.

6.2.3 Nacelle

The nacelle is located at the top of the tower and includes most of the equipment used to convert wind energy into electricity. The nacelle also acts as a sound enclosure to reduce sound emissions. The nacelle is climate controlled and is constructed from steel and fibreglass to protect against the elements. The nacelle will be mounted on a 99.5 m high tower which contains an internal personnel hoists and lifts for maintenance access.

6.2.4 Tower

The turbine tower is a 99.5 m high tubular steel tower and is approximately as tall as a 30 story building. A prefabricated power module is located at the bottom of the tower and provides the platform for the power converter. The turbine pad-mounted transformer will be located beside the tower base.

6.2.5 Foundation

The turbine will be constructed on a foundation that is approximately 25 m in diameter. The foundation consists of poured concrete and steel rebar to provide added strength.

7. Archaeological Assessment Report Summary

This section summarizes the Archaeological Assessment Reports prepared for the Project. A Stage 1 archaeological background study was conducted to determine the archaeological potential of the North Kent Wind 1 PSA. The Ontario Ministry of Tourism, Culture and Sport (MTCS) recommended that a Stage 2 archaeological assessment be completed for all areas that may be impacted by the Project.

The Stage 2 archaeological assessment of the Project Location was conducted over 44 days between the spring and summer of 2015. This assessment examined portions of the study area that are proposed to be impacted by the project, including turbine locations, access roads, substations, collector lines, operations and maintenance buildings, meteorological and microwave towers, and temporary staging areas. In some cases, entire parcels of land under option were also assessed. The areas assessed cumulatively represented approximately 675 hectares of land.

Locations that exhibit cultural heritage value or interest have been recommended for Stage 3 site-specific archaeological assessment. Details on the recommendations for each archaeological site, as well as the rationale for the recommendations pertaining to each site, are outlined in **Section 5.0** of the Stage 2 Archaeological Assessment Report.

7.1 Archaeological Potential

The following factors were examined to determine the potential for archaeological resources in the PSA:

- Topography, soil conditions and proximity to water sources;
- Known sites already in the area; and
- Historical Documentation.

The archaeological potential for pre-contact Aboriginal sites within the study area is deemed to be high. This determination was based on the presence of pre-contact Aboriginal sites in the vicinity of the study area, as well as the presence of natural potable water sources running through the assessment area.

The archaeological potential for Euro-Canadian sites within the study area was also deemed to be high based on documentation indicating occupation in the vicinity from the late 18th century to the early 19th century onwards, as well as the presence of historic transportation routes and properties within the study area that have been listed on a municipal heritage register. As a result, Stage 2 archaeological assessment was recommended for all areas that will be impacted by the proposed project.

7.1.1 Previously Known Archaeological Sites

A search of the Ontario Archaeological Sites Database (OASD) indicated that there are fifteen registered archaeological sites (2 pre-contact Aboriginal, 3 historic Euro-Canadian, 10 unknown) located within a 1 km radius of the study area. Nine of the registered archaeological sites (2 pre-contact Aboriginal, 7 unknown) are situated within the present study area.

7.2 Summary and Conclusions

In summary, the Stage 2 archaeological assessment resulted in the identification of 57 locations producing cultural material. Ten of the 57 archaeological locations identified within the study area were determined to exhibit cultural heritage value or interest and, as such, are recommended for Stage 3 site specific archaeological assessment. For further details on the recommendations for each archaeological site, as well as the rationale for the recommendation pertaining to each site, please refer to **Section 5.0** of the Stage 2 Archaeological Assessment report.

8. Heritage Impact Assessment Report Summary

This section summarizes the Heritage Impact Assessment (HIA) Report which determines whether the Project Location contains any built heritage resources or cultural heritage landscapes of significant cultural heritage value or interest. Research regarding the land use history of the study area was performed using primary and secondary sources and historic mapping. A field assessment was performed on May 15, 2015 in order to create an inventory of all known and potential heritage resources and cultural heritage landscapes with the Project Location.

8.1 Early Settlement and Crown Surveys

The PSA is located within the boundaries of the former Townships of Dover and Chatham, in the historical County of Kent. It is situated within an area of Ontario that exhibits evidence of an extended period of human settlement dating back at least 11,000 years. The nature of this settlement as it pertains to the pre-contact Aboriginal period has been well documented in the Stage 1 Archaeological Assessment.

Aside from some early inhabitants that had arrived in the area as early as 1780, formal settlement of Chatham and Dover Townships was not initiated until 1792 when United Empire Loyalists and French immigrants began locating along the banks of the Thames River. Eventually forced off of the settlement by rising water levels, many of these early settlers relocated within the interior of Dover and Chatham Townships during the early 19th century.

Settlement of the interior portions of Chatham and Dover Townships occurred in the 1830s when an influx of settlers, primarily from Northern Ireland and Scotland, began arriving in the area. By the late 19th century, Dover and Chatham Townships were considered by local residents to be almost completely settled. The slow rate of settlement in the area was undoubtedly related to the flat topography and poor natural drainage that the area exhibited.

8.2 Cultural Heritage Landscapes at the Project Location

The PSA is a flat landscape with various land uses such as agricultural uses, remnants of formal rural communities, cemeteries and an abandoned railway landscape. Farmsteads in the area are primarily located along concession roads rather than side roads. The PSA is noticeably void of woodlots, which is a direct consequence of the late 19th century lumber industry in Kent County.

8.3 Heritage Resources

Cultural heritage landscapes are defined as a geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community. The area may involve features such as structures, spaces, archaeological sites or natural elements that are valued together for their interrelationship, meaning, or association. Cultural heritage landscapes can also be comprised of entire communities and particular patterns of settlement, as well as more vernacular spaces including agricultural activities alongside urban developments.

A total of 14 sites with built heritage resources were identified within the Project Location to be older than 40 years of age. Of these, eight resources were identified to have potential cultural heritage value or interest.

None of the eight resources noted above were designated as protected sites. Due to the typical nature of the landscape, there are no anticipated impacts to the cultural heritage features, no further work is recommended.

9. Natural Heritage Assessment Report Summary

9.1 Records Review

A review of available background resources was completed to identify any potentially significant natural features within 120 m of the Project Location. This includes areas within 120 m of proposed turbines, measured from blade tip, as well as within 120 m of any areas that may be used for project activities, such as temporary lay-down areas, crane pads, access roads, collection lines, and distribution lines.

Key sources for information about the PSA include:

- Ontario Ministry of Natural Resources and Forestry (MNRF)
- Canadian Wildlife Service (CWS)
- Bird Studies Canada (BSC)
- Lower Thames Valley Conservation Authority (LTVCA)
- St. Clair Region Conservation Authority (SCRCA)
- Municipality of Chatham-Kent Official Plan
- Ministry of Natural Resources and Forestry, Natural Heritage Information Centre (NHIC) and Biodiversity Explorer
- Ontario Butterfly Atlas
- Ministry of Natural Resources, Land Information Ontario (LIO)
- Ontario Ministry of Northern Development and Mines (MNDM)
- Atlas of the Mammals of Ontario
- Ontario Reptile and Amphibian Atlas
- Ontario Breeding Bird Atlas (OBBA)
- Christmas Bird Count (CBC),
- Bird Studies Canada, Important Bird Areas Canada

9.2 Site Investigations

Site investigations were conducted and included planning and undertaking field work, compiling records and reporting the results. This entails a physical investigation of the air, land and water within 120 m of the Project Location, and determines:

- If any additional natural features exist;
- If the mapped boundaries of the natural features are correct;
- The distance between the Project and nearby natural features; and
- The function, form and attributes of the natural features.

9.3 Evaluation of Significance

Using information from the records review and site investigation, observations were compared against MNRF accepted standards, guidelines and literature to make an informed decision about the overall value, or significance, of each natural feature within 120 m of the Project Location. Natural feature attributes that contribute to the evaluation of significance include:

- Presence of species of conversation concern;
- Presence and significance of wetlands;
- Significance of wildlife habitat; and,
- Presence and significance of woodlands.

9.4 Wetlands

During the site investigation, a total of seven potentially significant wetlands were identified within the PSA. The seven wetlands identified in the PSA include individual wetlands, as well as wetland complexes, and range in size from less than 1 hectare ("ha") to over 12 ha. The Project Location is within the boundaries of three wetlands. Directional drilling will be used to bore beneath these features in order to avoid impacts to the features themselves.

9.5 Significant Wildlife Habitat

For the purposes of this series of Natural Heritage Assessment reports, the discussion on wildlife habitat has been divided into four categories, these include:

- Seasonal concentration areas;
- Rare vegetation communities and specialized wildlife habitat;
- Habitats of species of conservation concern; and
- Animal movement corridors.

A total of 94 candidate[4] Significant Wildlife Habitats (SWH) which may be affected by the operation of the North Kent Wind 1 Project have been identified within 120 m of the Project Location. In addition, several additional wildlife habitats have been identified within 120 m of the Project Location where components will not have operational effects. These habitats have been identified as generalized candidate SWH.

A summary of the candidate SWH and generalized candidate SWH that are found within the project area is provided in Table 15 and Table 16 respectively in the Natural Heritage Site Investigations Report.

General mitigation measures include restoring temporary disturbance areas, sediment and erosion controls, and scheduling construction activities to lessen impacts.

9.6 Woodlands

Site investigations in and within the North Kent Wind 1 PSA identified a total of 16 woodlands. Woodlands range in size from less than 1 ha to over 15 ha, and are primarily dominated by mid-aged to mature deciduous tree species.

The proposed Project Location overlaps with eight of these woodlands. Directional drilling will be used to bore beneath these features in order to avoid impacts to the features themselves.

9.7 Summary and Conclusions

Based on the implementation of the planned mitigation measures, monitoring programs and contingency plans, there is unlikely to be any significant impacts to natural heritage features, including wetlands, SWH or woodlands.

4. *A "candidate" Significant Wildlife Habitat (SWH) is a natural heritage (Environmental) feature that has the potential to be "significant" but has not yet been confirmed through field studies.*

10. Noise Impact Assessment Report

This section summarizes the information outlined in the Noise Impact Assessment Report including:

- An overview of how receptors are defined as per MOECC Noise Guidelines;
- The noise modelling that was conducted for the Project;
- Results of this modelling; and
- The predicted cumulative effects.

10.1 Noise Receptors

The MOECC Noise Guidelines generally define a Point of Reception (PoR) or Noise Receptor as a house, campground, church, school or other sensitive building that is not located on the same property as the wind farm. A Noise Receptor can also be located on a vacant lot that has a residence as a permitted use, and is known as a Vacant Lot Receptor (VLR).

10.2 Methodology / Noise Modelling

Noise modelling was used to ensure that noise levels meet the MOECC noise guidelines. The process followed four main steps:

1. **Identify PoRs:** ..... Identify PoRs within 1,500 m of any turbine or substation. PoRs were identified using available aerial imagery and validated in the field.
2. **Determine Project Details:**.... Obtain the turbine specifications from the manufacturer and assess contributing factors including wind speed and the specific design and model of the wind turbine.
3. **Model the Noise Levels:**..... Incorporate the turbine and substation locations and sound power levels into a noise model to predict overall noise levels at each PoR.
4. **Adjust the Layout:** ..... Adjust turbine locations during modelling to minimize noise levels at identified receptors.

10.3 Results

There are 810 receptors located within 1,500 m of a Project wind turbine or the substation, among which 299 are VLRs. Of those, 45 receptors have Project infrastructure on their property and are therefore not considered in the assessment.

The results of the Noise Impact Assessment show that the Project complies with the Provincial Noise Guidelines. For additional information, noise maps illustrating the maximum noise contribution of the Project are shown in **Appendix A** of the Noise Impact Assessment Report.

10.4 Cumulative Impacts

All other planned wind projects within 5 km of the Project must be considered in the Noise Impact Assessment report, in accordance with O. Reg. 359/09. Noise emissions from two adjacent wind farms have been considered in this analysis. These facilities include:

- East Lake St. Clair Wind Farm – 45 receptors within 1,500 m of the Project; and
- Marsh Line Wind Farm – (no shared receptors).

The cumulative impacts of these facilities were considered in the Noise Impact Assessment Report and all points of reception (PoR) for the Project are in compliance with MOECC Noise Guidelines.

11. Report Viewing Locations

The reports summarized in this document can be found at the following locations as of September 2, 2015.

Chatham-Kent Public Library
Chatham Branch
120 Queen Street
Chatham, ON

Municipality of Chatham-Kent
Clerk's Office
315 King Street West
Chatham, ON


North
Kent