



Samsung Renewable Energy Inc. and
Pattern Renewable Holdings Canada ULC

0 Draft Site Plan Report

For

Armow Wind Project



August 2012

SP ARMOW WIND ONTARIO LP - APPLICATION FOR A RENEWABLE ENERGY APPROVAL

Draft Site Plan Report for the Armow Wind Project

Submitted to:

Director, Ministry of Environment
2 St. Clair West, Floor 12A
Toronto, Ontario, M4V 1L5

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REPORT



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1.0 INTRODUCTION

The Armow Wind Project (the “Project”) is an up to 180 megawatt (MW) commercial wind energy generation facility located substantially on leased privately owned lands in the Municipality of Kincardine, Bruce County, Ontario (see Figure 1). The Project is being developed by SP Armow Wind Ontario GP Inc., in its capacity as general partner of SP Armow Wind Ontario LP (the “Proponent”). The Proponent is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada ULC (“Pattern”) and Samsung Renewable Energy Inc. (“Samsung”). The Proponent is proposing to develop, construct, and operate the Project in response to the Government of Ontario’s plan to integrate more renewable energy into the province’s power grid.

In 2009, the Government of Ontario introduced the *Green Energy and Green Economy Act* and Ontario Regulation (O. Reg.) 359/09. The regulatory amendments to O. Reg. 359/09 came into force on July 1, 2012 as O. Reg. 195/12¹. The Renewable Energy Approval (“REA”) integrates previous requirements under the *Environmental Assessment Act* with clear provincial rules and standards in a new regulation under the *Environmental Protection Act*.

This Draft Site Plan has been prepared to address the requirement for fixing the locations of Project noise sources (i.e. wind turbines and collector substation) in accordance with O. Reg. 359/09, as amended, and the Draft Technical Guide to Renewable Energy Approvals (MOE, 2012). Table 1 summarizes information to be included in the Report based on Section 54.1 of O. Reg. 359/06, as amended, and directs readers to the associated section(s) of this document.

Table 1: Draft Site Plan Requirements In Accordance With Section 54.1 of O. Reg. 359/09, as amended

Requirement as per O. Reg. 359/09, as amended	Report section where information can be found
Name of person proposing to engage in the renewable energy project	Sections 1.0 and 4.0
Description of the renewable energy project	Sections 2.0 and 3.0
Map identifying the project location	Figure 1 (end of the Report)
If the project is situated in a local municipality, the date the notice of the site plan was first published in a newspaper with general circulation in the local municipality	Section 4.0
The locations in each local municipality and in each part of an unorganized territory in which the project location is situated where members of the public can inspect paper copies of the draft site plan	Section 4.0
Description of the legal effect of the posting or publishing of the draft site plan	Section 1.0

The attached Draft Site Plan (Figure 1) will be provided to Aboriginal communities, the Municipality of Kincardine, County of Bruce, the public and stakeholders following the distribution requirements and timing constraints outlined in O. Reg. 359/09, as amended, and the Draft Technical Guide to Renewable Energy Approvals (MOE, 2012; MOE, 2012).

¹ All references to Ontario Regulation 359/09 refer to the Regulation as amended Regulation 195/12 which came into force July 1, 2012



2.0 PROJECT LOCATION

The proposed Project is situated in Bruce County, 3 km from Lake Huron, approximately 2 km northeast of Kincardine, Ontario (see Figure 1).

The Project location, is defined in O. Reg. 359/09, as amended, (in relation to a renewable energy project) to mean “a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposed to engage in the project”. The Project location is bounded by Highway 21 to the west, Concession 4 to the north, County Road 1 to the east and the North Line to the south. The area encompassed by these boundaries is referred to in this document as the “Project Study Area”.

The proposed Project Study Area, covering approximately 18,800 hectares of land in the Municipality of Kincardine, Ontario, is primarily comprised of agricultural lands with fragmented blocks of forest and riparian areas associated with small creeks and farm drains (see Figure 1). The Project will be located primarily within portions of privately owned land parcels with collection cables being placed in public road allowances. Portions of privately owned land parcels that contain Project infrastructure will be under lease or easement to the Proponent for the duration of the Project.

The location of the Project was established based on interest expressed by local landowners, its proximity to high-voltage transmission lines, and its excellent wind resource.

2.1.1 Project Description

The Project is a Class 4 wind facility with a nameplate generation capacity of up to 180 MW, which will generate electricity through approximately 90 Siemens SWT-2.3-101 wind turbines rated between 1.8 MW and 2.3 MW. A total of 99 turbines will be permitted to provide contingency positions. The Project lifespan from obtaining the REA Approval to the end of Decommissioning is estimated to be 20 years. See Table 2 for a summary of Project vital statistics.

2.2 Project Vital Statistics

Table 2: Summary of Project Vital Statistics

General	
Project Name	Armow Wind Project
Project Ownership and Operation	SP Armow Wind Ontario LP
Project Lifespan (approval to decommissioning)	20 Years
Project Nameplate Capacity	Up to 180 MW
Project Area (as shown in Figure 1)	
Location of Project	Privately-owned land and Public Road Allowances Municipality of Kincardine, County of Bruce
Total Project Study Area	18,800 ha
Total Area of Project Location (total disturbance area)	472.9 ha



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Wind Turbine Generators

Model	Siemens SWT-2.3-101
Total Number Permitted	99
Approximate Number Constructed	90
Nominal Power	1.8 to 2.3 MW
Number of Blades	3
Blade Length	49 m
Hub Height	99.5 m
Rotor Diameter	101 m
Cut-in Wind Speed	3 m/s
Cut-out Wind Speed	25 m/s
Rated Wind Speed	12 – 13 m/s
Swept Area	8,000 m ²
Foundation Dimensions	20 m diameter

Access Roads

Operation Roads (includes shoulder, travel width and ditch)	58 km x 4-8 m
Construction Roads (with shoulder)	58 km x 7-15 m
Temporary Roads / Crane Walks	3.22 km x 7-15 m

Collector Lines

34.5 kV Collector Lines in public ROW (total combined length of proposed underground and/or overhead)	132 km x 2-6 m
34.5 kV Collector Lines on private lands (underground)	60 km x 2-6 m

Other Project Structures and Facilities

Collector Substation	200 m x 150 m
Operations and Maintenance Building	50 m x 30 m
Point of Interconnect	1 acre

Temporary Land Use (Construction Phase)

Construction Staging Areas	10 acres
Wind Turbine Laydown Area (each turbine)	5000 m ²
Crane Pads	40 m x 20 m



3.0 DRAFT SITE PLAN

This attached Draft Site Plan has been prepared to address the requirement for providing a Draft Site Plan in accordance with section 54.1 of O. Reg. 359/09, as amended, and the Draft Technical Guide to Renewable Energy Approvals (MOE, 2012). Additional information about the Project will be found in the Draft Reports associated with the REA application.

The attached Draft Site Plan depicts the following at the wind facility or within 300 metres of the facility:

- Buildings;
- Proposed turbines;
- Electrical collector lines;
- Collector substation;
- Wind turbine access roads;
- Utility corridors;
- Right-of-ways and easements;
- Existing turbines within 2 km of noise receptors; and
- Noise receptors within 2 km of the proposed turbine locations.

3.1 Wind Turbine Locations

The proposed wind turbine locations and associated infrastructure as shown on the attached Draft Site Plan are deemed to be in draft form until the proposed Project consultation is completed and the final REA application for the proposed Project is submitted. Appendix A summarizes the UTM coordinates of the proposed wind turbine locations as shown on the attached Draft Site Plan. Receptors within 2 km of wind turbine locations are summarized in Appendix B and UTM coordinates of other existing and proposed wind turbines are contained in Appendix C of this report.

3.2 Description of Project Components

The major components of the Project include wind turbine generators, access roads, collector lines, collector substation, meteorological towers, interconnection structures and an operations building. The following sections provide descriptions of these major components along with ancillary components required for the operation of the Project.



3.2.1 Wind Turbine Generators

The Project will use wind turbines (Siemens WT-2.3-101) with a generating capacity ranging from 1.8 to 2.3 MW. The wind turbine nacelle includes the electric generator, gearbox, wind direction and speed sensors, and auxiliary equipment. These components are located at the top of a supporting tower and are connected to three blades and a hub via a main shaft.

3.2.2 Wind Turbine Foundation

Each turbine tower is anticipated to have a concrete foundation approximately 20 m in diameter and 2.5 m deep. The land base of each spread-footing turbine foundation will be dependent on subsurface conditions determined during geotechnical investigations. Following geotechnical investigations it may be determined that pile type foundations may be required for certain locations.

3.2.3 Pad-mounted Transformers

A pad-mounted transformer will be located immediately adjacent to each wind turbine. This transformer 'steps-up' the electricity generated by the wind turbine (600 V) to a common collector line voltage (34.5 kV).

3.2.4 Wind Turbine Access Roads

During construction and operation of the proposed Project, access roads are required in order to access wind turbine locations. Access roads will be constructed of native materials or engineered fill and will be up to 15 m wide during construction in order to accommodate cranes and transportation equipment used to deliver wind turbine components. Subject to landowner consultation, following construction and installation activities, roads may be reduced to 4-8 m wide, which would allow access to turbines and associated infrastructure for maintenance and repairs.

3.2.5 Collector Lines

Collector lines carry the electricity from the pad-mounted transformers to the Project substation (described below). The collector lines will be standard utility 34.5 kV. From the turbine to the municipal and county roads, collector lines will be buried on private land. Collector lines along municipal and county roads will be located within the existing road rights-of-way and, where possible, buried. Underground collector lines will be buried at a depth of approximately 1.0-1.5m. If determined that overhead collector lines are required, they will be constructed on single pole structures that are similar to existing medium voltage distribution lines within the Project Study Area.



3.2.6 Collector Substation

A collector substation is required to bring together all of the collector lines. The collected power will be transformed from the collector line voltage (34.5 kV) to a transmission voltage (230 kV). The collector substation is proposed to be located approximately 400 m from the existing Hydro One transmission line (Figure 1). The collector substation will be connected to the Hydro One line by a single circuit overhead line, supported by 3 to 4 interconnection structures.

The collector substation will be constructed within a construction disturbance area of approximately 200 m by 150 m on a raised pad or a prepared base of either engineered fill or native soil to a depth of approximately 2 m. The substation will comply with the requirements of O. Reg. 359/09, as amended, by including a 20 kg/m² acoustic barrier that breaks the line of sight with any noise receptors and is located at a distance of at least 500 metres from the nearest noise receptor.

Collector substation equipment will include isolation switch(es), circuit breaker(s), step-up power transformer(s), distribution switch-gear(s), capacitor banks, instrument transformers, grounding transformers, revenue metering, substation grounding and a control building. Substation grounding will follow the Canadian Electrical Code (CEC). An oil containment system designed for the main transformer(s) will be installed at the site to prevent soil contamination in the event of a leak.

3.2.7 Meteorological Towers

Assessment of meteorological conditions and wind resources requires permanent meteorological stations to be constructed. Up to three meteorological towers are proposed to be constructed within the Project Study Area (see Figure 1).

3.2.8 Operations and Maintenance Facilities

Operations and maintenance facilities with an approximate footprint of 3 acres will be constructed to accommodate offices, mess facilities, control facilities, storage space, maintenance work area, and a parking area. The operations and maintenance facilities will be within the Project Location (Figure 1).

The operations and maintenance building will be a structure constructed on a concrete foundation. An access road to the will be constructed to accommodate construction equipment and on-site traffic during the operation of the proposed Project.

The operations and maintenance building will be powered by local distribution power company, with an onsite backup power supply. Power will be delivered via underground lines adjacent to the access road.



4.0 CONTACT AND DISTRIBUTION INFORMATION

4.1 Contact Information

The proponent for the Project is SP Armow Wind Ontario LP, by its general partner SP Armow Wind Ontario GP Inc. The Proponent is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada ULC and Samsung Renewable Energy Inc.

The contacts for the Project are as follows:

Applicant

Brian Edwards
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Samsung Renewable Energy Inc.
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Email: info@armowwind.com

Jody Law
Project Developer
Pattern Energy
100 Simcoe Street, Suite 105
Toronto, ON M5H 3G2
Phone: (519) 396-9433
Fax: (416) 979-8428
Email: info@armowwind.com

Consultant

The Proponent has retained Golder Associates Ltd. (Golder) to prepare an REA Application under O. Reg. 359/09, as amended. Contact information for the Golder Project Manager is as follows:

Ian Callum, Project Manager
Golder Associates Ltd.
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Mississauga, Ontario L5N 5Z7
Phone: (905) 567-4444
Fax: (905) 567-6561
E-mail: Ian_Callum@golder.com

Project

Project Email: info@armowwind.com
Project website: www.armowwind.com



4.2 Distribution Information

The notice of the Draft Site Plan Report was first published in the Kincardine News on August 7, 2012. In accordance with the O. Reg. 359/09, as amended, a written copy of the Draft Site Plan Report will be made available for review and comment by August 12, 2012 to the following Aboriginal communities: The Historic Saugeen Métis; The Saugeen Ojibway Nation; The Saugeen First Nation; and the Chippewas of Nawash Unceded First Nation. The Draft Site Plan Report will also be made available at the Tiverton and Kincardine branches of the Bruce County Public Library (56 King Street, Tiverton and 727 Queen Street, Kincardine) and Bruce County and Kincardine municipal offices (30 Park Street, Walkerton and 1475 Concession 5, R.R. #5, Kincardine). The Draft Site Plan Report will also be made available at a website dedicated to the Project (www.armowwind.com).



5.0 REFERENCES

Government of Ontario. 2009. Ontario Bill 150, Green Energy and Green Economy Act. May 14, 2009.

Ministry of the Environment (MOE). 2012. Ontario Regulation 359/09. Renewable Energy Approvals under Part V.0.1 of the Environmental Protection Act.

Ministry of the Environment (MOE). 2012. Draft Technical Guide to Renewable Energy Approvals. URL: [http://www.ebr.gov.on.ca/ERS-WEB External/displaynoticecontent.do?noticeId=MTE2MTA3&statusId=MTczODEx](http://www.ebr.gov.on.ca/ERS-WEB%20External/displaynoticecontent.do?noticeId=MTE2MTA3&statusId=MTczODEx). Accessed: April 2012.



Report Signature Page

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KM/IC/JA/gf

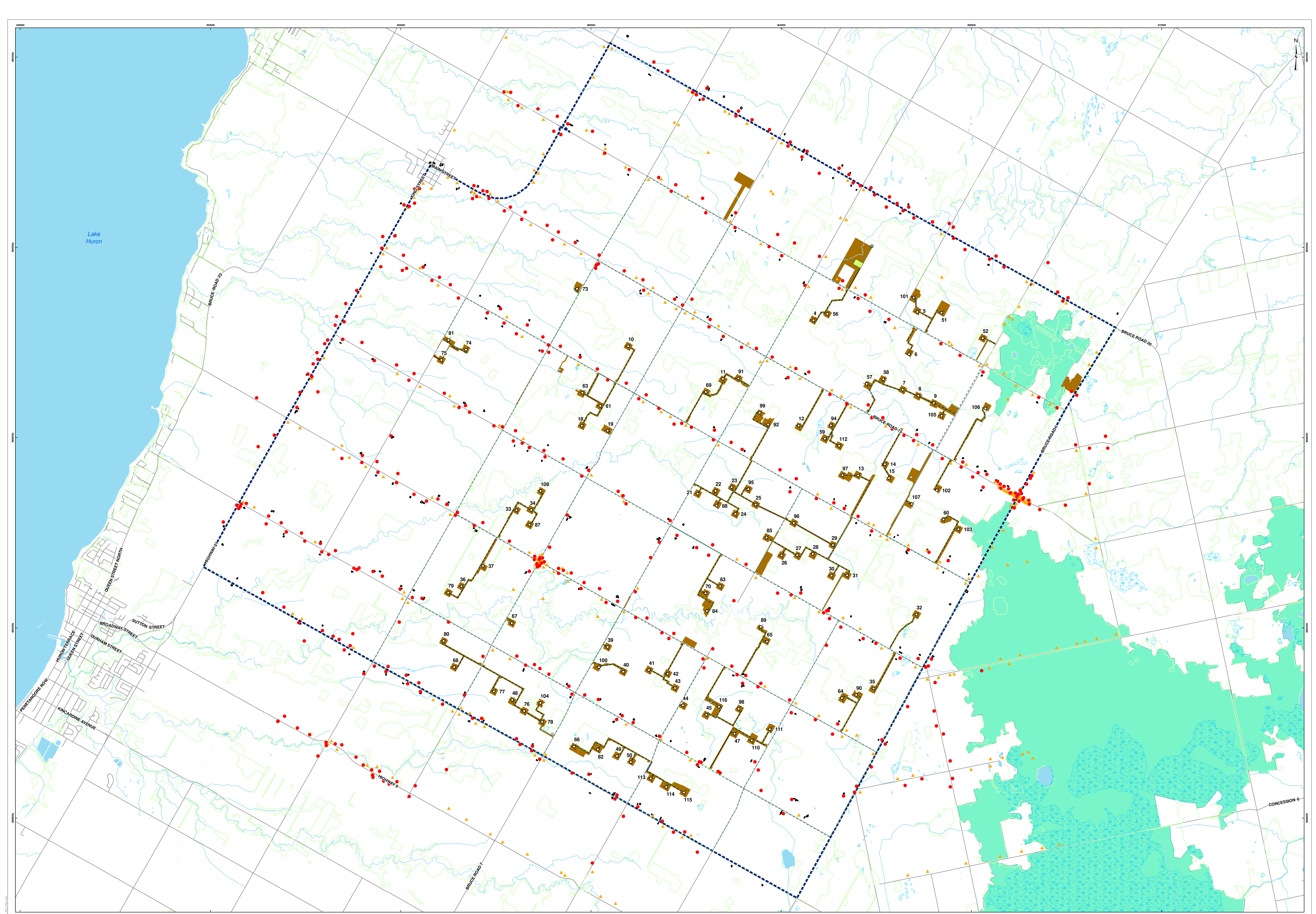
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FIGURE 1

Draft Site Plan



LEGEND

- Proposed Turbine Location
- Meteorological Tower
- Point Of Interconnect (POI)
- Substation
- Noise Receptor
- Existing Receptor
- Vacant Lot Receptor
- Access Road
- Temporary Road / Crane Walk
- Proposed Collector Location
- Watercourse
- Road
- Project Study Area
- Project Location
- Building
- ANSI, Provincially Significant Life Science
- Wooded Area
- Waterbody
- Wetland

REFERENCE

Revised Date: 10/11/2012, obtained 2012
Produced by: Golder Associates Ltd under license from:
Ontario Ministry of Natural Resources © Queen's Printer 2012
Provincially Significant Wetland and Area of Natural and Scientific Interest data: MNR, obtained 2009
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

INDEX MAP

PROJECT: ARMOW WIND PROJECT

TITLE: DRAFT SITE PLAN

SCALE: 1:25,000

SCALE BAR: 0 0.5 1.0 1.5 2.0 KILOMETERS

PROJECT NO.	1111-040	SCALE AS SHOWN	REV
ISSUED FOR	12/20/2012		
DESIGNED BY	13/20/2012		
ENGINEERED BY	14/20/2012		
REVIEWED BY	15/20/2012		

FIGURE 1



APPENDIX A

Proposed Wind turbine UTM Coordinates



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Wind turbine ID	Easting	Northing
4	464682	4898466
5	466865	4898641
6	466690	4897755
7	466554	4897005
8	466884	4896882
9	467210	4896729
10	460785	4897921
11	462777	4897234
12	464367	4896252
13	465621	4895205
14	466182	4895442
15	466268	4895147
18	459810	4896249
19	460352	4896143
21	462245	4894821
22	462622	4894878
23	462959	4894956
24	463039	4894395
25	463465	4894592
26	464009	4893522
27	464337	4893527
28	464666	4893553
29	465090	4893742
30	465060	4893097
31	465388	4893104
32	466845	4892281
33	458435	4894474
34	458746	4894479
35	465945	4890725
36	457280	4892873
37	457729	4893302
39	460352	4891598
40	460681	4891076
41	461220	4891113
42	461614	4891037



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Wind turbine ID	Easting	Northing
43	461768	4890734
44	461935	4890372
45	462426	4890172
47	463020	4889772
48	458346	4890486
49	460549	4889305
50	460839	4889178
51	467371	4898626
52	468239	4898092
56	464971	4898601
57	465799	4897131
58	466148	4897228
59	464921	4895976
60	467413	4894276
61	460197	4896667
63	459822	4896943
64	465279	4890523
65	463701	4891711
66	459648	4889504
67	458335	4892100
68	457127	4891173
69	462419	4896959
70	462409	4892727
73	459708	4899129
74	457373	4897847
75	456855	4897632
76	458595	4890252
77	457961	4890664
78	458976	4890025
79	457000	4892740
80	456905	4891725
81	457006	4898054
82	460147	4889442
83	462716	4892873
84	462437	4892354



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Wind turbine ID	Easting	Northing
85	463695	4893900
87	458708	4894168
88	462642	4894569
89	463573	4892018
90	465579	4890590
91	463100	4897245
92	463725	4896277
94	465047	4896257
95	463309	4894916
96	464266	4894203
97	465289	4895208
98	463109	4890298
99	463549	4896523
100	460169	4891172
101	466788	4898947
102	467274	4894893
103	467729	4894074
104	458938	4890421
105	467373	4896459
106	468294	4896614
107	466747	4894603
108	458941	4894875
110	463381	4889634
111	463760	4889869
112	465221	4895826
113	461259	4888833
114	461585	4888655
115	461956	4888538
116	462694	4890339



APPENDIX B

Noise Receptors within 2 km of Proposed Project Location



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
64	Residence	3	4.5	455594	4893081
65	Residence	3	4.5	455971	4892805
66	Residence	3	4.5	456404	4892637
67	Residence	3	4.5	456989	4892113
68	Residence	3	4.5	457717	4891395
69	Residence	3	4.5	457321	4890583
70	Residence	3	4.5	456475	4890654
71	Residence	3	4.5	456367	4890837
72	Residence	3	1.5	456129	4890818
73	Residence	3	4.5	456119	4890917
74	Residence	3	4.5	455673	4891069
75	Residence	3	4.5	455718	4891179
90	Residence	3	4.5	468969	4894791
91	School	3	1.5	469044	4894780
92	Church	3	4.5	468909	4894823
93	Residence	3	4.5	468893	4894831
94	Residence	3	4.5	468838	4894808
95	Residence	3	4.5	468924	4894766
96	Residence	3	4.5	468942	4894742
97	Residence	3	4.5	469006	4894708
98	Residence	3	1.5	469066	4894692
100	Residence	3	4.5	468936	4894618
101	Residence	3	1.5	468984	4894652
102	Residence	3	4.5	468861	4894644
103	Residence	3	4.5	468920	4894585



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
104	Residence	3	1.5	468896	4894539
105	Residence	3	1.5	468888	4894517
106	Residence	3	4.5	467139	4891338
107	School	3	1.5	467077	4891192
108	Residence	3	4.5	467016	4891173
109	Residence	3	4.5	466643	4890339
110	Residence	3	4.5	466104	4889642
111	Residence	3	4.5	466164	4889557
119	Residence	3	4.5	463575	4888576
120	Residence	3	4.5	462714	4888951
121	Residence	3	4.5	462676	4888972
122	Residence	3	4.5	462315	4889174
123	Residence	3	4.5	462234	4889111
124	Residence	3	4.5	461998	4889372
125	Residence	3	4.5	461398	4889690
126	Residence	3	4.5	460873	4889996
127	Residence	3	4.5	460641	4890145
128	Residence	3	4.5	460522	4890069
129	Residence	3	4.5	460138	4890483
130	Residence	3	1.5	459855	4890579
131	Residence	3	4.5	459614	4890581
132	Residence	3	4.5	459521	4890767
133	Residence	3	4.5	458796	4891225
134	Residence	3	7.5	458611	4891206
135	Residence	3	4.5	458426	4891398



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
136	Residence	3	4.5	465062	4889754
137	Residence	3	4.5	465172	4889972
138	Residence	3	4.5	464701	4890058
139	Residence	3	4.5	464197	4890211
140	Residence	3	7.5	464161	4890482
141	Residence	3	1.5	463554	4890826
142	Residence	3	1.5	463497	4890755
143	Residence	3	4.5	463179	4890859
144	Residence	3	4.5	463238	4890992
145	Residence	3	4.5	463053	4891010
146	Residence	3	4.5	462948	4891190
147	Residence	3	4.5	462360	4891153
148	Residence	3	4.5	462343	4891338
149	Residence	3	4.5	462545	4891547
150	Residence	3	4.5	462954	4892559
151	Residence	3	1.5	464722	4894708
152	Residence	3	4.5	464168	4894851
153	Residence	3	4.5	464324	4895138
154	Residence	3	4.5	463957	4895319
155	Residence	3	4.5	463164	4895742
156	Residence	3	4.5	462934	4895889
157	Residence	3	4.5	462558	4895946
158	Residence	3	4.5	462583	4896156
159	Residence	3	4.5	462097	4896210
160	Residence	3	1.5	461890	4896287



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
161	Residence	3	4.5	461733	4896274
162	Residence	3	4.5	461407	4896604
163	Residence	3	4.5	461144	4896889
164	Residence	3	4.5	460985	4896808
165	Residence	3	4.5	460727	4897135
166	Residence	3	4.5	460321	4897197
167	Residence	3	1.5	460119	4897434
168	Residence	3	7.5	459756	4897684
169	Residence	3	4.5	459342	4897912
170	Residence	3	4.5	459097	4897782
171	Residence	3	4.5	459090	4897938
172	Residence	3	4.5	458959	4897812
173	Residence	3	4.5	458974	4898107
174	Residence	3	4.5	458646	4898355
175	Residence	3	4.5	458416	4898169
176	Residence	3	4.5	458157	4898396
177	Residence	3	4.5	458084	4898700
178	Residence	3	4.5	457804	4898613
179	Residence	3	4.5	457197	4898926
180	Residence	3	4.5	457032	4899208
181	Residence	3	4.5	456795	4899365
182	Residence	3	4.5	456641	4899298
187	Residence	3	4.5	465094	4894620
188	Residence	3	4.5	465315	4894508
189	Residence	3	4.5	465599	4894343



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
190	Residence	3	4.5	465885	4894030
191	Residence	3	4.5	466655	4893631
192	Residence	3	4.5	467091	4893580
193	Residence	3	4.5	467498	4893407
199	Residence	3	4.5	468800	4894827
200	Residence	3	4.5	468779	4894844
201	Residence	3	4.5	468762	4894916
202	Residence	3	4.5	468699	4894877
203	Residence	3	4.5	468673	4894900
204	Residence	3	4.5	468634	4894920
205	Residence	3	4.5	468671	4894971
206	Residence	3	4.5	468590	4895019
207	Residence	3	4.5	468506	4895109
208	Residence	3	4.5	468231	4894949
209	Residence	3	7.5	468309	4895210
210	Residence	3	4.5	468011	4895165
211	Residence	3	4.5	468126	4895256
212	Residence	3	4.5	468078	4895326
213	Residence	3	1.5	467803	4895479
214	Residence	3	4.5	467772	4895378
215	Residence	3	4.5	467358	4895564
216	Residence	3	4.5	467135	4895832
217	Residence	3	4.5	467028	4895798
218	Residence	3	4.5	466765	4895928
219	Residence	3	1.5	466830	4896056



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
220	Residence	3	4.5	466563	4896042
221	Residence	3	4.5	466316	4896175
222	Residence	3	1.5	466082	4896396
223	Residence	3	4.5	465850	4896439
224	Residence	3	4.5	465815	4896681
225	Residence	3	4.5	465580	4896595
226	Residence	3	4.5	465361	4896706
227	Residence	3	1.5	465000	4896900
228	Residence	3	4.5	464559	4897070
229	Residence	3	4.5	464567	4897369
230	Residence	3	4.5	464286	4897449
231	Residence	3	1.5	463789	4897686
232	Residence	3	4.5	463466	4897869
233	Residence	3	4.5	463158	4897938
234	Residence	3	4.5	462764	4898121
235	Residence	3	1.5	462490	4898475
236	Residence	3	1.5	461914	4898781
238	Residence	3	4.5	461742	4898903
239	Residence	3	1.5	461431	4899146
240	Residence	3	4.5	461085	4899096
241	Residence	3	1.5	461016	4899326
242	Residence	3	7.5	460686	4899498
243	Residence	3	4.5	460096	4899622
244	Residence	3	4.5	460160	4899828
245	Residence	3	7.5	459657	4900094



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
246	Residence	3	4.5	459301	4900314
247	Residence	3	4.5	459177	4900150
248	Residence	3	7.5	459031	4900456
264	Residence	3	4.5	464268	4900083
266	Residence	3	4.5	464789	4899803
267	Residence	3	4.5	464487	4899193
268	Residence	3	4.5	465274	4899289
269	Residence	3	4.5	465232	4899155
270	Residence	3	4.5	465604	4898918
271	Residence	3	4.5	465852	4898653
272	Residence	3	1.5	466247	4898478
273	Residence	3	1.5	467340	4897968
274	Residence	3	4.5	467749	4897726
275	Residence	3	4.5	468224	4897369
276	Residence	3	7.5	469402	4896836
277	Residence	3	1.5	469779	4896620
285	Residence	3	4.5	468368	4899738
287	Residence	3	4.5	467849	4899944
288	Residence	3	4.5	467608	4900181
293	Residence	3	4.5	466546	4900768
294	Church	3	4.5	466419	4900914
316	Residence	3	1.5	466864	4891345
317	Residence	3	4.5	466480	4891354
318	Residence	3	4.5	465972	4891668
319	Residence	3	4.5	465708	4891767



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
320	Residence	3	4.5	465209	4892041
321	Residence	3	4.5	464975	4892354
322	Residence	3	4.5	464998	4892183
323	Residence	3	1.5	464876	4892305
324	Residence	3	4.5	464394	4892723
325	Residence	3	4.5	464189	4892683
326	Residence	3	4.5	463909	4892723
327	Residence	3	4.5	463248	4893325
328	Residence	3	4.5	462460	4893520
329	Residence	3	4.5	462543	4893739
330	Residence	3	4.5	462208	4893676
331	Residence	3	4.5	461793	4893936
333	Residence	3	1.5	460660	4894771
334	Residence	3	4.5	460557	4894864
335	Residence	3	4.5	459936	4895307
336	Residence	3	1.5	459790	4895187
337	Residence	3	4.5	459399	4895541
338	Residence	3	4.5	459021	4895587
339	Residence	3	1.5	458997	4895718
340	Residence	3	4.5	458691	4895779
341	Residence	3	4.5	458541	4895875
342	Residence	3	4.5	458353	4895916
343	Residence	3	4.5	458400	4896139
346	Residence	3	4.5	457432	4896527
347	Residence	3	4.5	457345	4896665



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
348	Residence	3	4.5	457207	4896623
349	Residence	3	4.5	456902	4896923
350	Residence	3	4.5	456159	4897200
351	Residence	3	4.5	456268	4897337
352	Residence	3	7.5	455896	4897521
353	Residence	3	4.5	455453	4897607
356	Residence	3	7.5	459484	4894365
357	Residence	3	4.5	459113	4893688
358	Residence	3	1.5	458964	4893459
359	Residence	3	4.5	458910	4893464
360	Residence	3	4.5	458897	4893434
361	Residence	3	4.5	458937	4893420
362	Church	3	4.5	458973	4893397
363	Church	3	4.5	458999	4893381
364	Residence	3	1.5	458957	4893349
365	Residence	3	1.5	458800	4893495
366	Residence	3	4.5	458828	4893426
367	Residence	3	4.5	458844	4893337
368	Residence	3	4.5	458901	4893297
369	Residence	3	4.5	458691	4893178
370	Residence	3	4.5	457739	4894279
371	Residence	3	4.5	457533	4894145
372	Residence	3	4.5	456951	4894583
381	Residence	3	1.5	459303	4893241
382	Residence	3	4.5	459383	4893202



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
383	Residence	3	1.5	459304	4893136
384	Residence	3	4.5	459567	4893142
385	Residence	3	4.5	459881	4892908
386	Residence	3	4.5	459800	4892858
387	Residence	3	4.5	460169	4892817
388	Residence	3	4.5	460303	4892525
389	Residence	3	4.5	460927	4892211
390	Residence	3	4.5	461160	4892202
391	Residence	3	4.5	461473	4891889
392	Residence	3	4.5	461726	4891875
393	Residence	3	4.5	461633	4891791
400	Residence	3	1.5	457494	4890090
401	Residence	3	4.5	457689	4890090
402	Residence	3	4.5	458416	4889661
403	Residence	3	4.5	458511	4889532
404	Residence	3	4.5	458752	4889505
405	Residence	3	4.5	458753	4889412
406	Residence	3	4.5	458904	4889233
407	Residence	3	7.5	459599	4888932
408	Residence	3	4.5	459938	4888910
409	Residence	3	4.5	460544	4888482
410	Residence	3	4.5	460506	4888398
411	Residence	3	4.5	460681	4888035
412	Residence	3	4.5	460983	4888234
413	Residence	3	4.5	461499	4887934



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
414	Residence	3	4.5	461735	4887704
415	Residence	3	4.5	461971	4887710
416	Residence	3	4.5	462229	4887283
418	Residence	3	4.5	461646	4894245
419	Residence	3	4.5	461421	4893792
420	Residence	3	4.5	461238	4893469
421	Residence	3	4.5	460916	4892752
425	Residence	3	4.5	456226	4892626
426	Residence	3	1.5	458934	4891132
427	Residence	3	1.5	459128	4891015
428	Residence	3	1.5	462284	4889193
434	Residence	3	4.5	467219	4890262
435	Residence	3	4.5	467250	4890911
437	Residence	3	1.5	464944	4892345
442	Church	3	7.5	457178	4894418
443	Residence	3	4.5	457141	4894372
444	Residence	3	1.5	458226	4893721
445	Residence	3	1.5	458972	4893330
446	Cemetery	3	1.5	459235	4893194
447	Residence	3	1.5	465327	4889811
452	Residence	3	4.5	455897	4890855
453	Residence	3	1.5	456874	4890392
455	Residence	3	4.5	467473	4893131
457	Residence	3	4.5	466780	4900619
458	Residence	3	1.5	466200	4900864



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
462	Residence	3	1.5	465748	4898985
469	Residence	3	1.5	469113	4894646
470	Residence	3	1.5	469091	4894669
471	Church	3	4.5	468601	4894932
472	Residence	3	4.5	464112	4897303
473	Residence	3	1.5	462470	4898319
474	School	3	1.5	460180	4899649
476	Residence	3	4.5	455932	4892040
497	Residence	3	1.5	458858	4893275
499	Residence	3	4.5	464947	4891630
500	Residence	3	4.5	463429	4889171
501	Residence	3	4.5	463498	4889008
503	Residence	3	1.5	455900	4896527
507	VLSR	3	4.5	467543	4891014
509	VLSR	3	4.5	469063	4894761
510	VLSR	3	4.5	468980	4894713
511	VLSR	3	4.5	469036	4894684
512	VLSR	3	4.5	468889	4894500
514	VLSR	3	4.5	469016	4894786
518	VLSR	3	4.5	466445	4900913
520	VLSR	3	4.5	468164	4895301
521	VLSR	3	4.5	468977	4894838
522	VLSR	3	4.5	468943	4894816
523	VLSR	3	4.5	468533	4895060
524	VLSR	3	4.5	468562	4895044



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
525	VLSR	3	4.5	468653	4894995
526	VLSR	3	4.5	468853	4894889
528	VLSR	3	4.5	469649	4896714
529	VLSR	3	4.5	468735	4894851
530	VLSR	3	4.5	468787	4894822
531	VLSR	3	4.5	468811	4894810
532	VLSR	3	4.5	468573	4894963
533	VLSR	3	4.5	463507	4897626
538	VLSR	3	4.5	456793	4899216
541	VLSR	3	4.5	458826	4893471
542	VLSR	3	4.5	458848	4893459
543	VLSR	3	4.5	458874	4893403
544	VLSR	3	4.5	458824	4893374
545	VLSR	3	4.5	458967	4893558
546	VLSR	3	4.5	458927	4893524
549	VLSR	3	4.5	459050	4893385
550	VLSR	3	4.5	459003	4893366
551	VLSR	3	4.5	458924	4893363
552	VLSR	3	4.5	458910	4893339
553	VLSR	3	4.5	459128	4893337
554	VLSR	3	4.5	459369	4893270
555	VLSR	3	4.5	457728	4890096
556	VLSR	3	4.5	461479	4889661
557	VLSR	3	4.5	462457	4891368
558	VLSR	3	4.5	461299	4888060



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
580	VLSR	3	4.5	467397	4900275
596	VLSR	3	4.5	468798	4894539
597	VLSR	3	4.5	466215	4896230
598	VLSR	3	4.5	469340	4896864
599	VLSR	3	4.5	469242	4896918
600	VLSR	3	4.5	469361	4896980
601	VLSR	3	4.5	468798	4896839
602	VLSR	3	4.5	468366	4897534
603	VLSR	3	4.5	468191	4897500
604	VLSR	3	4.5	468983	4898706
605	VLSR	3	4.5	469029	4898981
606	VLSR	3	4.5	467650	4897933
607	VLSR	3	4.5	467483	4898027
608	VLSR	3	4.5	466619	4898372
609	VLSR	3	4.5	466155	4898760
610	VLSR	3	4.5	467099	4899540
611	VLSR	3	4.5	465314	4900498
612	VLSR	3	4.5	465231	4900552
629	VLSR	3	4.5	459579	4899990
630	VLSR	3	4.5	459839	4899846
631	VLSR	3	4.5	457439	4898974
633	VLSR	3	4.5	457627	4896524
634	VLSR	3	4.5	457308	4896573
635	VLSR	3	4.5	457017	4896870
636	VLSR	3	4.5	456392	4897095



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
637	VLSR	3	4.5	457303	4898920
656	VLSR	3	4.5	463183	4898057
657	VLSR	3	4.5	462823	4898263
658	VLSR	3	4.5	462213	4898613
659	VLSR	3	4.5	461934	4898643
660	VLSR	3	4.5	461847	4898693
661	VLSR	3	4.5	462154	4898517
662	VLSR	3	4.5	463691	4897638
663	VLSR	3	4.5	464171	4897499
664	VLSR	3	4.5	464948	4897063
665	VLSR	3	4.5	465264	4896884
666	VLSR	3	4.5	467955	4893032
667	VLSR	3	4.5	467900	4892933
668	VLSR	3	4.5	467648	4891018
669	VLSR	3	4.5	467387	4890967
670	VLSR	3	4.5	467066	4890904
671	VLSR	3	4.5	466907	4891142
672	VLSR	3	4.5	466151	4891564
673	VLSR	3	4.5	465757	4891920
674	VLSR	3	4.5	465411	4892118
675	VLSR	3	4.5	466355	4893791
676	VLSR	3	4.5	466674	4893747
677	VLSR	3	4.5	466185	4894017
678	VLSR	3	4.5	465768	4894248
679	VLSR	3	4.5	464930	4894588



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
680	VLSR	3	4.5	464651	4894882
681	VLSR	3	4.5	462011	4896245
682	VLSR	3	4.5	461354	4898978
683	VLSR	3	4.5	461601	4898837
684	VLSR	3	4.5	462684	4895858
685	VLSR	3	4.5	459665	4897577
686	VLSR	3	4.5	458706	4895910
687	VLSR	3	4.5	459974	4895195
688	VLSR	3	4.5	460837	4896917
689	VLSR	3	4.5	461093	4896770
690	VLSR	3	4.5	461478	4896551
691	VLSR	3	4.5	461674	4896437
692	VLSR	3	4.5	462953	4893510
693	VLSR	3	4.5	463452	4893093
694	VLSR	3	4.5	464308	4892609
695	VLSR	3	4.5	464646	4892419
696	VLSR	3	4.5	463694	4890753
697	VLSR	3	4.5	464281	4890422
698	VLSR	3	4.5	464772	4890144
699	VLSR	3	4.5	465558	4889703
703	VLSR	3	4.5	460980	4892842
704	VLSR	3	4.5	460660	4892479
705	VLSR	3	4.5	460107	4892660
706	VLSR	3	4.5	460650	4894679
707	VLSR	3	4.5	460411	4894813



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
708	VLSR	3	4.5	458669	4893605
709	VLSR	3	4.5	457072	4894384
711	VLSR	3	4.5	456152	4892568
712	VLSR	3	4.5	456122	4892716
713	VLSR	3	4.5	456070	4892614
718	VLSR	3	4.5	455822	4897420
734	VLSR	3	4.5	456714	4890500
735	VLSR	3	4.5	457122	4890271
736	VLSR	3	4.5	457207	4890225
737	VLSR	3	4.5	457263	4890325
738	VLSR	3	4.5	457500	4890199
739	VLSR	3	4.5	457624	4890001
740	VLSR	3	4.5	457795	4889905
741	VLSR	3	4.5	458165	4889700
742	VLSR	3	4.5	458844	4889160
743	VLSR	3	4.5	459690	4890569
744	VLSR	3	4.5	459054	4889340
745	VLSR	3	4.5	458969	4889182
746	VLSR	3	4.5	461506	4887831
747	VLSR	3	4.5	461925	4887595
748	VLSR	3	4.5	462535	4887386
749	VLSR	3	4.5	462619	4887337
751	VLSR	3	4.5	461949	4889283
752	VLSR	3	4.5	460742	4889982
753	VLSR	3	4.5	458405	4891293



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Building ID	Building Type	NPC Class	Height (m)	Easting	Northing
754	VLSR	3	4.5	457922	4891573
755	VLSR	3	4.5	459504	4893135
756	VLSR	3	4.5	459403	4893060
757	VLSR	3	4.5	465375	4899201
758	VLSR	3	4.5	464776	4899538
759	VLSR	3	4.5	465546	4899104
760	VLSR	3	4.5	466307	4896310
761	VLSR	3	4.5	467572	4895479
762	VLSR	3	4.5	466963	4891241
763	VLSR	3	4.5	465943	4889358
764	VLSR	3	4.5	465425	4889647



APPENDIX C

UTM Coordinates of Wind turbines from Existing or Proposed Facilities



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Wind Farm Name	Easting	Northing
Cruickshank Wind Farm	454779	4899525
Cruickshank Wind Farm	454362	4899575
Cruickshank Wind Farm	454102	4899089
Cruickshank Wind Farm	454385	4899246
Cruickshank Wind Farm	455094	4899388
Enbridge Ontario Wind Farm	460019	4905155
Enbridge Ontario Wind Farm	460379	4905167
Enbridge Ontario Wind Farm	460707	4905156
Enbridge Ontario Wind Farm	459698	4905239
Enbridge Ontario Wind Farm	459964	4906094
Enbridge Ontario Wind Farm	460367	4905994
Enbridge Ontario Wind Farm	461189	4904717
Enbridge Ontario Wind Farm	461598	4904571
Enbridge Ontario Wind Farm	462003	4904412
Enbridge Ontario Wind Farm	462408	4904256
Enbridge Ontario Wind Farm	462814	4904165
Enbridge Ontario Wind Farm	463307	4903900
Enbridge Ontario Wind Farm	463721	4903810
Enbridge Ontario Wind Farm	464137	4903725
Enbridge Ontario Wind Farm	464555	4903640
Enbridge Ontario Wind Farm	465069	4902904
Enbridge Ontario Wind Farm	465439	4902774
Enbridge Ontario Wind Farm	465801	4902799
Enbridge Ontario Wind Farm	466220	4902740
Enbridge Ontario Wind Farm	459425	4905334
Enbridge Ontario Wind Farm	459107	4904237
Enbridge Ontario Wind Farm	459409	4904069
Enbridge Ontario Wind Farm	459677	4903958
Enbridge Ontario Wind Farm	460012	4903818
Enbridge Ontario Wind Farm	460288	4903573
Enbridge Ontario Wind Farm	460672	4903378
Enbridge Ontario Wind Farm	461020	4903208
Enbridge Ontario Wind Farm	461375	4903037
Enbridge Ontario Wind Farm	461754	4902779



DRAFT SITE PLAN REPORT FOR THE ARMOW WIND PROJECT

Wind Farm Name	Easting	Northing
Enbridge Ontario Wind Farm	462050	4902573
Enbridge Ontario Wind Farm	462347	4902404
Enbridge Ontario Wind Farm	462688	4902268
Enbridge Ontario Wind Farm	463015	4902105
Enbridge Ontario Wind Farm	463264	4902004
Enbridge Ontario Wind Farm	463591	4901906
Enbridge Ontario Wind Farm	464436	4902945
Enbridge Ontario Wind Farm	464802	4902875

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

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