



Stantec

Stantec Consulting Ltd.
Suite 1 - 70 Southgate Drive
Guelph ON N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

October 15, 2012
Stantec File: 160960649

Ministry of the Environment
Environmental Approvals Access & Service Integration Branch
2 St. Clair Avenue West, Floor 12A
Toronto Ontario
M4V 1L5

Attention: Doris Dumais, Director

**Reference: St. Columban Wind Project
Project Design Change Addendum Information Package**

Dear Ms. Dumais:

St. Columban Energy LP is proposing to develop, construct, and operate the 33 megawatt (MW) St. Columban Wind Project (the Project) in the Municipality of Huron East (Huron East), Municipality of Morris-Turnberry (Morris-Turnberry), and Township of Howick (Howick), County of Huron (Huron County), in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province.

The Renewable Energy Approval (REA) application for the Project was submitted to the Ministry of the Environment (MOE) on June 14, 2012 (MOE Reference No. 6602-8V9P97). Based on a request from a community member regarding the placement of a Vacant Lot Surrogate Receptor (VLSR), St. Columban Energy LP has agreed to change the Project layout by moving Turbine 10.

This letter and its attachments provide information regarding the details of the design change, and an assessment of the potential environmental effects of the change. A copy of this information has also been provided to the MOE London District Office.

DESCRIPTION OF THE DESIGN CHANGE

Turbine 10 has moved 75 metres (m) from the location proposed in the REA application submitted to the MOE in June, 2012 (refer to Attachment A).

Turbine 10	Easting (X)	Northing (Y)
Current Location	476414	4824755
Amended Location (July 2012)	476464	4824699

Due to this shift in turbine location, the VLSR of concern (V679) would be moved to meet the typical building pattern of the area.

V679	Easting (X)	Northing (Y)
Current Location	475862	4824661
Amended Location (July 2012)	475917	4824767

Reference: St. Columban Wind Project – Project Design Change Addendum Information Package

St Columban Energy LP is currently considering two similar turbine models, and to be conservative, both models were assessed as part of the REA process (including this addendum) – the SWT 2.3-113 (113m blade span) and the SWT 2.3-101 (101m blade span). For the noise assessment, the SWT 2.3-101 was assessed, due to its higher noise level. For potential impacts to the natural environment, and property line setback assessments, the SWT 2.3-113 was assessed, due to its longer blade length. This conservative approach ensured the ‘worst case scenario’ was assessed.

Addendum (Addendum 1) to the St. Columban Wind Project Noise Assessment Reports submitted as part of the Project’s REA application on June 14, 2012 (Revision 5-101 and Revision 5-113) have been prepared and are included in Attachment B. The Noise Assessment Report Addendum include updated supplementary information (searchable maps, Excel spreadsheets of data, etc) reflecting the movement of Turbine 10 and V679. Please note that except for the relocations of Turbine 10 and V679, the Project details remain the same as previously reported. In fact, there has been no negative impact to the next closest noise receptor (R3) for either setback distance or noise level, due to the movement of Turbine 10.

Distances and noise levels for the old and amended Turbine 10 and V679 locations are summarized below.

	101 Old Location	101 Amended Location	113 Old Location	113 Amended Location
Noise level at V679	38.7 dBA	38.6 dBA	37.6 dBA	37.5 dBA
Distance to Turbine 10	560m	551m	560m	551m

While the turbine location is closer to V679, the proposed new location results in a reduction in overall noise levels by 0.1dBA for both models. The turbine location remains compliant (less than 40dBA and more than 550m from non-participating receptors).

Moving Turbine 10 has resulted in a shift of the Project Location, as defined by O.Reg.359/09, since submission of the REA application to the MOE on June 14, 2012. Apart from this shift, the information provided to the public at the final public meeting has not altered appreciably. The intention is to provide this Addendum to the MOE for possible inclusion in the posting on the Environmental Registry. To ensure the community is notified of the reasoning behind the change, and the net effects of the change, notification will also be provided on the Project website, and by mail to the municipalities, land owners within 2 kilometers of the new and old turbine locations, as well as to the community member directly affected by the change. Due to addenda for the NHA and Stage 2 Archaeological Assessments, St. Columban Energy LP will also be providing notification of the proposed change to Aboriginal communities on the s. 14 list and others that have been consulted with throughout the REA process.

RATIONALE FOR THE DESIGN CHANGE

At the final public meeting for the Project held on May 8, 2012 in Seaforth, a community member spoke with members of the Study Team regarding the placement of a VLSR on their property. It was determined that a vacant lot with a shed (located southwest of Turbine 10) was not identified in the Noise Assessment Report, even though it is a separate parcel from their home property (receptor #86 and #87). Data received from Huron County had indicated their property was a single 200ac parcel, when in fact it was two 100ac parcels, and therefore a VLSR would need to be added. The landowner had not identified the oversight to the Study Team prior to the May 8, 2012 meeting.

October 15, 2012

Page 3 of 5

Reference: St. Columban Wind Project – Project Design Change Addendum Information Package

The Study Team provided an email response to the community member on May 17, 2012, indicating the placement of a VLSR (V679) 560m from Turbine 10, with a modeled noise level of 38.7dBA with the 2.3-101 turbine. A response from the landowner on June 14, 2012 indicated he was not pleased with the proposed location for V679, as it was not consistent with the building pattern, considering Minimum Separation Distance (MDS) from surrounding barns. The proposed location also prevented use of the existing laneway, drilled well, and electrical service on the property. The Study Team agreed that the location is further back from the road than the neighbours, but is not the furthest back in the neighbourhood, and 'typical building pattern' is subjective in this case. There has never been a residence on the property, and the structure near the laneway is a shed. The landowner later informed the MOE that if they ever did build on the lot, it would be in the area of the shed.

There is no requirement for placing the VLSR adjacent to the existing services, and under the *Green Energy and Green Economy Act* (2009) (GEGEA), Schedule K, the *Planning Act* was amended to exempt renewable energy projects from the following local planning instruments:

- Official Plans (Section 62.0.2, Subsection (3) of the Planning Act);
- Demolition Control By-laws (Section 62.0.2, Subsection (5) of the Planning Act);
- By-laws or Orders passed under Part V of the *Planning Act*, including zoning, site plan, holding and interim control by-laws (Section 62.0.2, Subsection (6) of the Planning Act); and,
- Development Permit System By-laws (Section 62.0.2, Subsection (8) of the Planning Act).

Although as noted above consideration of MDS is not required due to amendments to the *Planning Act* under the GEGEA, the Project has sited the proposed VLSRs on properties such that they would be outside the minimum 550 m / under 40dBA setback from all wind turbines, and where possible, outside the MDS setback from existing barns.

Following discussions with the MOE, and considering the request from the community member, the Project has opted to shift the location of Turbine 10 to provide a distance of 551m from the new location of V679, with a maximum modeled noise level of 37.6dBA.

A copy of Project correspondence with the landowner is provided as Attachment C to this letter.

CONSULTATION WITH THE MINISTRY OF NATURAL RESOURCES (MNR) AND THE MINISTRY OF TOURISM, CULTURE AND SPORT (MTCS) REGARDING THE DESIGN CHANGE

MNR

The Natural Heritage Assessment/Environmental Impact Study (NHA/EIS) confirmation letter for the Wind Project Study Area was provided on August 29, 2011. The addition of an approximately 43km underground interconnection line in the fall of 2011 resulted in an NHA Addendum, which received a confirmation letter from the MNR on February 13, 2012.

October 15, 2012

Page 4 of 5

Reference: St. Columban Wind Project – Project Design Change Addendum Information Package

Shifting the location of Turbine 10 75m will not have any additional negative effects on natural features, and will move the construction zone away from one feature, a Maple-Ash Mineral Cultural Woodland. The Study Team provided a memo outlining potential effects to the MNR on July 13, 2012, and has since confirmed with the MNR that the design change would not affect their confirmation of the Project's NHA/EIS, as detailed in their confirmation letters. An email from the MNR with letter attached confirming that they have no issues with the proposed design change is provided as Attachment D to this letter.

MTCS

Archaeological Services Inc. (ASI) conducted a Stage 1 archaeological assessment for the initial St. Columban Wind Project study area in 2009, including a background study and property inspection for 10 proposed turbine sites and associated access roads. The report recommended a Stage 2 property assessment in advance of any development, and the MTCS accepted these recommendations on August 10, 2009. ASI conducted a Stage 2 archaeological assessment for the lands included in the St. Columban Wind Project in 2011, including additional background research and the property assessment of the Project Location, which now included 15 turbine sites and associated project infrastructure as well as adjacent lands prepared for pedestrian survey. No archaeological resources were identified during the assessment, and the Project Location and adjacent lands were cleared of archaeological concern. The Stage 2 report was accepted by the MTCS on July 14, 2011.

In June 2012, an additional Stage 2 pedestrian survey was conducted on the new lands required for the relocation of Turbine 10 and its associated infrastructure. No archaeological resources were identified (Attachment E).

In light of these results, ASI makes the following recommendations:

1. The lands required for the relocation of Turbine 10 within the St. Columban Wind Project do not require any further archaeological assessment; and,
2. If changes to the Project location or temporary workspace requirements result in the inclusion of previously unassessed lands, these lands should be subject to a Stage 2 property assessment.

A request for expedited review of the Additional Assessment was provided to the MTCS on July 6, 2012. Follow-up correspondence from MTCS has indicated a response to this request will be provided no later than August 7, 2012 (Attachment E). In the interest of expedient response to the landowner's concern, St. Columban Energy LP requests that the MOE initiate review of this addendum without the MTCS confirmation letter. St. Columban Energy LP will provide the letter as soon as it is received.

EFFECTS ASSESSMENT FOR THE DESIGN CHANGE

To identify any new environmental effects as a result of the design change that would require additional mitigation or monitoring measures beyond those outlined in the REA application, a screening of potential effects on environmental features considered during the REA process was undertaken. The screening considered potential effects and mitigation measures provided in the REA application, and is intended to identify only additional considerations resulting from the design change. The screening assessment is provided as Attachment F to this letter.

October 15, 2012

Page 5 of 5

Reference: St. Columban Wind Project – Project Design Change Addendum Information Package

At 84m from the road right-of-way, the amended turbine location meets the setback distance from public road rights of way, 65 metres (blade length + 10m), as prescribed in s.53 of O. Reg. 359/09. The new location is also more than hub height (99.5m) from the closest non-participating property line, to the south on Summerhill Road (Figure 1, Attachment A).

The original and amended turbine locations (including associated infrastructure, such as access roads and cabling) are within the same agricultural field (soy in 2011 planting, corn in 2012). The blade sweep for the turbine is also completely within the agricultural field (Figure 2, Attachment A). The amended 120m zone of investigation from the construction area includes less of the CUW1-3 (Maple-Ash Mineral Cultural Woodland) feature than the previous location. Two grassland bird survey locations previously just outside the 120m zone of investigation are now within (Figure 2, Attachment A).

SUMMARY AND CONCLUSION

Given that the Project Location has not changed significantly, and the potential effects of relocating Turbine 10 are the same as at the previous location, no additional potential effects or requirements for specific mitigation measures have been identified for the design change. The design change is a Project improvement to address the landowner's concerns, and can be implemented with no new net negative environmental effects.

If you have any questions or concerns, please do not hesitate to contact me (contact information provided below) at any time.

Sincerely,

STANTEC CONSULTING LTD.



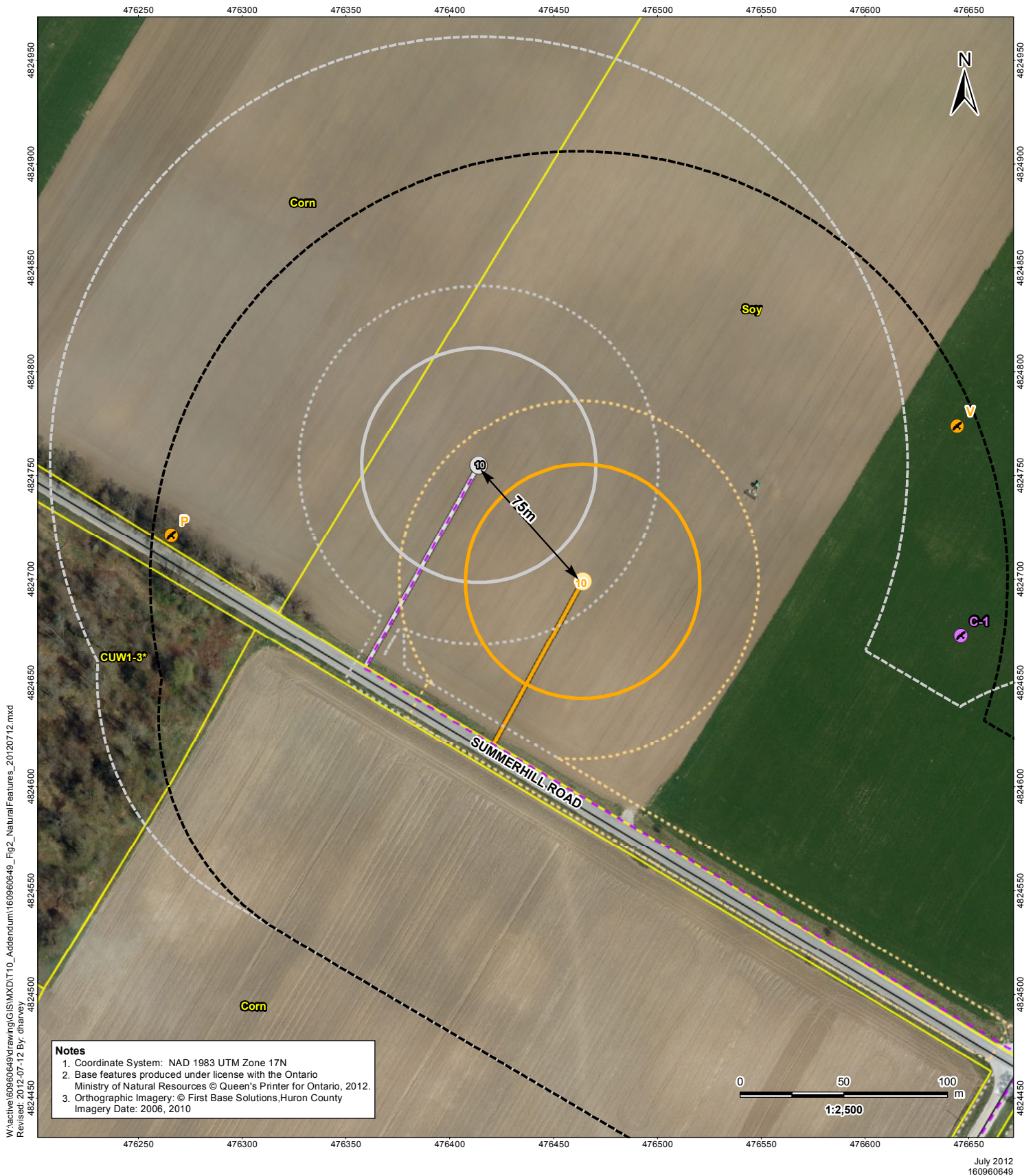
Shawna Peddle
Senior Project Manager
Tel: (519) 836-6050
Fax: (519) 836-2493
shawna.peddle@stantec.com

Attachments: A – Figures
B – Noise Assessment Report Addendum and Supporting Information
C - Correspondence with the Landowner
D - NHA Addendum Memo and Confirmation Letter from MNR Regarding Proposed Design Change
E - Additional Stage 2 Property Assessment Report and Letter to the MTCS Regarding Proposed Design Change and Request for an Expedited Review
F - Screening Assessment of Potential Effects of the Design Change

cc. Mark Dunn, District Manager, MOE London District
Jose Menendez, St. Columban Energy LP
Hali Zigomanis, St. Columban Energy LP

Attachment A

Figures



Legend

120m Zone of Investigation

- Original Location
- Amended Location

Turbine Location (Center Point)

- Original Location
- Amended Location

Turbine Blade Reach

- Original Location
- Amended location

Underground Collector

- Original Location
- Amended Location

Construction Area

- Original Location
- Amended Location

ELC Boundary

Grassland Bird Survey Locations

- AECOM (2006 and 2008)
- Stantec (2011)

Client/Project

ST. COLUMBAN ENERGY LP
ST. COLUMBAN WIND PROJECT

Figure No.

2

DRAFT

Title

**Amended T10 Location-
Natural Features**

July 2012
160960649

Attachment B

Noise Assessment Report Addendum and
Supporting Information

Zephyr North

Zephyr North

Zephyr North



Zephyr North

Zephyr North Ltd.

850 LEGION ROAD UNIT 20
BURLINGTON ON L7S 1T5
CANADA

Phone: 905-335-9670

Fax: 905-335-0119

Internet: Info@ZephyrNorth.com

Zephyr North

ST. COLUMBAN WIND PROJECT

NOISE ASSESSMENT REPORT

Revision 5-101 Addendum 1

For

ST. COLUMBAN ENERGY LP



By

J. R. Salmon

S. J. Corby

2012 July 9

J. Menéndez, P.Eng.

For St. Columban Energy LP



Originals printed on
Recycled 20% post-consumer content

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITIES

This Report was prepared by Zephyr North Ltd. of Burlington Ontario Canada as an account of work sponsored by St. Columban Energy LP (St. Columban). Neither Zephyr North Ltd. nor any person acting on its behalf:

- (a) Makes any warranty or representation whatsoever, express or implied, (i) with respect to the use of any information, apparatus, method, process, or similar item disclosed in this report, including merchantability and fitness for a particular purpose, or (ii) that such use does not infringe on or interfere with privately owned rights, including any party's intellectual property, or (iii) that this report is suitable to any particular user's circumstance, or
- (b) Assumes responsibility for any damages or other liability whatsoever (including any consequential damages, even if Zephyr North Ltd. or its representatives have been advised of the possibility of such damages) resulting from your selection or use of this report or any information, apparatus, method, process or similar item disclosed in this report.

Table of Contents

1 INTRODUCTION.....	5
1.1 Purpose.....	5
2 PROJECT LAYOUT.....	5
2.1 Project Site.....	5
2.2 Project Details.....	5
3 DESCRIPTION OF RECEPTORS.....	7
3.1 Summary.....	7
4 DESCRIPTION OF SOURCES.....	7
4.1 Summary.....	7
5 NOISE EMISSION RATINGS.....	8
5.1 Summary.....	8
6 IMPACT ASSESSMENT.....	8
6.1 Summary.....	8
6.2 Results.....	8
7 NOISE LEVEL SUMMARY TABLES.....	10
8 NOISE LEVEL ISOPLETH MAP.....	15
9 EXAMPLE CALCULATION.....	17
9.1 Example.....	17
10 CONCLUSIONS.....	19
11 REFERENCES.....	20
12 APPENDIX A — TURBINE, RECEPTOR, VACANT LOT AND PARTICIPANT LOCATIONS.....	21

List of Figures

Figure 2-1 Wind Farm details map.....6

Figure 8-1 40 dBA noise isopleth map for 6 ms⁻¹ (10 m) for 1.5 and 4.5 m
receptor heights..... 16

List of Tables

Table 6-1 Sorted highest noise levels at receptors.....9

Table 7-1 Receptor noise level summary table.....10

Table 7-2 Vacant lot surrogate receptor noise level summary table.....13

Table 7-3 Participant noise level summary table.....14

Table 9-1 Sample calculation for receptor and turbine.....17

Table 9-2 Sample calculation for single receptor R3 and multiple
turbines/transformers.....18

1 INTRODUCTION

1.1 Purpose

This addendum (Addendum 1) to the St Columban Wind Project Noise Assessment Report (Revision 5-101) has been prepared in order to address the following.

1. Relocation of turbine T10 within its host property. This turbine has been moved to 476,464E 4,824,699N (NAD83, UTM17N) from 476,414E 4,824,755N.
2. Relocation of vacant lot surrogate receptor (VLSR) V679 in response to a request from the landowner. This VLSR has been moved from 475,862E 4,824,661N (NAD83, UTM17N) to 475,917E 4,824,767N.

This addendum updates all information, results, maps, tables, *etc.*, impacted by these two changes.

2 PROJECT LAYOUT

2.1 Project Site

Figure 2-1 has been updated to show the new locations of T10 and V679.

2.2 Project Details

Except for the relocations of T10 and V679, project details remain the same as previously reported.

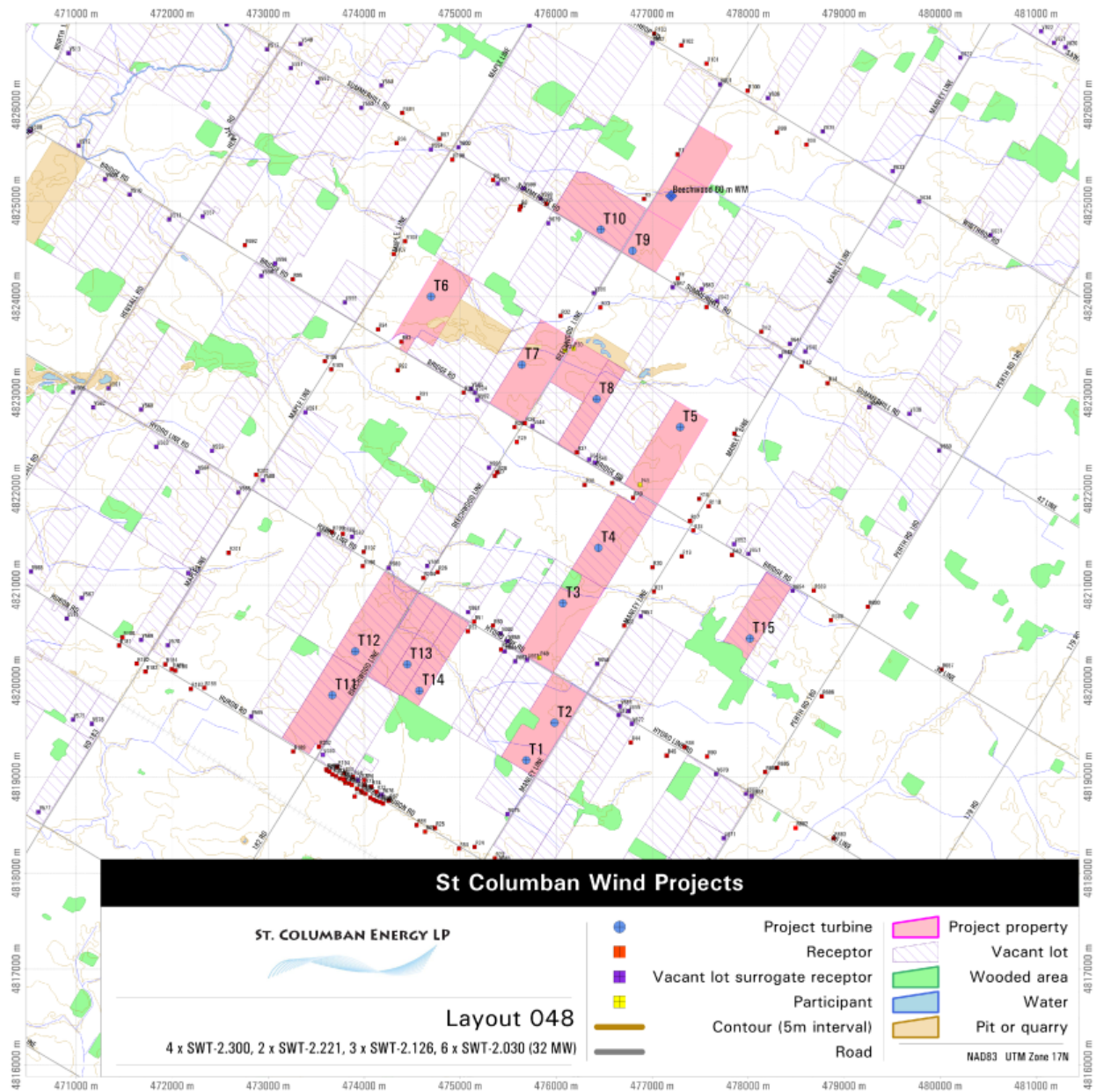


Figure 2-1 Wind Farm details map.

3 DESCRIPTION OF RECEPTORS

3.1 Summary

Except for the relocation of V679, all receptors, participants, and vacant lot surrogate receptors (VLSRs) remain the same.

4 DESCRIPTION OF SOURCES

4.1 Summary

Except for the relocation of T10, all turbine and transformer details remain as reported previously. Note that only T10's location has changed. No other details of this turbine have changed.

5 NOISE EMISSION RATINGS

5.1 Summary

As noted previously, only the location of turbine T10 has changed. Its noise emission ratings have not changed from those previously reported.

6 IMPACT ASSESSMENT

6.1 Summary

The ‘Specific Parameters’, ‘Methodology’, and ‘Additional Parameters and Conditions’ for this project have not changed from those previously reported.

6.2 Results

Due to the changes in location of T10 and V679, updated impact assessment results are reported in Tables 7-1, 7-2 and 7-3 found in Section 7 and the noise level isopleth map of Section 8 .

Table 6-1 briefly summarizes the results of the noise assessment. It is a sorted list of the highest sound pressure levels determined in the analysis for receptors and VLSRs.

Table 6-1 Sorted highest noise levels at receptors.

Receptor ID	SPrL (dBA)	Height (m)	Nearest Turbine	Project or Other Turbine	Distance (m)
V596	39.6	4.5	T9	P	597
R3	39.5	4.5	T9	P	551
V645	39.3	4.5	T8	P	635
R93	39.3	4.5	T6	P	564
V646	39.2	4.5	T8	P	660
V644	39.2	4.5	T7	P	650
V662	39.2	4.5	T3	P	698
V663	39.2	4.5	T2	P	760
R32	39.1	4.5	T7	P	648
R34	39.1	4.5	T7	P	611
V664	39.1	4.5	T3	P	788
V659	39.0	4.5	T3	P	697
R33	39.0	4.5	T9	P	678
R52	39.0	1.5	T13	P	719
V661	38.9	4.5	T13	P	836
V660	38.9	4.5	T3	P	718
R50	38.8	4.5	T3	P	763
V594	38.7	4.5	T7	P	568
R39	38.7	4.5	T4	P	691
R107	38.6	4.5	T6	P	589
V595	38.6	4.5	T7	P	586
V679	38.6	4.5	T10	P	551
R37	38.4	1.5	T8	P	592
R15	38.4	4.5	T5	P	570
R38	38.4	4.5	T4	P	670
V592	38.4	4.5	T7	P	594
WindFarm layout file: StC05-WFL048.WFL					

7 NOISE LEVEL SUMMARY TABLES

Table 7-1 Receptor noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1	Residence	4.5	1108	T9	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
R3	Residence	4.5	551	T9	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R5	Residence	4.5	631	T10	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R6	Residence	4.5	868	T10	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R7	Residence	4.5	869	T10	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R8	Residence	4.5	1238	T10	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R9	Residence	4.5	551	T9	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R10	Residence	1.5	968	T9	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R12	Residence	4.5	1305	T5	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R13	Residence	4.5	1417	T5	30.9	30.9	30.9	30.9	30.9	40.0	43.0	45.0	49.0	51.0
R15	Residence	4.5	570	T5	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R16	Residence	4.5	772	T5	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R17	Residence	4.5	983	T5	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R18	Residence	1.5	1007	T4	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R19	Residence	4.5	874	T4	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R20	Residence	4.5	599	T4	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R21	Residence	4.5	736	T4	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R22	School	4.5	681	T3	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R23	Residence	4.5	1073	T1	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
R24	Residence	1.5	1051	T1	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R25	Hall	4.5	1183	T1	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R26	Residence	4.5	1012	T13	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R27	Residence	4.5	1190	T7	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R28	Residence	1.5	1151	T7	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R29	Residence	4.5	808	T7	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R32	Residence	4.5	648	T7	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R33	Residence	4.5	678	T9	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R34	Residence	4.5	611	T7	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R35	Residence	4.5	673	T7	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R36	Residence	4.5	657	T7	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R37	Residence	1.5	592	T8	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R38	Residence	4.5	670	T4	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R39	Residence	4.5	691	T4	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R40	Residence	1.5	634	T4	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R43	Residence	1.5	891	T15	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R44	Residence	1.5	822	T2	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R45	Residence	4.5	1218	T2	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R46	Residence	4.5	1316	T15	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R49	Residence	1.5	802	T3	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R50	Residence	4.5	763	T3	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R51	Residence	1.5	827	T13	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R52	Residence	1.5	719	T13	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R62	Residence	4.5	1224	T1	31.6	31.6	31.6	31.6	31.6	40.0	43.0	45.0	49.0	51.0
R63	Residence	1.5	1143	T1	30.7	30.7	30.7	30.7	30.7	40.0	43.0	45.0	49.0	51.0
R64	Residence	1.5	1157	T1	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
R65	Residence	4.5	1290	T1	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R66	Residence	1.5	1326	T1	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R67	Residence	4.5	1187	T14	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R68	Residence	1.5	1235	T14	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R69	Residence	4.5	1218	T11	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R70	Residence	1.5	1192	T11	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R71	Residence	1.5	1168	T11	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R72	Residence	1.5	1105	T11	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R73	Residence	1.5	1139	T11	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R74	Trailer	4.5	1035	T11	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R75	Residence	1.5	1082	T11	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R76	Residence	4.5	1061	T11	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R77	Residence	4.5	994	T11	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R78	Residence	4.5	1040	T11	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R79	Residence	1.5	947	T11	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R80	Residence	4.5	1005	T11	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R81	Residence	1.5	1079	T11	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R82	Residence	1.5	957	T11	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R83	Residence	1.5	934	T11	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R84	Trailer	1.5	876	T11	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R85	Residence	1.5	923	T11	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R86	Residence	4.5	888	T11	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R87	Residence	4.5	877	T11	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R88	Residence	4.5	825	T11	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R89	Residence	1.5	871	T11	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R90	Residence	4.5	1305	T15	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R91	Residence	1.5	1066	T6	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R92	Residence	4.5	841	T6	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R93	Residence	4.5	564	T6	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
R94	Residence	4.5	649	T6	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R95	Residence	4.5	1450	T6	30.1	30.1	30.1	30.1	30.1	40.0	43.0	45.0	49.0	51.0
R104	Residence	1.5	915	T13	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R105	Residence	4.5	1286	T6	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
R106	Residence	4.5	1296	T6	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R107	Residence	4.5	589	T6	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R108	Residence	4.5	634	T6	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R109	Residence	4.5	1441	T6	31.3	31.3	31.3	31.3	31.3	40.0	43.0	45.0	49.0	51.0
R110	Residence	7.5	874	T5	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R187	Residence	4.5	1476	T11	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
R188	Residence	4.5	1337	T11	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
R189	Residence	4.5	714	T11	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R190	Residence	4.5	777	T11	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R191	Residence	1.5	786	T11	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R192	Residence	1.5	795	T11	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R193	Residence	1.5	825	T11	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R194	Residence	4.5	750	T11	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R195	Residence	1.5	844	T11	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R196	Residence	4.5	888	T12	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R197	Residence	4.5	1038	T12	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R198	Residence	4.5	1232	T12	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R199	Residence	4.5	1264	T12	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R202	Residence	1.5	555	T11	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R684	Residence	7.5	1398	T15	31.1	31.1	31.1	31.1	31.1	40.0	43.0	45.0	49.0	51.0
R685	Residence	4.5	1373	T15	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
R686	Residence	4.5	960	T15	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R688	Residence	4.5	867	T15	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R689	Residence	1.5	834	T15	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R690	Residence	4.5	1273	T15	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0

Table 7-2 Vacant lot surrogate receptor noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V555	VLSR	4.5	899	T6	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V585	VLSR	4.5	877	T11	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
V586	VLSR	4.5	1275	T12	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
V587	VLSR	4.5	1193	T12	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
V589	VLSR	4.5	936	T12	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
V590	VLSR	4.5	1046	T13	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
V592	VLSR	4.5	594	T7	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V593	VLSR	4.5	1127	T7	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
V594	VLSR	4.5	568	T7	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V595	VLSR	4.5	586	T7	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V596	VLSR	4.5	597	T9	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
V597	VLSR	4.5	1176	T10	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
V598	VLSR	4.5	706	T10	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V599	VLSR	4.5	912	T10	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V641	VLSR	4.5	1437	T5	31.1	31.1	31.1	31.1	31.1	40.0	43.0	45.0	49.0	51.0
V642	VLSR	4.5	1025	T9	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
V643	VLSR	4.5	825	T9	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
V644	VLSR	4.5	650	T7	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
V645	VLSR	4.5	635	T8	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
V646	VLSR	4.5	660	T8	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
V647	VLSR	4.5	568	T9	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V648	VLSR	4.5	1281	T5	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V651	VLSR	4.5	884	T15	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V652	VLSR	4.5	1000	T15	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
V654	VLSR	4.5	670	T15	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V655	VLSR	4.5	779	T2	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V656	VLSR	4.5	704	T2	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V657	VLSR	4.5	822	T3	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V658	VLSR	4.5	725	T3	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V659	VLSR	4.5	697	T3	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
V660	VLSR	4.5	718	T3	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V661	VLSR	4.5	836	T13	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V662	VLSR	4.5	698	T3	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
V663	VLSR	4.5	760	T2	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
V664	VLSR	4.5	788	T3	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V670	VLSR	4.5	1452	T15	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
V672	VLSR	4.5	806	T2	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
V673	VLSR	4.5	672	T2	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
V675	VLSR	4.5	596	T1	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
V676	VLSR	4.5	1155	T14	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
V677	VLSR	4.5	922	T11	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V678	VLSR	4.5	1241	T1	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
V679	VLSR	4.5	551	T10	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V680	VLSR	4.5	629	T11	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V681	VLSR	4.5	1104	T1	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0

Table 7-3 Participant noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)				
					6.0	7.0	8.0	9.0	10.0
P30	Residence	4.5	564	T7	40.9	40.9	40.9	40.9	40.9
P31	Residence	4.5	473	T7	41.4	41.4	41.4	41.4	41.4
P41	Residence	4.5	731	T5	38.7	38.7	38.7	38.7	38.7
P48	Residence	4.5	616	T3	39.3	39.3	39.3	39.3	39.3

8 NOISE LEVEL ISOPLETH MAP

Figure 8-1 is an updated noise level isopleth map of the sound pressure levels (dBA) due to turbines and transformers (as existent) over the project area for a 10 m a.g.l. wind speed of 6 ms^{-1} . The noise levels are calculated for receptors with 1.5 m (1 storey) and 4.5 m (2 storeys) heights. Changes in this map are due only to the relocation of T10. (The updated location of V679 is also shown.)

The map displays the specific noise level isopleth relevant to the MoE (2008) Guidelines limit for each wind speed as listed here:

Wind Speed	Limiting Noise Isopleth
6 ms^{-1}	40 dBA

Noise level isopleth maps for 8 ms^{-1} and 10 ms^{-1} have not been included since the calculated sound pressure levels are identical to those calculated for the 6 ms^{-1} values.

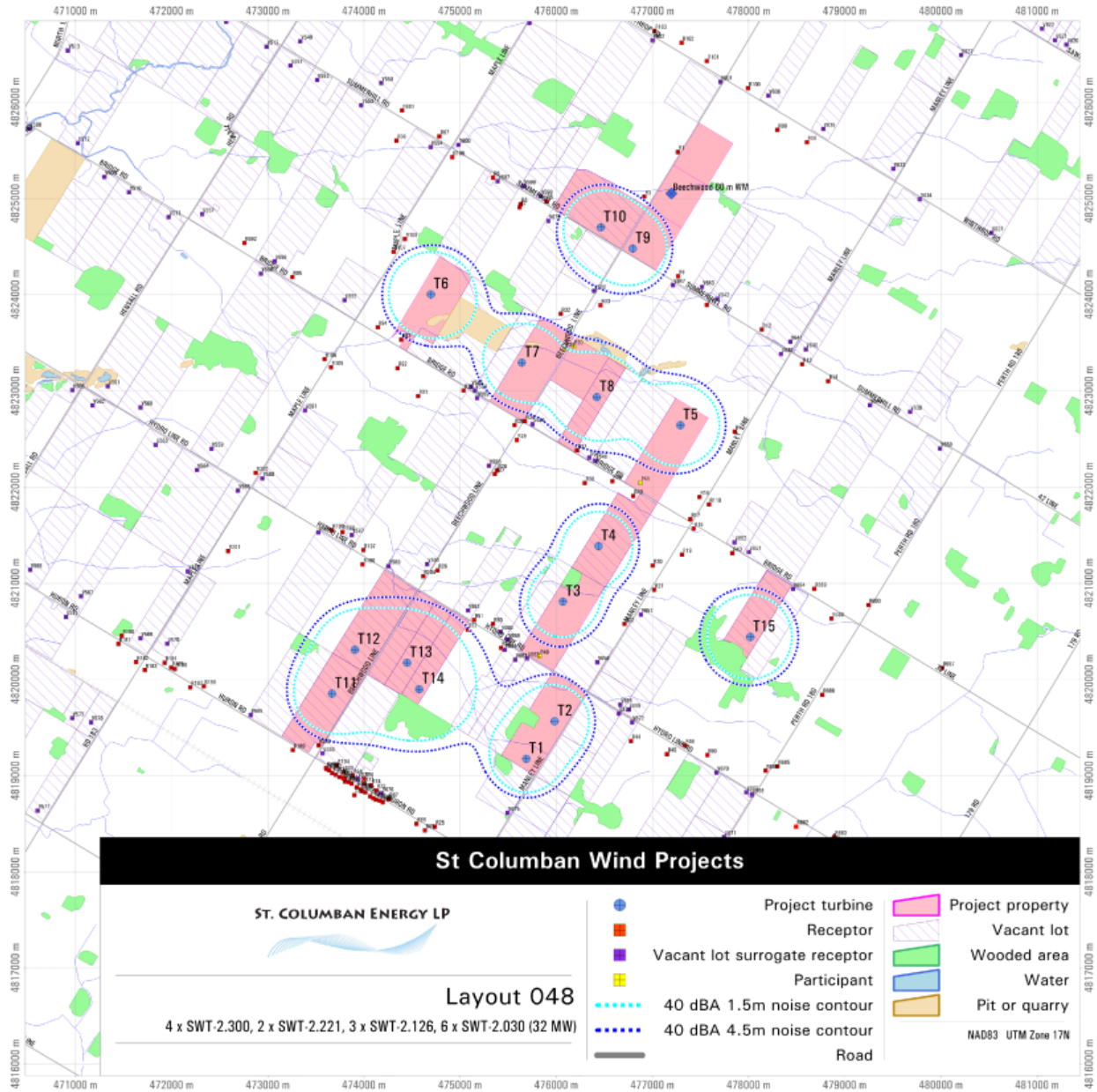


Figure 8-1 40 dBA noise isopleth map for 6 ms⁻¹ (10 m) for 1.5 and 4.5 m receptor heights.

9 EXAMPLE CALCULATION

9.1 Example

The changes in the results of this example calculation are due only to the relocation of turbine T10. As it treats only receptor R3 and turbine T9, Table 9-1 has not changed. Table 9-2 has changed.

The following sample calculation presents intermediate octave-band results of calculations for A-weighted sound pressure levels corresponding to a 10 m (a.g.l.) wind speed of 6 ms^{-1} . All model parameters are the same as previously tabulated.

Table 9-1 lists the intermediate sound pressure levels calculated at receptor R3 due to the single turbine T9. Receptor and turbine are separated by 551 m. Note that the resultant A-weighted sound pressure level at R3 due to turbine T9 alone is 35.6 dBA.

Table 9-1 Sample calculation for receptor and turbine.

Intermediate calculations for receptor R3 and turbine T9						
Octave band	Mid-band frequency (Hz)	L_w (dBA)	A_{div} (dB)	A_{atm} (dB)	A_{gr} (dB)	L_{rT} (DW) (dBA)
1	63	82.2	66.0	0.1	-3.0	19.2
2	125	92.2	66.0	0.2	1.0	25.0
3	250	93.7	66.0	0.6	-0.1	27.2
4	500	97.2	66.0	1.1	-0.7	30.9
5	1000	98.2	66.0	2.1	-0.7	30.9
6	2000	94.7	66.0	5.4	-0.8	24.0
7	4000	88.6	66.0	18.4	-0.8	5.0
8	8000	84.8	66.0	65.6	-0.8	-46.0

In the table:

L_W is the octave-band sound power level, in decibels (A-weighted), produced by the point sound source relative to a reference sound power of one picowatt,

A_{div} is the attenuation due to geometrical divergence,

A_{atm} is the attenuation due to atmospheric absorption,

A_{gr} is the attenuation due to the ground effect,

$L_{PT}(DW)$ is the equivalent continuous downwind octave-band sound pressure level.

Table 9-2 shows intermediate octave band values of the calculations for the A-weighted sound pressure levels at receptor R3 due to all turbines (including other projects, if any) within 5,000 m of the receptor. The resultant A-weighted sound pressure level at R3 due to all turbines is 39.5 dBA.

Table 9-2 Sample calculation for single receptor R3 and multiple turbines/transformers.

Intermediate calculations for single receptor R3 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_n contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
T3	4293	28.1	21.9	14.6	9.5	-0.4	-30.9	-136.0	-499.3	11.6
T4	3663	29.2	23.5	16.5	12.0	3.2	-23.5	-114.0	-424.3	13.7
T5	2404	32.7	28.3	23.6	20.5	13.3	-5.9	-68.2	-272.6	21.1
T6	2441	32.7	28.6	24.6	21.7	14.1	-5.5	-68.9	-276.5	22.0
T7	2143	33.6	28.9	23.7	20.7	14.3	-3.4	-59.2	-241.7	21.5
T8	2140	33.8	29.5	24.9	22.1	15.3	-2.3	-58.5	-240.7	22.6
T9	551	45.4	41.1	35.8	34.1	30.9	22.8	4.0	-44.9	35.6
T10	552	45.4	41.4	36.9	35.4	31.8	23.6	4.4	-44.7	36.6
T15	4709	27.8	22.2	16.8	11.8	0.2	-33.0	-148.8	-547.2	13.1

10 CONCLUSIONS

The locations of turbine T10 and VLSR V679 have changed from those reported in the previous noise assessment report — Revision 5-101. The conclusions remain the same — namely that this noise impact assessment for the proposed St. Columban Wind Project has determined that the estimated sound pressure levels at receptors and Vacant Lot Surrogate Receptors (VLSRs) in the project area comply with the Ministry of the Environment sound level limits at all qualified points of reception.

11 REFERENCES

There are no references cited for this Addendum.

12 APPENDIX A — TURBINE, RECEPTOR, VACANT LOT AND PARTICIPANT LOCATIONS

This appendix contains lists of turbine, transformer, receptor, vacant lot surrogate receptor (VLSR), and participant locations. Coordinates are given in the Universal Transverse Mercator (UTM) Zone 17 North projection. The datum is North American Datum 1983 (NAD83, Canada). For completeness, all turbine locations (including the relocated T10) and all receptor, participant and VLSR locations (including the relocated V679) have been shown.

For reference, the project (turbine/transformer) layout identifier is StC05-WFL048.wfl.

Turbines

Table: Wind Turbine Locations

Project Name: St. Columban Wind Project

Datum and Projection: NAD83 (Canada); UTM 17N

Identifier	Equipment		X(E,m)	Y(N,m)
	Make	Model		
T1	Siemens	SWT 2.030-101	475688	4819174
T2	Siemens	SWT 2.030-101	475982	4819564
T3	Siemens	SWT 2.030-101	476068	4820809
T4	Siemens	SWT 2.030-101	476439	4821386
T5	Siemens	SWT 2.221-101	477290	4822643
T6	Siemens	SWT 2.300-101	474695	4824004
T7	Siemens	SWT 2.126-101	475642	4823294
T8	Siemens	SWT 2.221-101	476421	4822936
T9	Siemens	SWT 2.030-101	476794	4824480
T10	Siemens	SWT 2.126-101	476464	4824699
T11	Siemens	SWT 2.126-101	473668	4819851
T12	Siemens	SWT 2.030-101	473905	4820309
T13	Siemens	SWT 2.300-101	474447	4820173
T14	Siemens	SWT 2.300-101	474574	4819899
T15	Siemens	SWT 2.300-101	478016	4820440

Transformer (Off-site)

Table: Transformer Location

Project Name: St. Columban Wind Project

Datum: NAD83 (Canada) Projection: UTM 17N

Identifier	Equipment Make and Model	X(E,m)	Y(N,m)
Transformer	Unknown	487630	4854885

Points of Reception (Receptors)

Table - Point of Reception Locations

Project Name: St. Columban Wind Project

Datum: NAD83 (Canada) Projection: UTM 17N

Point of Reception		Height (m)	NPC Class	X(E,m)	Y(N,m)
ID	Description				
R1	Residence	4.5	3	477263	4825484
R3	Residence	4.5	3	476915	4825018
R5	Residence	4.5	3	475895	4824971
R6	Residence	4.5	3	475630	4824941
R7	Residence	4.5	3	475620	4824907
R8	Residence	4.5	3	475340	4825218
R9	Residence	4.5	3	477265	4824193
R10	Residence	1.5	3	477565	4823894
R12	Residence	4.5	3	478137	4823636
R13	Residence	4.5	3	478557	4823277
R15	Residence	4.5	3	477856	4822577
R16	Residence	4.5	3	477491	4821898
R17	Residence	4.5	3	477394	4821666
R18	Residence	1.5	3	477429	4821568
R19	Residence	4.5	3	477308	4821297
R20	Residence	4.5	3	477003	4821184
R21	Residence	4.5	3	477017	4820931
R22	School	4.5	3	476708	4820575
R23	Residence	4.5	3	475360	4818152
R24	Residence	1.5	3	475151	4818270
R25	Hall	4.5	3	474738	4818469
R26	Residence	4.5	3	474765	4821134
R27	Residence	4.5	3	475362	4822137
R28	Residence	1.5	3	475386	4822172
R29	Residence	4.5	3	475590	4822488
R32	Residence	4.5	3	476047	4823800
R33	Residence	4.5	3	476460	4823890
R34	Residence	4.5	3	475675	4822684
R35	Residence	4.5	3	475035	4823003
R36	Residence	4.5	3	475564	4822642
R37	Residence	1.5	3	476216	4822381
R38	Residence	4.5	3	476296	4822041
R39	Residence	4.5	3	476583	4822062
R40	Residence	1.5	3	476801	4821907
R43	Residence	1.5	3	477831	4821312
R44	Residence	1.5	3	476778	4819360
R45	Residence	4.5	3	477151	4819223
R46	Residence	4.5	3	477337	4819313
R49	Residence	1.5	3	475426	4820329
R50	Residence	4.5	3	475341	4820576

R51	Residence	1.5	3	475144	4820618
R52	Residence	1.5	3	475078	4820517
R62	Residence	4.5	3	475375	4817991
R63	Residence	1.5	3	475430	4818060
R64	Residence	1.5	3	474987	4818253
R65	Residence	4.5	3	474634	4818431
R66	Residence	1.5	3	474547	4818499
R67	Residence	4.5	3	474256	4818755
R68	Residence	1.5	3	474196	4818723
R69	Residence	4.5	3	474166	4818739
R70	Residence	1.5	3	474124	4818750
R71	Residence	1.5	3	474097	4818765
R72	Residence	1.5	3	474127	4818846
R73	Residence	1.5	3	474064	4818783
R74	Trailer	4.5	3	474075	4818899
R75	Residence	1.5	3	474012	4818825
R76	Residence	4.5	3	473985	4818838
R77	Residence	4.5	3	474003	4818915
R78	Residence	4.5	3	473968	4818855
R79	Residence	1.5	3	474002	4818965
R80	Residence	4.5	3	473925	4818879
R81	Residence	1.5	3	473900	4818797
R82	Residence	1.5	3	473871	4818916
R83	Residence	1.5	3	473843	4818934
R84	Trailer	1.5	3	473884	4819002
R85	Residence	1.5	3	473803	4818938
R86	Residence	4.5	3	473792	4818972
R87	Residence	4.5	3	473780	4818981
R88	Residence	4.5	3	473793	4819036
R89	Residence	1.5	3	473747	4818984
R90	Residence	4.5	3	477569	4819214
R91	Residence	1.5	3	474564	4822946
R92	Residence	4.5	3	474350	4823237
R93	Residence	4.5	3	474387	4823532
R94	Residence	4.5	3	474143	4823662
R95	Residence	4.5	3	473256	4824181
R104	Residence	1.5	3	474616	4821072
R105	Residence	4.5	3	473657	4823245
R106	Residence	4.5	3	473588	4823330
R107	Residence	4.5	3	474307	4824447
R108	Residence	4.5	3	474427	4824579
R109	Residence	4.5	3	474917	4825428
R110	Residence	7.5	3	477587	4821821
R187	Residence	4.5	3	472194	4819919
R188	Residence	4.5	3	472333	4819929
R189	Residence	4.5	3	473260	4819265
R190	Residence	4.5	3	473602	4819077
R191	Residence	1.5	3	473614	4819067
R192	Residence	1.5	3	473637	4819057
R193	Residence	1.5	3	473670	4819026
R194	Residence	4.5	3	473720	4819103
R195	Residence	1.5	3	473707	4819008
R196	Residence	4.5	3	473986	4821193
R197	Residence	4.5	3	473993	4821343
R198	Residence	4.5	3	473778	4821534
R199	Residence	4.5	3	473665	4821550
R202	Residence	1.5	3	473527	4819314
R684	Residence	7.5	3	478177	4819051
R685	Residence	4.5	3	478300	4819097
R686	Residence	4.5	3	478766	4819841

R688	Residence	4.5	3	478861	4820632
R689	Residence	1.5	3	478682	4820942
R690	Residence	4.5	3	479245	4820773

Vacant Lot Surrogate Receptors

Table: Vacant Lot Surrogate Receptor Locations
 Project Name: St. Columban Wind Project
 Datum: NAD83 (Canada) Projection: UTM 17N

Point of Reception ID	Description	Height (m)	NPC Class	X (E,m)	Y (N,m)
V555	VLSR	4.5	3	473798	4823943
V585	VLSR	4.5	3	472820	4819629
V586	VLSR	4.5	3	473525	4821526
V587	VLSR	4.5	3	473874	4821502
V589	VLSR	4.5	3	474254	4821178
V590	VLSR	4.5	3	474657	4821198
V592	VLSR	4.5	3	475176	4822925
V593	VLSR	4.5	3	475299	4822220
V594	VLSR	4.5	3	475154	4823004
V595	VLSR	4.5	3	475113	4823042
V596	VLSR	4.5	3	476392	4824039
V597	VLSR	4.5	3	475390	4825178
V598	VLSR	4.5	3	475837	4825024
V599	VLSR	4.5	3	475659	4825127
V641	VLSR	4.5	3	478435	4823511
V642	VLSR	4.5	3	477674	4823955
V643	VLSR	4.5	3	477516	4824081
V644	VLSR	4.5	3	475754	4822654
V645	VLSR	4.5	3	476344	4822306
V646	VLSR	4.5	3	476404	4822276
V647	VLSR	4.5	3	477215	4824099
V648	VLSR	4.5	3	478336	4823382
V651	VLSR	4.5	3	478003	4821324
V652	VLSR	4.5	3	477853	4821427
V654	VLSR	4.5	3	478462	4820940
V655	VLSR	4.5	3	476752	4819684
V656	VLSR	4.5	3	476665	4819736
V657	VLSR	4.5	3	476879	4820674
V658	VLSR	4.5	3	476427	4820179
V659	VLSR	4.5	3	475494	4820413
V660	VLSR	4.5	3	475422	4820496
V661	VLSR	4.5	3	475081	4820718
V662	VLSR	4.5	3	475696	4820218
V663	VLSR	4.5	3	475571	4820203
V664	VLSR	4.5	3	475462	4820305
V670	VLSR	4.5	3	477667	4819031
V672	VLSR	4.5	3	476788	4819554
V673	VLSR	4.5	3	476649	4819645
V675	VLSR	4.5	3	475493	4818611
V676	VLSR	4.5	3	474182	4818813
V677	VLSR	4.5	3	473933	4818968
V678	VLSR	4.5	3	475746	4817934
V679	VLSR	4.5	3	475917	4824767
V680	VLSR	4.5	3	473570	4819230
V681	VLSR	4.5	3	475399	4818109

Participating Receptors (Participants)

Table: Participating Receptor Locations
Project Name: St. Columban Wind Project
Datum: NAD83 (Canada) Projection: UTM 17N

Point of Reception		Height (m)	NPC Class	X (E,m)	Y (N,m)
ID	Description				
P30	Residence	4.5	3	476181	4823460
P31	Residence	4.5	3	476092	4823440
P41	Residence	4.5	3	476873	4822043
P48	Residence	4.5	3	475826	4820242

END

Zephyr North

Zephyr North

Zephyr North



Zephyr North Ltd.

850 LEGION ROAD UNIT 20
BURLINGTON ON L7S 1T5
CANADA

Phone: 905-335-9670

Fax: 905-335-0119

Internet: Info@ZephyrNorth.com

Zephyr North

ST. COLUMBAN WIND PROJECT

NOISE ASSESSMENT REPORT

Revision 5-113 Addendum 1

For

ST. COLUMBAN ENERGY LP



By

J. R. Salmon

S.J. Corby

2012 July 9

J. Menéndez, P.Eng.

For St. Columban Energy LP



Originals printed on
Recycled 20% post-consumer content

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITIES

This Report was prepared by Zephyr North Ltd. of Burlington Ontario Canada as an account of work sponsored by St. Columban Energy LP (St. Columban). Neither Zephyr North Ltd. nor any person acting on its behalf:

- (a) Makes any warranty or representation whatsoever, express or implied, (i) with respect to the use of any information, apparatus, method, process, or similar item disclosed in this report, including merchantability and fitness for a particular purpose, or (ii) that such use does not infringe on or interfere with privately owned rights, including any party's intellectual property, or (iii) that this report is suitable to any particular user's circumstance, or
- (b) Assumes responsibility for any damages or other liability whatsoever (including any consequential damages, even if Zephyr North Ltd. or its representatives have been advised of the possibility of such damages) resulting from your selection or use of this report or any information, apparatus, method, process or similar item disclosed in this report.

Table of Contents

1 INTRODUCTION.....	5
1.1 Purpose.....	5
2 PROJECT LAYOUT.....	5
2.1 Project Site.....	5
2.2 Project Details.....	5
3 DESCRIPTION OF RECEPTORS.....	7
3.1 Summary.....	7
4 DESCRIPTION OF SOURCES.....	7
4.1 Summary.....	7
5 NOISE EMISSION RATINGS.....	8
5.1 Summary.....	8
6 IMPACT ASSESSMENT.....	8
6.1 Summary.....	8
6.2 Results.....	8
7 NOISE LEVEL SUMMARY TABLES.....	10
8 NOISE LEVEL ISOPLETH MAP.....	15
9 EXAMPLE CALCULATION.....	17
9.1 Example.....	17
10 CONCLUSIONS.....	19
11 REFERENCES.....	20
12 APPENDIX A — TURBINE, RECEPTOR, VACANT LOT AND PARTICIPANT LOCATIONS.....	21

List of Figures

Figure 2-1 Wind Farm details map.....6

Figure 8-1 40 dBA noise isopleth map for 6 ms⁻¹ (10 m) for 1.5 and
4.5 m receptor heights.....16

List of Tables

Table 6-1 Sorted highest noise levels at receptors.....9

Table 7-1 Receptor noise level summary table.....10

Table 7-2 Vacant lot surrogate receptor noise level summary table.....13

Table 7-3 Participant noise level summary table.....14

Table 9-1 Sample calculation for receptor R3 and turbine T9.....17

Table 9-2 Sample calculation for single receptor R3 and multiple
turbines/transformers.....18

1 INTRODUCTION

1.1 Purpose

This addendum (Addendum 1) to the St Columban Wind Project Noise Assessment Report (Revision 5-113) has been prepared in order to address the following.

1. Relocation of turbine T10 within its host property. This turbine has been moved to 476,464E 4,824,699N (NAD83, UTM17N) from 476,414E 4,824,755N.
2. Relocation of vacant lot surrogate receptor (VLSR) V679 in response to a request from the landowner. This VLSR has been moved from 475,862E 4,824,661N (NAD83, UTM17N) to 475,917E 4,824,767N.

This addendum updates all information, results, maps, tables, *etc.*, impacted by these two changes.

2 PROJECT LAYOUT

2.1 Project Site

Figure 2-1 has been updated to show the new locations of T10 and V679.

2.2 Project Details

Except for the relocations of T10 and V679, project details remain the same as previously reported.

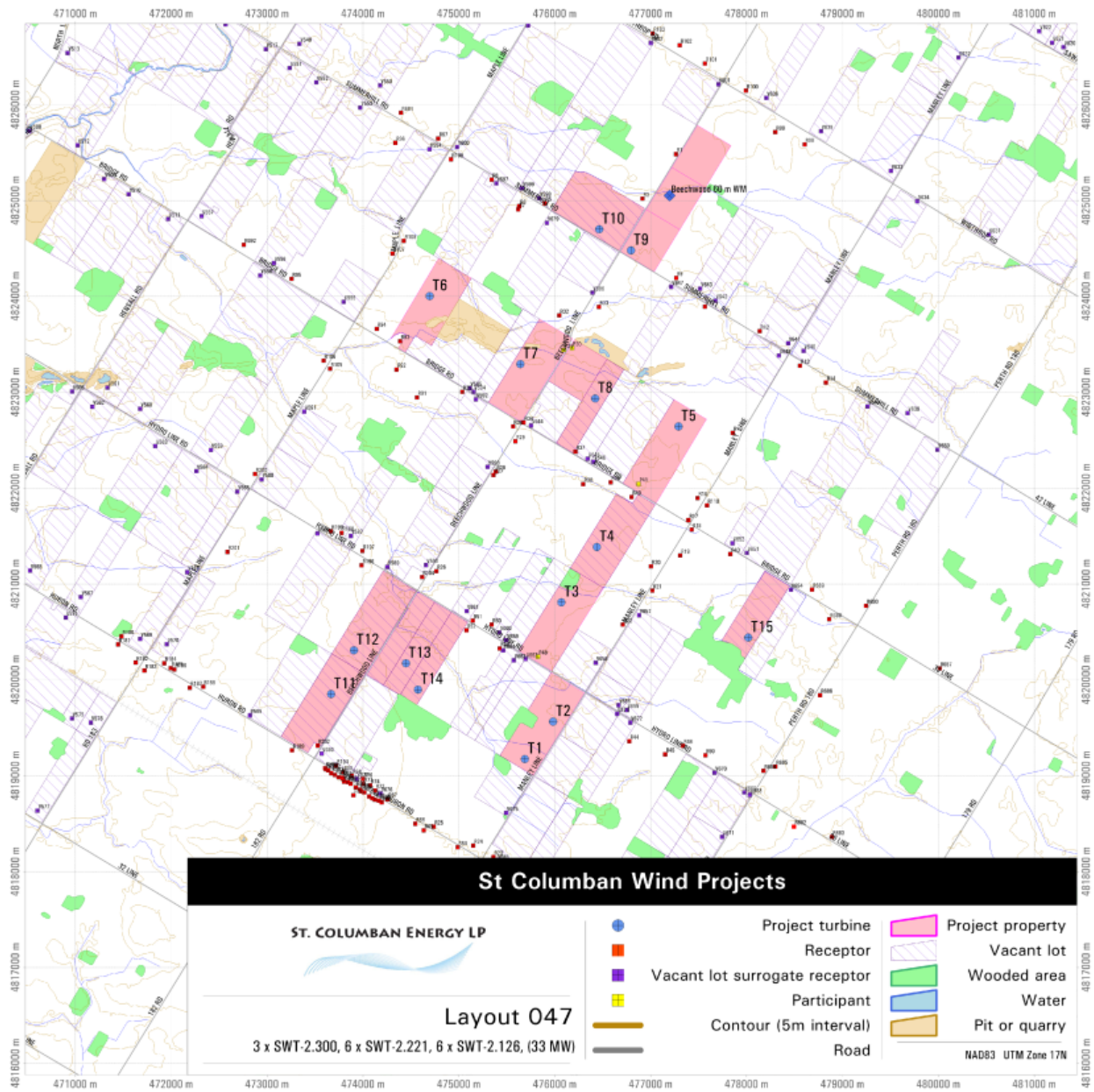


Figure 2-1 Wind Farm details map.

3 DESCRIPTION OF RECEPTORS

3.1 Summary

Except for the relocation of V679, all receptors, participants, and vacant lot surrogate receptors (VLSRs) remain the same.

4 DESCRIPTION OF SOURCES

4.1 Summary

Except for the relocation of T10, all turbine and transformer details remain as reported previously. Note that only T10's location has changed. No other details of this turbine have changed.

5 NOISE EMISSION RATINGS

5.1 Summary

As noted previously, only the location of turbine T10 has changed. Its noise emission ratings have not changed from those previously reported.

6 IMPACT ASSESSMENT

6.1 Summary

The ‘Specific Parameters’, ‘Methodology’, and ‘Additional Parameters and Conditions’ for this project have not changed from those previously reported.

6.2 Results

Due to the changes in location of T10 and V679, updated impact assessment results are reported in Tables 7-1, 7-2 and 7-3 found in Section 7 and the noise level isopleth map of Section 8 .

Table 6-1 briefly summarizes the results of the noise assessment. It is a sorted list of the highest sound pressure levels determined in the analysis for receptors and VLSRs.

Table 6-1 Sorted highest noise levels at receptors

Receptor ID	SPrL (dBA)	Height (m)	Nearest Turbine	Project or Other Turbine	Distance (m)
V662	39.4	4.5	T3	P	698
V663	39.1	4.5	T2	P	760
R3	38.8	4.5	T9	P	551
V659	38.8	4.5	T3	P	697
V664	38.8	4.5	T3	P	788
V596	38.8	4.5	T9	P	597
V660	38.6	4.5	T3	P	718
R50	38.4	4.5	T3	P	763
V680	38.4	4.5	T11	P	629
V658	38.4	4.5	T3	P	725
R202	38.2	1.5	T11	P	555
V661	38.1	4.5	T13	P	836
V645	38.0	4.5	T8	P	635
R33	38.0	4.5	T9	P	678
R22	38.0	4.5	T3	P	681
V646	38.0	4.5	T8	P	660
R32	37.9	4.5	T7	P	648
R39	37.9	4.5	T4	P	691
V644	37.9	4.5	T7	P	650
R20	37.8	4.5	T4	P	599
R34	37.8	4.5	T7	P	611
R52	37.7	1.5	T13	P	719
R38	37.7	4.5	T4	P	670
V675	37.6	4.5	T1	P	596
V679	37.5	4.5	T10	P	551
R9	37.5	4.5	T9	P	551
WindFarm layout file: StC05-WFL047.WFL					

7 NOISE LEVEL SUMMARY TABLES

Table 7-1 Receptor noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1	Residence	4.5	1108	T9	32.0	32.0	32.0	32.0	32.0	40.0	43.0	45.0	49.0	51.0
R3	Residence	4.5	551	T9	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R5	Residence	4.5	631	T10	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R6	Residence	4.5	868	T10	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R7	Residence	4.5	869	T10	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R8	Residence	4.5	1238	T10	31.6	31.6	31.6	31.6	31.6	40.0	43.0	45.0	49.0	51.0
R9	Residence	4.5	551	T9	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R10	Residence	1.5	968	T9	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R12	Residence	4.5	1305	T5	31.4	31.4	31.4	31.4	31.4	40.0	43.0	45.0	49.0	51.0
R13	Residence	4.5	1417	T5	30.0	30.0	30.0	30.0	30.0	40.0	43.0	45.0	49.0	51.0
R15	Residence	4.5	570	T5	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R16	Residence	4.5	772	T5	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R17	Residence	4.5	983	T5	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R18	Residence	1.5	1007	T4	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R19	Residence	4.5	874	T4	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R20	Residence	4.5	599	T4	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R21	Residence	4.5	736	T4	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R22	School	4.5	681	T3	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R23	Residence	4.5	1073	T1	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R24	Residence	1.5	1051	T1	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R25	Hall	4.5	1183	T1	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R26	Residence	4.5	1012	T13	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R27	Residence	4.5	1190	T7	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R28	Residence	1.5	1151	T7	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R29	Residence	4.5	808	T7	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R32	Residence	4.5	648	T7	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R33	Residence	4.5	678	T9	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R34	Residence	4.5	611	T7	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R35	Residence	4.5	673	T7	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R36	Residence	4.5	657	T7	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R37	Residence	1.5	592	T8	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R38	Residence	4.5	670	T4	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R39	Residence	4.5	691	T4	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R40	Residence	1.5	634	T4	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R43	Residence	1.5	891	T15	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R44	Residence	1.5	822	T2	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R45	Residence	4.5	1218	T2	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R46	Residence	4.5	1316	T15	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R49	Residence	1.5	802	T3	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R50	Residence	4.5	763	T3	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R51	Residence	1.5	827	T13	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R52	Residence	1.5	719	T13	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R62	Residence	4.5	1224	T1	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R63	Residence	1.5	1143	T1	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
R64	Residence	1.5	1157	T1	31.4	31.4	31.4	31.4	31.4	40.0	43.0	45.0	49.0	51.0
R65	Residence	4.5	1290	T1	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R66	Residence	1.5	1326	T1	32.0	32.0	32.0	32.0	32.0	40.0	43.0	45.0	49.0	51.0
R67	Residence	4.5	1187	T14	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R68	Residence	1.5	1235	T14	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R69	Residence	4.5	1218	T11	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R70	Residence	1.5	1192	T11	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R71	Residence	1.5	1168	T11	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R72	Residence	1.5	1105	T11	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R73	Residence	1.5	1139	T11	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R74	Trailer	4.5	1035	T11	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R75	Residence	1.5	1082	T11	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R76	Residence	4.5	1061	T11	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R77	Residence	4.5	994	T11	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R78	Residence	4.5	1040	T11	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R79	Residence	1.5	947	T11	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R80	Residence	4.5	1005	T11	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R81	Residence	1.5	1079	T11	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R82	Residence	1.5	957	T11	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R83	Residence	1.5	934	T11	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R84	Trailer	1.5	876	T11	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R85	Residence	1.5	923	T11	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R86	Residence	4.5	888	T11	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R87	Residence	4.5	877	T11	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R88	Residence	4.5	825	T11	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R89	Residence	1.5	871	T11	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R90	Residence	4.5	1305	T15	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0
R91	Residence	1.5	1066	T6	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R92	Residence	4.5	841	T6	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R93	Residence	4.5	564	T6	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R94	Residence	4.5	649	T6	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R95	Residence	4.5	1450	T6	28.1	28.1	28.1	28.1	28.1	40.0	43.0	45.0	49.0	51.0
R104	Residence	1.5	915	T13	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R105	Residence	4.5	1286	T6	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
R106	Residence	4.5	1296	T6	30.0	30.0	30.0	30.0	30.0	40.0	43.0	45.0	49.0	51.0
R107	Residence	4.5	589	T6	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R108	Residence	4.5	634	T6	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R109	Residence	4.5	1441	T6	29.5	29.5	29.5	29.5	29.5	40.0	43.0	45.0	49.0	51.0
R110	Residence	7.5	874	T5	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R187	Residence	4.5	1476	T11	30.7	30.7	30.7	30.7	30.7	40.0	43.0	45.0	49.0	51.0
R188	Residence	4.5	1337	T11	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0
R189	Residence	4.5	714	T11	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R190	Residence	4.5	777	T11	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R191	Residence	1.5	786	T11	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R192	Residence	1.5	795	T11	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R193	Residence	1.5	825	T11	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R194	Residence	4.5	750	T11	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R195	Residence	1.5	844	T11	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R196	Residence	4.5	888	T12	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R197	Residence	4.5	1038	T12	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R198	Residence	4.5	1232	T12	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R199	Residence	4.5	1264	T12	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R202	Residence	1.5	555	T11	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R684	Residence	7.5	1398	T15	30.7	30.7	30.7	30.7	30.7	40.0	43.0	45.0	49.0	51.0
R685	Residence	4.5	1373	T15	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
R686	Residence	4.5	960	T15	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R688	Residence	4.5	867	T15	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R689	Residence	1.5	834	T15	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R690	Residence	4.5	1273	T15	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0

Table 7-2 Vacant lot surrogate receptor noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V555	VLSR	4.5	899	T6	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
V585	VLSR	4.5	877	T11	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
V586	VLSR	4.5	1275	T12	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
V587	VLSR	4.5	1193	T12	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
V589	VLSR	4.5	936	T12	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
V590	VLSR	4.5	1046	T13	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
V592	VLSR	4.5	594	T7	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
V593	VLSR	4.5	1127	T7	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V594	VLSR	4.5	568	T7	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V595	VLSR	4.5	586	T7	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
V596	VLSR	4.5	597	T9	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V597	VLSR	4.5	1176	T10	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
V598	VLSR	4.5	706	T10	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
V599	VLSR	4.5	912	T10	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
V641	VLSR	4.5	1437	T5	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V642	VLSR	4.5	1025	T9	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
V643	VLSR	4.5	825	T9	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V644	VLSR	4.5	650	T7	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
V645	VLSR	4.5	635	T8	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V646	VLSR	4.5	660	T8	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V647	VLSR	4.5	568	T9	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V648	VLSR	4.5	1281	T5	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V651	VLSR	4.5	884	T15	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
V652	VLSR	4.5	1000	T15	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V654	VLSR	4.5	670	T15	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V655	VLSR	4.5	779	T2	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V656	VLSR	4.5	704	T2	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
V657	VLSR	4.5	822	T3	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V658	VLSR	4.5	725	T3	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V659	VLSR	4.5	697	T3	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V660	VLSR	4.5	718	T3	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V661	VLSR	4.5	836	T13	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V662	VLSR	4.5	698	T3	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
V663	VLSR	4.5	760	T2	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V664	VLSR	4.5	788	T3	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V670	VLSR	4.5	1452	T15	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
V672	VLSR	4.5	806	T2	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V673	VLSR	4.5	672	T2	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V675	VLSR	4.5	596	T1	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
V676	VLSR	4.5	1155	T14	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
V677	VLSR	4.5	922	T11	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
V678	VLSR	4.5	1241	T1	31.6	31.6	31.6	31.6	31.6	40.0	43.0	45.0	49.0	51.0
V679	VLSR	4.5	551	T10	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
V680	VLSR	4.5	629	T11	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V681	VLSR	4.5	1104	T1	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0

Table 7-3 Participant noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/Transformer (m)	Nearest Project Turbine/Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)				
					6.0	7.0	8.0	9.0	10.0
P30	Residence	4.5	564	T7	39.5	39.5	39.5	39.5	39.5
P31	Residence	4.5	473	T7	40.0	40.0	40.0	40.0	40.0
P41	Residence	4.5	731	T5	37.8	37.8	37.8	37.8	37.8
P48	Residence	4.5	616	T3	39.7	39.7	39.7	39.7	39.7

8 NOISE LEVEL ISOPLETH MAP

Figure 8-1 is an updated noise level isopleth map of the sound pressure levels (dBA) due to turbines and transformers (as existent) over the project area for a 10 m a.g.l. wind speed of 6 ms^{-1} . The noise levels are calculated for receptors with 1.5 m (1 storey) and 4.5 m (2 storeys) heights. Changes in this map are due only to the relocation of T10. (The updated location of V679 is also shown.)

The map displays the specific noise level isopleth relevant to the MoE (2008) Guidelines limit for each wind speed as listed here:

Wind Speed	Limiting Noise Isopleth
6 ms^{-1}	40 dBA

Noise level isopleth maps for 8 ms^{-1} and 10 ms^{-1} have not been included since the calculated sound pressure levels are identical to those calculated for the 6 ms^{-1} values.

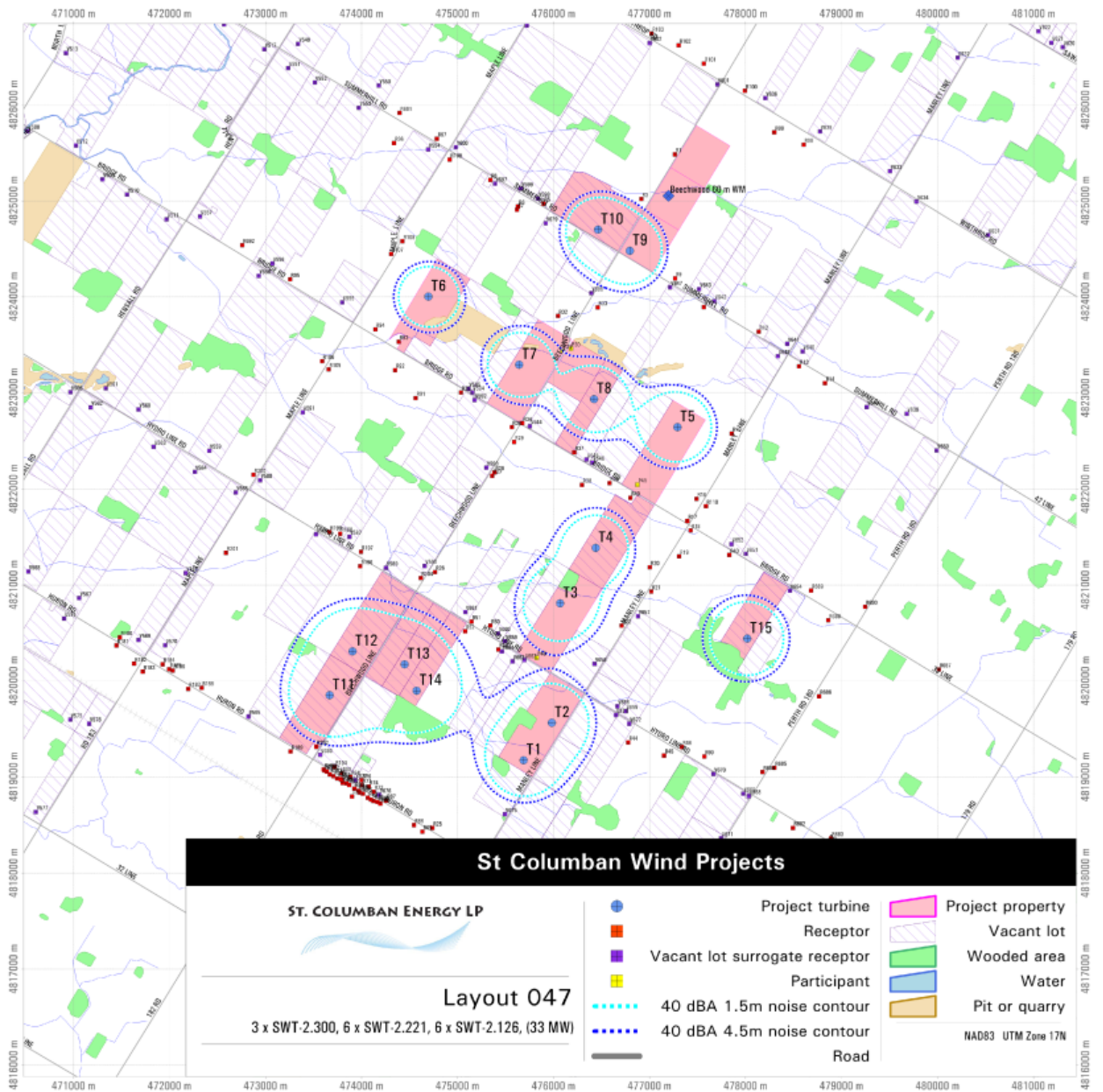


Figure 8-1 40 dBA noise isopleth map for 6 ms^{-1} (10 m) for 1.5 and 4.5 m receptor heights.

9 EXAMPLE CALCULATION

9.1 Example

The changes in the results of this example calculation are due only to the relocation of turbine T10. As it treats only receptor R3 and turbine T9, Table 9-1 has not changed. Table 9-2 has changed.

The following sample calculation presents intermediate octave-band results of calculations for A-weighted sound pressure levels corresponding to a 10 m (a.g.l.) wind speed of 6 ms^{-1} . All model parameters are the same as previously tabulated.

Table 9-1 lists the intermediate sound pressure levels calculated at receptor R3 due to the single turbine T9. Receptor and turbine are separated by 551 m. Note that the resultant A-weighted sound pressure level at R3 due to turbine T9 alone is 35.6 dBA.

Table 9-1 Sample calculation for receptor R3 and turbine T9.

Intermediate calculations for receptor R3 and turbine T9						
Octave band	Mid-band frequency (Hz)	L_w (dBA)	A_{div} (dB)	A_{atm} (dB)	A_{gr} (dB)	$L_{ft}(DW)$ (dBA)
1	63.	78.0	66.0	0.1	-3.0	15.0
2	125.	90.7	66.0	0.2	1.0	23.5
3	250.	96.2	66.0	0.6	-0.1	29.7
4	500.	96.9	66.0	1.1	-0.7	30.6
5	1000	96.9	66.0	2.1	-0.7	29.6
6	2000	95.9	66.0	5.4	-0.8	25.2
7	4000	89.2	66.0	18.4	-0.8	5.6
8	8000	72.9	66.0	65.6	-0.8	-57.9

In the table:

L_W is the octave-band sound power level, in decibels, produced by the point sound source relative to a reference sound power of one picowatt,

A_{div} is the attenuation due to geometrical divergence,

A_{atm} is the attenuation due to atmospheric absorption,

A_{gr} is the attenuation due to the ground effect,

$L_{PT}(DW)$ is the equivalent continuous downwind octave-band sound pressure level.

Table 9-2 shows intermediate octave band values of the calculations for the A-weighted sound pressure levels at receptor R3 due to all turbines (including other projects, if any) within 5,000 m of the receptor. The resultant A-weighted sound pressure level at R3 due to all turbines is 38.8 dBA.

Table 9-2 Sample calculation for single receptor R3 and multiple turbines/transformers.

Intermediate calculations for single receptor R3 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_r contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
T3	4293	25.9	22.1	18.0	10.0	-0.7	-28.6	-133.9	-509.7	12.8
T4	3663	25.0	22.0	19.0	11.7	1.9	-22.3	-113.4	-436.2	13.8
T5	2404	30.3	27.7	24.7	18.4	11.1	-5.4	-67.1	-283.9	20.2
T6	2441	28.2	25.9	23.7	17.5	9.9	-7.0	-69.9	-289.8	19.0
T7	2143	29.4	27.1	25.1	19.1	12.1	-3.0	-59.0	-253.9	20.6
T8	2140	29.4	27.2	25.1	19.2	12.1	-2.9	-58.9	-253.5	20.6
T9	551	41.2	39.6	38.3	33.8	29.6	24.0	4.6	-56.8	35.6
T10	552	41.2	39.6	38.3	33.8	29.6	24.0	4.6	-56.9	35.5
T15	4709	24.4	20.9	18.0	9.9	-2.1	-32.6	-148.3	-559.1	12.5

10 CONCLUSIONS

The locations of turbine T10 and VLSR V679 have changed from those reported in the previous noise assessment report — Revision 5-113. The conclusions remain the same — namely that this noise impact assessment for the proposed St. Columban Wind Project has determined that the estimated sound pressure levels at receptors and Vacant Lot Surrogate Receptors (VLSRs) in the project area comply with the Ministry of the Environment sound level limits at all qualified points of reception.

11 REFERENCES

There are no references cited for this Addendum.

12 APPENDIX A — TURBINE, RECEPTOR, VACANT LOT AND PARTICIPANT LOCATIONS

This appendix contains lists of turbine, transformer, receptor, vacant lot surrogate receptor (VLSR), and participant locations. Coordinates are given in the Universal Transverse Mercator (UTM) Zone 17 North projection. The datum is North American Datum 1983 (NAD83, Canada). For completeness, all turbine locations (including the relocated T10) and all receptor, participant and VLSR locations (including the relocated V679) have been shown.

For reference, the project (turbine/transformer) layout identifier is StC05-WFL047.wfl.

Turbines

Table: Turbine Locations

Project Name: St. Columban Wind Project

Datum and Projection: NAD83 (Canada); UTM 17N

Identifier	Equipment		X (E,m)	Y (N,m)
	Make and Model			
T1	Siemens	SWT 2.221-113	475688	4819174
T2	Siemens	SWT 2.221-113	475982	4819564
T3	Siemens	SWT 2.221-113	476068	4820809
T4	Siemens	SWT 2.126-113	476439	4821386
T5	Siemens	SWT 2.221-113	477290	4822643
T6	Siemens	SWT 2.126-113	474695	4824004
T7	Siemens	SWT 2.126-113	475642	4823294
T8	Siemens	SWT 2.126-113	476421	4822936
T9	Siemens	SWT 2.126-113	476794	4824480
T10	Siemens	SWT 2.126-113	476464	4824699
T11	Siemens	SWT 2.300-113	473668	4819851
T12	Siemens	SWT 2.300-113	473905	4820309
T13	Siemens	SWT 2.221-113	474447	4820173
T14	Siemens	SWT 2.221-113	474574	4819899
T15	Siemens	SWT 2.300-113	478016	4820440

Transformer (Off-site)

Table: Transformer Location

Project Name: St. Columban Wind Project

Datum: NAD83 (Canada) Projection: UTM 17N

Identifier	Equipment Make and Model	X(E,m)	Y(N,m)
Transformer	Unknown	487630	4854885

Points of Reception (Receptors)

Table: Point of Reception Locations

Project Name: St. Columban Wind Project

Datum: NAD83 (Canada) Projection: UTM 17N

Point of Reception		Height (m)	NPC Class	X(E,m)	Y(N,m)
ID	Description				
R1	Residence	4.5	3	477263	4825484
R3	Residence	4.5	3	476915	4825018
R5	Residence	4.5	3	475895	4824971
R6	Residence	4.5	3	475630	4824941
R7	Residence	4.5	3	475620	4824907
R8	Residence	4.5	3	475340	4825218
R9	Residence	4.5	3	477265	4824193
R10	Residence	1.5	3	477565	4823894
R12	Residence	4.5	3	478137	4823636
R13	Residence	4.5	3	478557	4823277
R15	Residence	4.5	3	477856	4822577
R16	Residence	4.5	3	477491	4821898
R17	Residence	4.5	3	477394	4821666
R18	Residence	1.5	3	477429	4821568
R19	Residence	4.5	3	477308	4821297
R20	Residence	4.5	3	477003	4821184
R21	Residence	4.5	3	477017	4820931
R22	School	4.5	3	476708	4820575
R23	Residence	4.5	3	475360	4818152
R24	Residence	1.5	3	475151	4818270
R25	Hall	4.5	3	474738	4818469
R26	Residence	4.5	3	474765	4821134
R27	Residence	4.5	3	475362	4822137
R28	Residence	1.5	3	475386	4822172
R29	Residence	4.5	3	475590	4822488
R32	Residence	4.5	3	476047	4823800
R33	Residence	4.5	3	476460	4823890
R34	Residence	4.5	3	475675	4822684
R35	Residence	4.5	3	475035	4823003
R36	Residence	4.5	3	475564	4822642
R37	Residence	1.5	3	476216	4822381
R38	Residence	4.5	3	476296	4822041
R39	Residence	4.5	3	476583	4822062
R40	Residence	1.5	3	476801	4821907
R43	Residence	1.5	3	477831	4821312
R44	Residence	1.5	3	476778	4819360
R45	Residence	4.5	3	477151	4819223
R46	Residence	4.5	3	477337	4819313
R49	Residence	1.5	3	475426	4820329

R50	Residence	4.5	3	475341	4820576
R51	Residence	1.5	3	475144	4820618
R52	Residence	1.5	3	475078	4820517
R62	Residence	4.5	3	475375	4817991
R63	Residence	1.5	3	475430	4818060
R64	Residence	1.5	3	474987	4818253
R65	Residence	4.5	3	474634	4818431
R66	Residence	1.5	3	474547	4818499
R67	Residence	4.5	3	474256	4818755
R68	Residence	1.5	3	474196	4818723
R69	Residence	4.5	3	474166	4818739
R70	Residence	1.5	3	474124	4818750
R71	Residence	1.5	3	474097	4818765
R72	Residence	1.5	3	474127	4818846
R73	Residence	1.5	3	474064	4818783
R74	Trailer	4.5	3	474075	4818899
R75	Residence	1.5	3	474012	4818825
R76	Residence	4.5	3	473985	4818838
R77	Residence	4.5	3	474003	4818915
R78	Residence	4.5	3	473968	4818855
R79	Residence	1.5	3	474002	4818965
R80	Residence	4.5	3	473925	4818879
R81	Residence	1.5	3	473900	4818797
R82	Residence	1.5	3	473871	4818916
R83	Residence	1.5	3	473843	4818934
R84	Trailer	1.5	3	473884	4819002
R85	Residence	1.5	3	473803	4818938
R86	Residence	4.5	3	473792	4818972
R87	Residence	4.5	3	473780	4818981
R88	Residence	4.5	3	473793	4819036
R89	Residence	1.5	3	473747	4818984
R90	Residence	4.5	3	477569	4819214
R91	Residence	1.5	3	474564	4822946
R92	Residence	4.5	3	474350	4823237
R93	Residence	4.5	3	474387	4823532
R94	Residence	4.5	3	474143	4823662
R95	Residence	4.5	3	473256	4824181
R104	Residence	1.5	3	474616	4821072
R105	Residence	4.5	3	473657	4823245
R106	Residence	4.5	3	473588	4823330
R107	Residence	4.5	3	474307	4824447
R108	Residence	4.5	3	474427	4824579
R109	Residence	4.5	3	474917	4825428
R110	Residence	7.5	3	477587	4821821
R187	Residence	4.5	3	472194	4819919
R188	Residence	4.5	3	472333	4819929
R189	Residence	4.5	3	473260	4819265
R190	Residence	4.5	3	473602	4819077
R191	Residence	1.5	3	473614	4819067
R192	Residence	1.5	3	473637	4819057
R193	Residence	1.5	3	473670	4819026
R194	Residence	4.5	3	473720	4819103
R195	Residence	1.5	3	473707	4819008
R196	Residence	4.5	3	473986	4821193
R197	Residence	4.5	3	473993	4821343
R198	Residence	4.5	3	473778	4821534
R199	Residence	4.5	3	473665	4821550
R202	Residence	1.5	3	473527	4819314
R684	Residence	7.5	3	478177	4819051
R685	Residence	4.5	3	478300	4819097

R686	Residence	4.5	3	478766	4819841
R688	Residence	4.5	3	478861	4820632
R689	Residence	1.5	3	478682	4820942
R690	Residence	4.5	3	479245	4820773

Vacant Lot Surrogate Receptors

Table: Vacant Lot Surrogate Receptor Locations

Project Name: St. Columban Wind Project

Datum: NAD83 (Canada) Projection: UTM 17N

Point of Reception ID	Description	Height (m)	NPC Class	X (E, m)	Y (N, m)
V555	VLSR	4.5	3	473798	4823943
V585	VLSR	4.5	3	472820	4819629
V586	VLSR	4.5	3	473525	4821526
V587	VLSR	4.5	3	473874	4821502
V589	VLSR	4.5	3	474254	4821178
V590	VLSR	4.5	3	474657	4821198
V592	VLSR	4.5	3	475176	4822925
V593	VLSR	4.5	3	475299	4822220
V594	VLSR	4.5	3	475154	4823004
V595	VLSR	4.5	3	475113	4823042
V596	VLSR	4.5	3	476392	4824039
V597	VLSR	4.5	3	475390	4825178
V598	VLSR	4.5	3	475837	4825024
V599	VLSR	4.5	3	475659	4825127
V641	VLSR	4.5	3	478435	4823511
V642	VLSR	4.5	3	477674	4823955
V643	VLSR	4.5	3	477516	4824081
V644	VLSR	4.5	3	475754	4822654
V645	VLSR	4.5	3	476344	4822306
V646	VLSR	4.5	3	476404	4822276
V647	VLSR	4.5	3	477215	4824099
V648	VLSR	4.5	3	478336	4823382
V651	VLSR	4.5	3	478003	4821324
V652	VLSR	4.5	3	477853	4821427
V654	VLSR	4.5	3	478462	4820940
V655	VLSR	4.5	3	476752	4819684
V656	VLSR	4.5	3	476665	4819736
V657	VLSR	4.5	3	476879	4820674
V658	VLSR	4.5	3	476427	4820179
V659	VLSR	4.5	3	475494	4820413
V660	VLSR	4.5	3	475422	4820496
V661	VLSR	4.5	3	475081	4820718
V662	VLSR	4.5	3	475696	4820218
V663	VLSR	4.5	3	475571	4820203
V664	VLSR	4.5	3	475462	4820305
V670	VLSR	4.5	3	477667	4819031
V672	VLSR	4.5	3	476788	4819554
V673	VLSR	4.5	3	476649	4819645
V675	VLSR	4.5	3	475493	4818611
V676	VLSR	4.5	3	474182	4818813
V677	VLSR	4.5	3	473933	4818968
V678	VLSR	4.5	3	475746	4817934
V679	VLSR	4.5	3	475917	4824767
V680	VLSR	4.5	3	473570	4819230
V681	VLSR	4.5	3	475399	4818109

Participating Receptors (Participants)

Table: Participating Receptor Locations
Project Name: St. Columban Wind Project
Datum: NAD83 (Canada) Projection: UTM 17N

Point of Reception		Height	NPC		
ID	Description	(m)	Class	X (E,m)	Y (N,m)
P30	Residence	4.5	3	476181	4823460
P31	Residence	4.5	3	476092	4823440
P41	Residence	4.5	3	476873	4822043
P48	Residence	4.5	3	475826	4820242

END

Attachment C

Correspondence with the Landowner

ST. COLUMBAN ENERGY LP

ST. COLUMBAN WIND PROJECT

Public Open House(s)

Gorrie
05-08-2012, 12-3

Seaforth
05-08-2012, 6-9

Bluevale
05-09-2012, 12-3

Brussels
05-09-2012, 6-9

Comments:

We have a vacant lot
(just has a shed on it / no
house) that is not identified
on your Noise Assessment map.
The parcel is South west of
Turbine 10. We also own
the parcel with receptor #86
+ #87 on it. (adjacent to the vacant lot)
a separate
parcel + was not severed from
~~the~~ the parcel with our house on it.
Please investigate and explain why
a vacant receptor wasn't put on that

Comments recorded by: Parcel 1 +

Follow Up Required:

YES ☒

NO ☐

Details:

Note: we also own the
property with V599 on it.
why the
parcel
wasn't
identified
on your
map

Contact Information:

Name:

Address:

Email Address:

Telephone No:

Peddle, Shawna

From: Jose Menendez <jmenendez@vereseninc.com>
Sent: Thursday, May 17, 2012 11:33 AM
To: [REDACTED]
Cc: Peddle, Shawna; Hali Zigomanis; Skillen, Kerrie
Subject: St. Columban Wind Project - Open House Question on Vacant Lot
Attachments: VacantLots.pdf; StC05-StColumbanWindProject-VacantLot-20120511.png

[REDACTED]

Thank you for attending the St. Columban Wind Project open house in Seaforth last Wednesday.

At the meeting you had asked why we did not show in our project mapping a vacant 100 acre property [REDACTED] adjacent to the 100 acre property where you currently reside [REDACTED]. We had initially requested and obtained the vacant lot information from Huron County and used this information to design our wind farm. The information provided to us by Huron County did not show [REDACTED] as a vacant lot, and we therefore did not include this property as a 'vacant lot surrogate receptor' or VLSR (as required by the Ministry of the Environment). For ease of reference, attached to this e-mail is the vacant property information provided to us by Huron County.

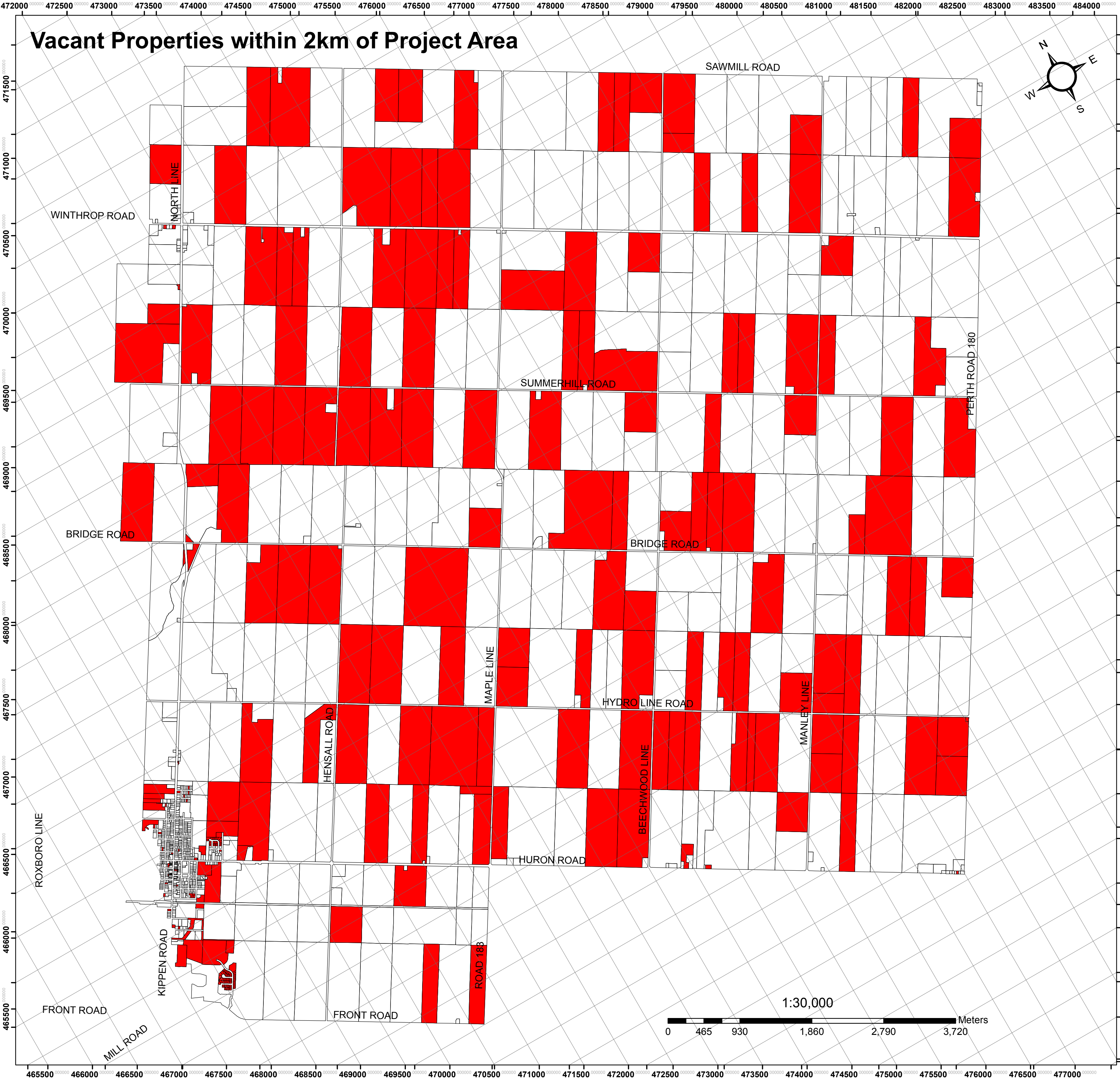
In order to address your question, we have assumed that [REDACTED] is in fact a vacant lot, with a new VLSR labeled as V679. This new VLSR has been placed to meet the setback requirements, including being further than 550m from the closest turbine (T10), and maintaining noise levels below 40bBA. Attached is a drawing showing the location of the homes and turbines in the immediate vicinity of your home (including the new VLSR – V679 on [REDACTED]). Please note that even though our noise modeling shows this VLSR – V679 is still some distance back from where the 40 dB noise levels are predicted (see outside dotted blue line for 4.5m or two storey home), the VLSR – V679 has been conservatively placed 560m away from the closest turbine T10.

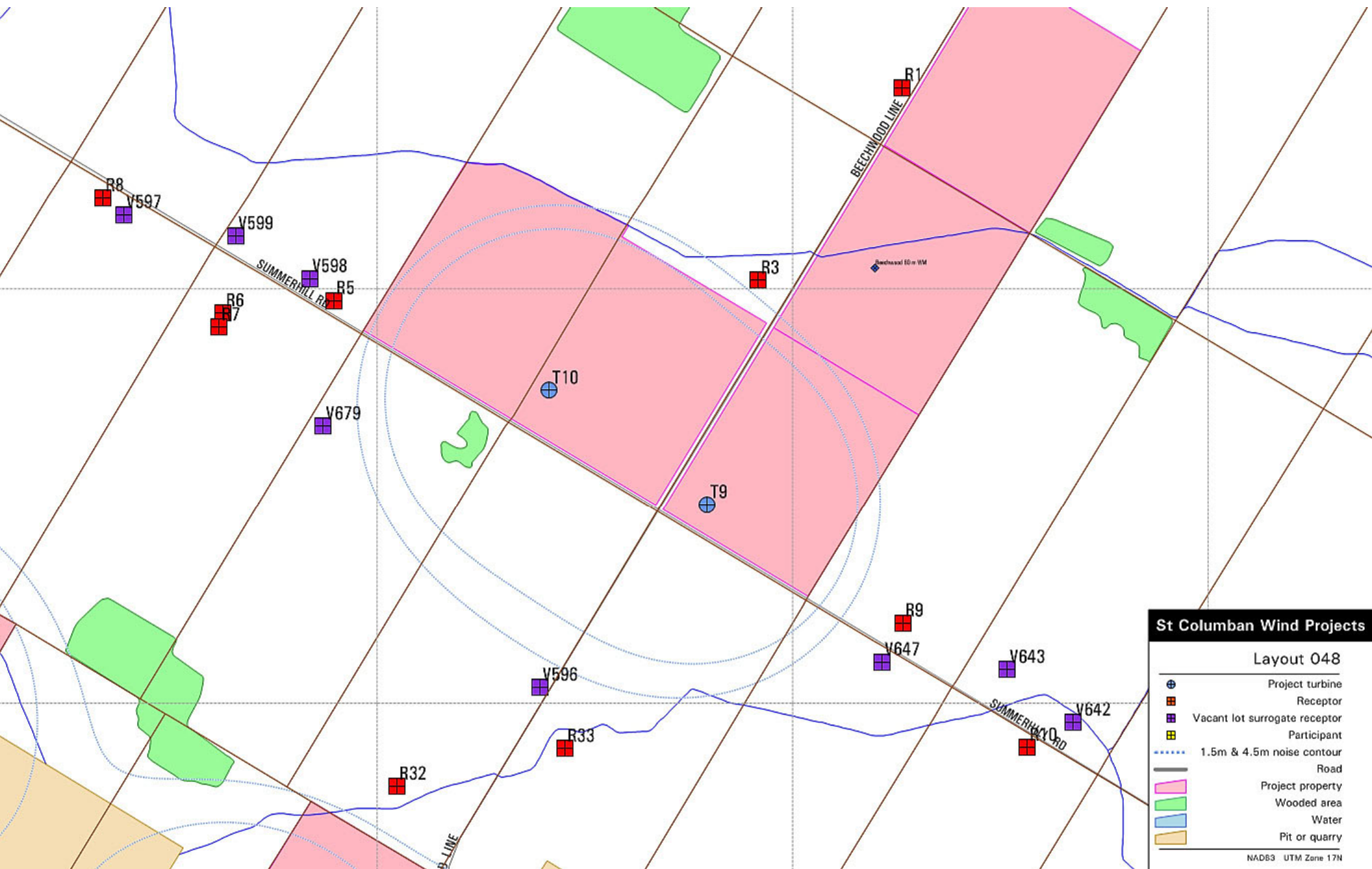
We trust this information addresses your questions and comments. However, should you have any further questions or comments please do not hesitate to contact us.

Regards,

José Menéndez, P.Eng.
St. Columban Energy LP

This transmission (including any attachments) may contain confidential information, privileged material, or constitute non-public information. Any use of this information by anyone other than the intended recipient is prohibited. If you have received this transmission in error, please immediately reply to the sender and delete this information from your system. Use, dissemination, distribution, or reproduction of this transmission by unintended recipients is not authorized and may be unlawful.





From: [REDACTED]
Sent: Thursday, June 14, 2012 08:17 PM
To: Jose Menendez
Subject: St. Columban Wind Project - Vacant Lot

Jose:

Thank you for your e-mail of May 17, 2012. We appreciate you taking the time to speak to us at the Open House and respond to our questions.

We have reviewed your e-mail, the location of Noise Receptor V679 and Regulation 359/09 to the Environmental Protection Act.

As you are aware, Regulation 359/09 of the Environmental Protection Act provides that a noise receptor includes a location on a vacant lot, other than an inaccessible vacant lot, that has been zoned to permit a building mentioned in paragraph 1 or 2 and in respect of which no approval or building permit mentioned in paragraph 3 has been issued and at which a building would reasonably be expected to be located, having regard to the existing zoning by-law and the typical building pattern in the area.

The placement of Noise Receptor V679 does not appear to meet the above criteria and from your response of May 17, 2012 appears to confirm that Noise Receptor V679 has been specifically placed at a location solely to create compliance with setback requirements.

Firstly, we have met with the Chief Building Official of the Municipality of Huron East who has advised that the location of Noise Receptor V679 appears to not comply with the Minimum Distance Separations (MDS) from the existing livestock barn on our adjacent property [REDACTED]. To comply with the MDS from our livestock barn would require movement of V679 approximately 10 metres to the northeast, bringing V679 within approximately 550 metres of T10.

Secondly, our review of the typical building pattern in the study area for the project indicates that the placement of V679 is not where a building would reasonably be located having regard to the typical building pattern in the area. V679 has been placed approximately 240 metres away from Summerhill Road. We have studied the location of residences in the study area for the project and of the 56 residences we reviewed only one (1) was 240 metres or further away from a municipal road. The average distance from a municipal road for houses in the 56 houses we studied was approximately 52 metres from a municipal road. Further your placement of V679 on the extreme west side of [REDACTED] appears to place V679 approximately 200 metres from the existing road entrance, drilled well and electrical service on [REDACTED]. The typical building pattern in the study area is that residences are placed adjacent to or in close proximity to the existing road entrances, water supplies and electrical services.

From our review, noise receptor V679 should be placed approximately 190 metres north (closer to Summerhill Road) and approximately 200 meters to the east so it is adjacent to the existing road entrance, well and electrical connection on [REDACTED]. We estimate that if V679 is placed in what we believe is the correct location (and where a building would reasonably be expected to be located having regard to typical building patterns in the area) that V679 will be located within 350 metres of Turbine T10 and therefore not be in compliance with the regulations to the Environmental Protection Act.

It is obvious from our review of the placement of V679 that its location would not reasonably be where a residence would be located, having regard to the existing zoning by-law and the typical building pattern in the area. It is obvious that there was little or no regard to the existing zoning by-law and typical building pattern in the area in the placement of V679. In fact, it appears that the only criterion used in placement of V679 was to create the necessary set back from T10. This obviously is not compliance with both the letter and intent of Regulation 359/09 of the Environmental Protection Act.

We advise you of our concerns and our intent to submit this comment to the Ministry of the Environment.

We once again appreciate you taking the time to talk to us and respond to our question, however from our review of the information available, neither the letter nor the intent of Regulation 359/09 was followed in the placement of noise receptor V679.

Thank you,

[REDACTED]

Attachment D

NHA Addendum Memo and
Confirmation Letter from the MNR
Regarding Proposed Design Change

**Ministry of
Natural Resources**

Renewable Energy Operations Team
P.O. Box 7000
300 Water Street
4th Floor, South Tower
Peterborough, Ontario K9J 8M5

**Ministère des
Richesses naturelles**



July 13, 2012

St. Columban Energy LP
Suite 440 Livingston Place, South Tower
222-3rd Avenue SW
Calgary, AB T2P 0B4

RE: Modifications to St. Columban Wind Project Location

Dear José Menéndez,

The Ministry of Natural Resources (MNR) has received the document dated July 13, 2012 (Stantec File: 160960649) which describes modifications to the St. Columban project location made subsequent to MNR's letter confirming the Natural Heritage Assessment in respect of the project.

Upon review of the modifications, MNR is satisfied that the Natural Heritage Assessment requirements of Ontario Regulation 359/09 have been met. Please add this letter as an addendum to the confirmation letter issued August 29, 2012 for the St. Columban project.

If you wish to discuss, please contact me at amy.cameron@ontario.ca or 705-875-7481.

Sincerely,

Sincerely,

A handwritten signature in blue ink that reads "Amy Cameron". The signature is written in a cursive style with a large initial "A".

Amy Cameron
Coordinator
Renewable Energy Operations Team
Southern Region MNR

cc Ian Hagman, District Manager, MNR Guelph District
Erin Cotnam, Project Manager, SR-REOT, MNR
Emily Gryck, Project Manager, SR-REOT, MNR

Narren Santos, Environmental Approvals Branch, MOE
Zeljko Romic, Environmental Approvals Branch, MOE
Shawna Peddle, Senior Project Manager, Stantec



Stantec Consulting Ltd.
70 Southgate Drive Suite 1
Guelph ON N1G 4P5
Tel: (519) 836-6050
Fax: (519) 836-2493

Stantec

July 13, 2012
Stantec File: 160960649

Ministry of Natural Resources
Robinson PI South Tower
4th Flr S, 300 Water St
PO Box 7000
Peterborough ON
K9J8M5

Attention: Amy Cameron, Southern Region Renewable Energy Operations Team Coordinator

Dear Amy:

**Reference: St. Columban Wind Project
NHA Addendum - Project Design Change**

St. Columban Energy LP is proposing to develop, construct, and operate the 33 megawatt (MW) St. Columban Wind Project (the Project) in the Municipality of Huron East (Huron East), Municipality of Morris-Turnberry (Morris-Turnberry), and Township of Howick (Howick), County of Huron (Huron County), in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province.

The Natural Heritage Assessment/Environmental Impact Study (NHA/EIS) confirmation letter for the Wind Project Study Area was provided on August 29, 2011. The addition of a 43km underground interconnection line in the fall of 2011 resulted in an NHA Addendum, which received a confirmation letter from the Ministry of Natural Resources (MNR) on February 13, 2012. The Renewable Energy Approval (REA) application for the Project was submitted to the Ministry of the Environment (MOE) on June 14, 2012 (MOE Reference No. 6602-8V9P97).

Based on a request from a community member regarding placement of a Vacant Lot Surrogate Receptor (VLSR), St. Columban Energy LP has agreed to make a change to the Project layout by moving turbine T10. This letter and its attachments provide information regarding the details of the design change, and an assessment of the potential environmental effects of the change.

Description of the Design Change

St. Columban Energy LP proposes to move Turbine T10 75 metres (m) from the location proposed in the NHA/EIS and REA application submitted to the MOE in June, 2012 (Figure 1).

	Easting (X)	Northing (Y)
Current Location	476414	4824755
Amended Location (July 2012)	476464	4824699

St Columban Energy LP is currently considering two similar turbine models, and to be conservative, both models were assessed as part of the REA process – the SWT 2.3-113 (113m blade span) and the SWT 2.3-101 (101m blade span). For potential impacts to the natural environment, and property line setback assessments, the SWT 2.3-113 was assessed, due to its longer blade length. This conservative approach ensured the 'worst case scenario' was assessed.

Error! Reference source not found.

Amy Cameron, MNR

Page 2 of 2

Reference: St. Columban Wind Project – NHA Addendum – Project Design Change

To identify any new environmental effects as a result of the design change that would require additional mitigation or monitoring measures beyond those outlined in the REA application, a screening of potential effects on environmental features considered during the REA process was undertaken. The original and amended turbine locations (including associated infrastructure, such as access roads and cabling) are within the same agricultural field (soy in 2011 planting, corn in 2012 planting). The blade sweep for the turbine is also completely within the agricultural field (Figure 2). The amended 120m zone of investigation from the construction area includes less of the CUW1-3 (Maple-Ash Mineral Cultural Woodland) feature than the previous location. Two grassland bird survey locations previously just outside the 120m zone of investigation are now within (Figure 2).

Moving T10 has resulted in a shift of the Project Location, as defined by O.Reg.359/09, since submission of the REA application to the MOE on June 14, 2012. Apart from this shift, the information provided to the public at the final open house has not altered appreciably. The intention is to provide this Addendum for inclusion in the posting on the Environmental Registry, to ensure the community is notified of the reasoning behind the change, and the net effects of the change.

SUMMARY AND CONCLUSION

Given that the Project Location has not changed significantly, and the potential effects of relocating T10 are the same as at the previous location, no additional potential effects or requirements for specific mitigation measures have been identified for the design change. The design change can be implemented with no new net negative environmental effects.

We request a confirmation that the MNR has no issues with the change as proposed, due to the absence of new effects on natural features.

If you have any questions or concerns, please do not hesitate to contact me (contact information provided below) at any time.

Respectfully,

STANTEC CONSULTING LTD.



Shawna Peddle, MSc.

Senior Project Manager - Assessment, Permitting, and Compliance

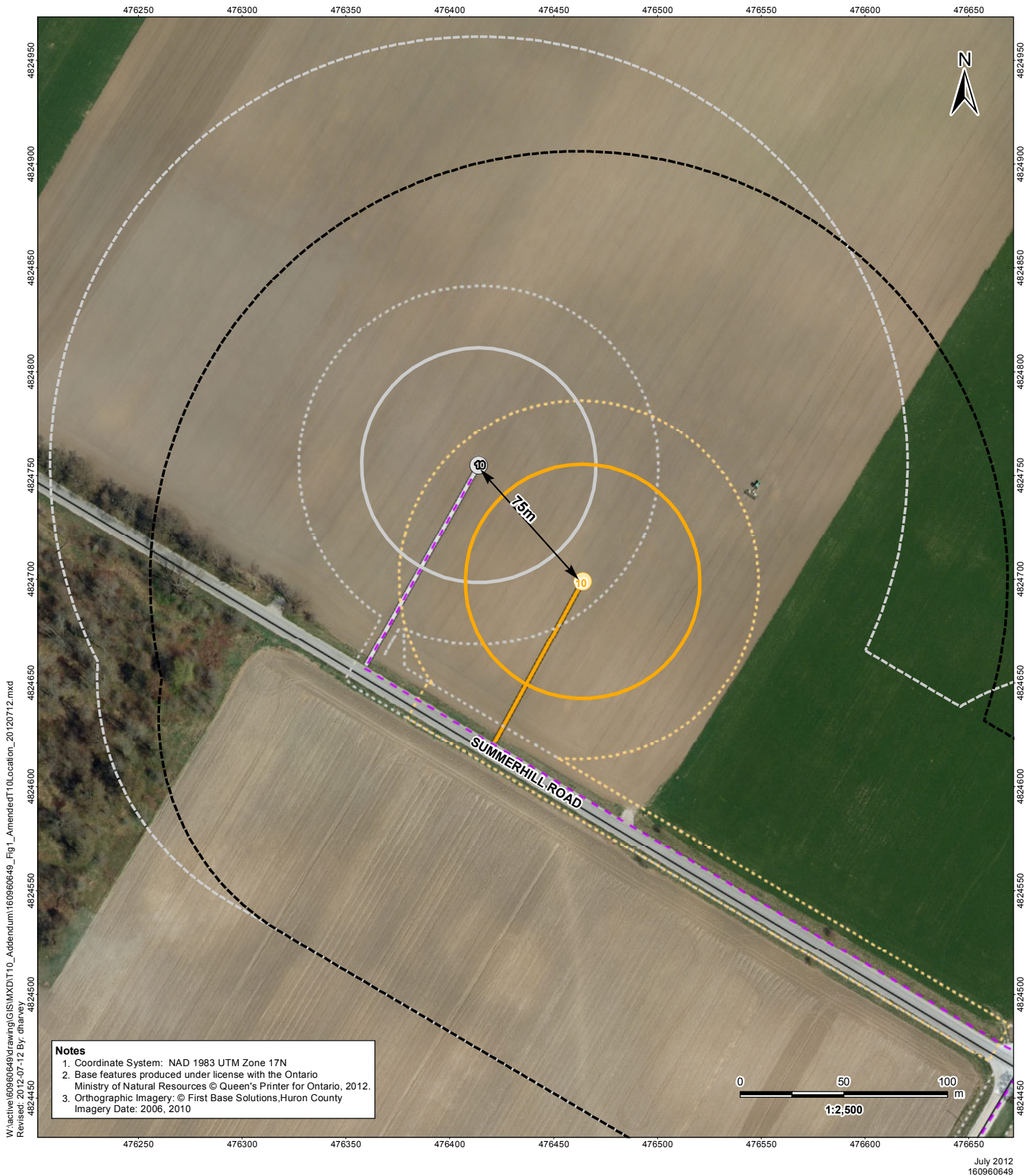
Tel: (519) 836-6050

Fax: (519) 836-2493

shawna.peddle@stantec.com

Attachments: Figure 1 – Amended T10 Location
Figure 2 – Amended T10 Location – Natural Features

c. Kristina Rudzki, MOE
Jose Menendez, St. Columban Energy LP
Hali Zigomanis, St. Columban Energy LP



Legend

120m Zone of Investigation

- Original Location
- Amended Location

Turbine Location (Center Point)

- Original Location
- Amended Location

Turbine Blade Reach

- Original Location
- Amended location

Underground Collector

- Original Location
- Amended Location

Construction Area

- Original Location
- Amended Location

Client/Project

ST. COLUMBAN ENERGY LP
 ST. COLUMBAN WIND PROJECT

Figure No.

1

DRAFT

Title

Amended T10 Location

Attachment E

Additional Stage 2 Property Assessment Report and
Letter to the MTCS Regarding
Proposed Design Change and Request
for an Expedited Review

Ministry of Tourism, Culture and Sport

Culture Programs Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel.: 416-212-5107
Fax: 416 314-7175
Email: wai.kok@ontario.ca

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes culturels
Direction des programmes et des services
Division de culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Tél. : 416-212-5107
Téléc. : 416 314-7175
Email: wai.kok@ontario.ca



August 8, 2012

Robert Pihl
Archaeological Services Inc.
528 Bathurst Street,
Toronto, ON
M5S 2P9

RE: Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, “Additional Stage 2 Property Assessment, St. Columban Wind Project (Lot 11, Concession 7 Former Township of McKillop), Municipality of Huron East, Huron County, Ontario FIT-F1PW818 and FIT-F9YXBY,” Dated July 5, 2012, Filed by MTCS Toronto Office on July 16, 2012, MTCS Project Information Form Number P057-717-2012, OPA FIT Number FIT-F1PW818 and FIT-F9YXBY, MTCS RIMS Number 40EA014

Dear Mr. Pihl:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area, as depicted in Green in Figure 2 and 3 as “Pedestrian Survey at 2.5 m intervals” of the above titled report and recommends the following:

- All of the lands within the study area can be considered clear of further archaeological concern and no further archaeological assessment is required; and

- If there is any alteration in the design of the proposed project, any new lands must be subject to a Stage 2 Property Assessment if they are to be disturbed by construction and/or staging activities.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment is consistent with the ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences. This report will be entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Wai Kok
Archaeology Review Officer

cc. Archaeology Licensing Officer
Jose Menendez, Veresen Inc.
Doris Dumais, MOE

****In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.***

----- Forwarded by Rob Pihl/IASI on 07/23/2012 05:37 PM -----

From: "Archaeology Reports (MTCS)" <archaeologyreports@ontario.ca>
To: <RPihl@iasi.to>
Cc: <CBella@iasi.to>
Date: 07/16/2012 04:50 PM
Subject: Report package and Expedited Review Request: P057-717-2012

Good Afternoon Rob,

Re: Project Report Package: P057-717-2012, Stage 2, St. Columban Wind Project (F1PW818 and F9YXBY)

The Ministry of Tourism, Culture and Sport has processed your project report package for the report under PIF number P057-717-2012. The original report arrived in our Toronto office on July 6, 2012 and additional information was received on July 13, 2012. The report has been filed with this ministry.

The ministry has also granted a request for an expedited review of the above report. We expect that the review of this report will be completed by August 7, 2012. We have noted the request for an earlier review, and if possible we will attempt to accommodate the review prior to this date.

If you have any questions regarding the above, please contact me at ArchaeologyReports@Ontario.ca

Best regards,

Wai

Wai Kok I Archaeology Review Officer
Ministry of Tourism, Culture and Sport
401 Bay Street, Suite 1700
Toronto, Ontario
M7A 0A7
(P) 416-212-5107
(F) 416-314-7175
(E) wai.kok@ontario.ca

ST. COLUMBAN ENERGY LP



St. Columban Energy LP

SUITE 900, LIVINGSTON PLACE - SOUTH TOWER
222-3RD AVENUE SW
CALGARY, ALBERTA T2P 0B4
MAIN: (866) 944-6401
(403) 296-0140
FAX: (403) 444-6784

July 6, 2012

Sent Via Email

Archaeological Services Inc.
528 Bathurst St.
Toronto, ON M5S 2P9
Ministry of the Environment

Attention: Robert Pihl, Partner and Senior Archaeologist

**Reference: St. Columban Wind Project – Additional Stage 2 Property Assessment
Request for an Expedited Review**

Dear Robert,

The purpose of this letter is to confirm that we would like to request that the Ministry of Tourism, Culture and Sport (MTCS) conduct an expedited review of the Stage 2 Property Assessment recently completed by Archaeological Services Inc. (ASI) for the St. Columban Wind Project (the Project) in the Municipality of Huron East, Huron County, Ontario.

The primary reason for the expedited review is to ensure that the timing of the Project's Renewable Energy Approval (REA) is not delayed as a result of this additional assessment. The REA for the Project was submitted to the Ministry of the Environment (MOE) on June 13, 2012. The requirement to assess these additional lands was only identified after this date. However, the MOE has advised that if the additional archaeological assessment and other associated work is completed quickly, it should not impact the timing of the REA process which is critical to the success of the project.

I trust the above provides sufficient information to justify the need for an expedited approval.

Should you have any questions or comments, please do not hesitate to contact the undersigned.

Kind regards,

José Menéndez
Vice President Business Development, East
Veresen Inc./St. Columban Energy LP

CC: Hali Zigomanis, Veresen Inc.
Shawna Peddle, Stantec Consulting Ltd.

ORIGINAL REPORT

Additional Stage 2 Property Assessment

St. Columban Wind Project

**(Lot 11, Concession 7 Former Township of McKillop)
Municipality of Huron East, Huron County, Ontario**

FIT-F1PW818 and FIT-F9YXBYJ

Prepared for:

Veresen Inc.
216 Chrislea Road, Unit 502
Woodbridge, ON, L4L 8S5
Tel: 647-654-3989
Fax: 416-233-9959
Email: jmenendez@vereseninc.com
www.vereseninc.com

Archaeological Licence P057 (Robert Pihl)
MTCS PIF P057-717-2012
ASI File 12EA-185

July 5, 2012



Archaeological Services Inc.

528 Bathurst St.
Toronto, Ontario
Canada, M5S 2P9

T 416-966-1069

F 416-966-9723

info@iASI.to/www.iASI.to

Additional Stage 2 Property Assessment

St. Columban Wind Project

**(Lot 11, Concession 7 Former Township of McKillop)
Municipality of Huron East, Huron County, Ontario**

EXECUTIVE SUMMARY

Archaeological Services Inc. (ASI) was contracted by Veresen Inc. to conduct a Stage 2 Property Assessment on additional lands required for the St. Columban Wind Project (the Project) in the Municipality of Huron East, Huron County, Ontario. Specifically, this report focuses on the investigation of additional lands required for the relocation of Turbine 10 subsequent to the original Stage 2 archaeological assessment that was conducted in 2011. The lands are situated north of Summerhill Road and west of Beechwood Line in the Municipality of Huron East, Huron County.

ASI conducted a Stage 1 archaeological assessment for the initial St. Columban Wind Project study area in 2009 (ASI 2009; PIF 264-076-2009). The Stage 1 included a background study and property inspection for 10 proposed turbine sites and associated access roads that comprised the Project location. The report recommended a Stage 2 property assessment for the Project location in advance of any development, and the Ministry of Tourism, Culture and Sport (MTCS) accepted these recommendations on August 10, 2009.

ASI conducted a Stage 2 archaeological assessment for the lands included in the St. Columban Wind Project in 2011 (ASI 2011; PIF P057-664-2010). This assessment included additional background research and the property assessment of the Project location which now included 15 turbine sites and associated project infrastructure as well as adjacent lands prepared for pedestrian survey. No archaeological resources were identified during the assessment, and the Project location and adjacent lands were cleared of archaeological concern. The Stage 2 report was accepted by the MTCS on July 14, 2011.

In June 2012, additional Stage 2 pedestrian survey was conducted on new lands required for the relocation of Turbine 10 and its associated infrastructure. No archaeological resources were recovered.

In light of these results, ASI makes the following recommendations:

1. The lands required for the relocation of Turbine 10 within the St. Columban Wind Project do not require any further archaeological assessment; and



2. If changes to the Project location or temporary workspace requirements result in the inclusion of previously unassessed lands, these lands should be subject to a Stage 2 property assessment.



TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
PROJECT PERSONNEL	iv
1.0 PROJECT CONTEXT	5
1.1 Project Objectives	5
1.2 Development Context	6
1.3 Historical Context	6
1.4 Archaeological Context.....	6
1.4.1 Current Land Use and Field Conditions	6
1.4.2 Physiography	7
1.4.3 Previous Archaeological Assessments.....	7
1.4.4 Registered Archaeological Sites	7
2.0 FIELD METHODS	9
2.1 Stage 2 Property Assessment: Results.....	9
3.0 RECORD OF FINDS	10
4.0 ANALYSIS AND CONCLUSIONS	11
5.0 RECOMMENDATIONS	12
6.0 ADVICE ON COMPLIANCE ADVICE WITH LEGISLATION	13
7.0 REFERENCES	14
8.0 MAPS	15
9.0 IMAGES	18

LIST OF MAPS

Figure 1: Location of the Project Area and Turbine 10 Assessment Area.....	15
Figure 2: St. Columban Wind Project – Key Plan	16
Figure 3: St. Columban Wind Project – Results of Stage 2 Property Assessment – Turbine 10	17

LIST OF PLATES

Plate 1: North-northeast view of visibility in field for proposed Turbine 10. Field is clear between rows of corn.	18
Plate 2: North-northeast view of location of proposed Turbine 10. Pedestrian survey at 5 m intervals was conducted. No archaeological resources found.....	18



**ARCHAEOLOGICAL SERVICES INC.
ENVIRONMENTAL ASSESSMENT DIVISION**

PROJECT PERSONNEL

<i>Senior Project Manager/Licensee:</i>	Robert Pihl, MA, CAHP [MTCS licence P057] <i>Partner and Senior Archaeologist Manager, EA Division</i>
<i>Project Manager:</i>	Deborah Pihl, BA [MTCS licence R130] <i>Staff Archaeologist</i>
<i>Project Coordinator:</i>	Sarah Jagelewski, BA [MTCS licence R405] <i>Staff Archaeologist</i>
<i>Project Administration:</i>	Carol Bella, BA <i>Research Archaeologist</i>
<i>Field Director:</i>	Deborah Pihl
<i>Report Writer :</i>	Heidy Schopf, MES <i>Research Archaeologist</i>
<i>Graphics:</i>	Jonas Fernandez, MSc [MTCS licence R281] <i>GIS Technician/Staff Archaeologist</i> Heidy Schopf
<i>Report Reviewer:</i>	Robert Pihl



1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by Veresen Inc. to conduct a Stage 2 Property Assessment on additional lands required for the St. Columban Wind Project (the Project) in the Municipality of Huron East, Huron County, Ontario (Figure 1). The initial Stage 2 property assessment for the Project was conducted in 2011 by ASI and the Project location included 15 wind turbine sites and associated infra-structure in the southeast portion of the former Township of McKillop (Figure 2). This report focuses on lands required for the relocation of Turbine 10 subsequent to the 2011 assessment. The additional lands are situated north of Summerhill Road and west of Beechwood Line in the Municipality of Huron East, Huron County.

This assessment was conducted under the project management of Deborah Pihl (MTCS licence R130) and the senior project management of Robert Pihl (MTCS licence P057), both of ASI. Rob Pihl also served as licensee for the project.

All activities carried out during this assessment were completed in accordance with the terms of the *Ontario Heritage Act* (MTC 2005) and the *Standards and Guidelines for Consultant Archaeologists* (S&G) (MTC 2011).

1.1 Project Objectives

Section 2 of the *S & G* lists the objectives of a Stage 2 assessment as follows:

- To document all archaeological resources in the study area;
- To determine whether the study area contains archaeological resources with cultural heritage value or interest that would require further assessment; and
- To recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

This report addresses these objectives as follows: Section 1.0 first identifies the development context for the St. Columban Wind Project, then summarizes the relevant historical and archaeological context documented in the Stage 1 background study (ASI 2009) and Stage 2 property assessment (ASI 2011) that were previously conducted by ASI; Section 2.0 outlines the field methods employed to conduct the Stage 2 fieldwork, then summarizes the results from additional lands surveyed for the new location of Turbine 10; Section 3.0 details the record of finds resulting from the additional survey; Section 4.0 provides the analysis and conclusions of the property assessment; Section 5.0 provides recommendations for the next assessment steps; and the remaining sections contain other report information that is required by the Ministry's *S&G*, such as advice on compliance with legislation, works cited, photo-documentation and mapping.



1.2 Development Context

This archaeological assessment is being conducted under Ontario Regulation 359/09, the Renewable Energy Approvals (REA), and under Part V.0.1 of the *Environmental Protection Act*. Under Section 20 (1) and Section 21 of the REA process, it must be determined if an REA project will potentially impact an archaeological resource. In accordance with Section 22, an archaeological assessment must be undertaken if a potential impact to an archaeological resource is determined. The St. Columban Wind Project has been assigned the following Feed-in-Tariff Reference No: FIT-F1PW818 and FIT-F9YXBYJ.

Permission to carry out all activities necessary for the completion of the assessment was granted by Veresen Inc. on June 29, 2012.

1.3 Historical Context

The historical context of the study area was provided in the Stage 1 background study conducted by ASI in 2009 (ASI 2009i; PIF 264-076-2009). The results of the historical context are summarized below.

The 1879 *Illustrated Historical Atlas of the County of Huron* was reviewed to determine the potential for the presence of Euro-Canadian archaeological resources within the study area (Belden & Co. 1879). The review determined that the study area is located in the former Township of McKillop, Huron County. Numerous property owners and historic features were identified within the study area originally outlined in the 2009 report (see ASI 2009: Figure 2).

The current study area falls within Lot 11, Concession 7 of McKillop Township. The 2009 report noted that T. Holland and J. Malone were property owners for this lot. One farmstead is depicted in close proximity to the current study area (ASI 2009: Figure 2). The report also noted that Summerhill Road and Beechwood Line are historically surveyed roads, and are therefore indicators of archaeological potential.

1.4 Archaeological Context

Information pertaining to archaeological context of the study area was gathered from the Stage 1 and 2 assessment reports previously produced by ASI (2009, 2011) and from current observations of the study area. The archaeological context is summarized below.

1.4.1 Current Land Use and Field Conditions

The Stage 2 property assessment of the new lands for Turbine 10 was conducted by Deborah Pihl (R130) on June 28, 2012. The Project area consists of approximately 2 ha of land situated within an actively cultivated agricultural field. The original location of Turbine 10 is immediately west of the current study area (Figure 3).



1.4.2 Physiography

The Stage 1 background study determined that the Project area is situated within the Stradford Till Plain physiographic region of southern Ontario (Chapman and Putnam 1984; see also ASI 2009). Soils in the study area consist of mainly of imperfectly drained Perth clay with some areas of Brookston clay loam (Ontario Agricultural College 1979). The background study also identified that a moraine intersects the north portion of the study area.

A watercourse is located approximately 200 m north of the study area (Figure 3).

1.4.3 Previous Archaeological Assessments

Previous archaeological work has been conducted within 50 m of the study area for this Project: this work was conducted by ASI as part of the St. Columban Wind Project.

ASI conducted a Stage 1 archaeological assessment for the initial St. Columban Wind Project study area in 2009 (ASI 2009; PIF 264-076-2009). The Stage 1 included a background study and property inspection for 10 proposed turbine sites and associated access roads that comprised the Project location. The Stage 1 determined that the majority of lands within the initial St. Columban study area retained archaeological potential and remained relatively undisturbed. Accordingly, a Stage 2 property assessment was recommended for the Project location in advance of any development. The report documenting the Stage 1 archaeological assessment for the Project was accepted by the MTCS on August 10, 2009.

In response to the recommendations set out in the Stage 1 report, ASI conducted a Stage 2 archaeological assessment for the lands included in the St. Columban Wind Project in 2011 (ASI 2011; PIF P057-664-2010). This assessment included additional background research, and the property assessment of the Project location which now included 15 turbine sites and associated infrastructure as well as adjacent lands included for survey (see Figure 2 for turbine locations). Fieldwork was conducted between November 17 and 19, 2010 and consisted of almost entirely pedestrian with some judgemental test pit survey. No cultural resources were identified during the assessment, and the Project location and adjacent lands were cleared of archaeological concern. No further work was recommended, and the report documenting the Stage 2 archaeological assessment for the Project was accepted by the MTCS approval on July 14, 2011.

It should be noted that approximately 2.1 ha of land immediately west of the current Project area was previously assessed by ASI as part of the 2011 Stage 2 property assessment of the Project (Figure 3). No archaeological resources were identified.

1.4.4 Registered Archaeological Sites

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MTCS. This database contains archaeological sites registered



within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The study area under review is located in Borden block *AjHh*.

According to the OASD (email communication, Robert von Bitter, MTCS Data Coordinator, July 4, 2012), no archaeological sites have been registered within 1 km of the study area.

It should be noted that the dearth of registered archaeological sites in the vicinity of the study area is most likely related to the limited degree of development in the area prior to the instigation of systematic archaeological assessments under provincial legislation. Accordingly, the absence of registered archaeological sites should not be taken as an indicator of any lack of Aboriginal or early Euro-Canadian land use or occupation.



2.0 FIELD METHODS

The current Project area includes approximately 2 ha of land located north of Summerhill Road and west of Beechwood Line. It consists entirely (100%) of an actively cultivated agricultural field that was recently planted in corn prior to the Stage 2 property assessment: the land was determined to have open visibility (Plates 1 and 2).

The assessment of lands with open visibility, e.g., cultivated fields, is accomplished by pedestrian survey as prescribed in Section 2.1.1 of the *S&G*. Pedestrian survey involves systematically walking the subject property while mapping notable features and collecting any artifacts found on the ground surface. Survey transects are spaced at maximum intervals of 5 m. When archaeological resources are found, survey transects are decreased to 1 m intervals over a 20 m radius around the find (where possible) to determine whether it is an isolated find or part of a larger scatter. Stage 2 pedestrian survey was only conducted on lands with acceptable survey conditions, specifically ground surface visibility of 80% or better with thorough weathering.

As required in *S&G, Section 2.1*, the documentation of the Stage 2 property assessment includes notes about survey conditions, field maps, and representative photographic documentation of field conditions. Observations and conclusions about the archaeological potential of the study area are also noted.

All Stage 2 work was conducted in accordance with the *Ontario Heritage Act* (2005) and *S&G, Section 2*. The results of this assessment are mapped and presented in Section 8.0 and associated photographs are presented in Section 9.0.

2.1 Stage 2 Property Assessment: Results

The Stage 2 pedestrian survey was conducted within the Project area on June 28, 2012 under the field direction of Ms. Deb Pihl (R130), ASI. Weather conditions were warm and partly cloudy, with no precipitation.

The entire (100%) of the study area was subject to pedestrian survey at 2.5 m intervals (Figure 3: area marked in green). No archaeological resources were encountered during the survey.



3.0 RECORD OF FINDS

No archaeological resources were recovered during the Stage 2 property survey.

The documentation related to this project will be curated by ASI until such a time that arrangements for their ultimate transfer to Her Majesty the Queen in right of Ontario, or other public institution, can be made to the satisfaction of the project owner(s), the MTCS, and any other legitimate interest groups.

Document/Material	Location	Comments
Written Field Notes, Annotated Field Maps, GPS Logs, etc.	Archaeological Services Inc., 528 Bathurst Street, Toronto, ON M5S 2P9	Field notes hard copy, GPS data (digital)
Field Photography (Digital)	Archaeological Services Inc., 528 Bathurst Street, Toronto, ON M5S 2P9	Stored on ASI network servers and/or CD-ROM
Research/Analysis/Reporting Materials (Various Formats)	Archaeological Services Inc., 528 Bathurst Street, Toronto, ON M5S 2P9	Hard copy and/or digital files stored on ASI network servers and/or CD-ROM
Artifacts	n/a	n/a



4.0 ANALYSIS AND CONCLUSIONS

The Project area was completely assessed by pedestrian survey and no archaeological resources were identified. The study area, therefore, does not retain archaeological potential and can be cleared of further concern.



5.0 RECOMMENDATIONS

In light of these results, the following recommendations are made:

1. The lands required for the relocation of Turbine 10 within the St. Columban Wind Project do not require further archaeological assessment; and
2. If changes to the Project location or temporary workspace requirements result in the inclusion of previously unassessed lands, these lands should be subject to a Stage 2 property assessment.

Notwithstanding the results and recommendations presented in this study, Archaeological Services Inc. notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the Ministry of Tourism, Culture, and Sport should be immediately notified.



6.0 ADVICE ON COMPLIANCE ADVICE WITH LEGISLATION

In addition, the following advice on compliance with legislation is provided:

- This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the Ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.
- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.
- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*.
- The *Cemeteries Act*, R.S.O. 1990, c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must immediately notify the police or coroner and the Registrar of cemeteries, Ministry of Consumer Services.



7.0 REFERENCES

Archaeological Services Inc. (ASI)

- 2009 Stage 1 Archaeological Assessment, St. Columban Wind Project, Municipality of East Huron, Huron County, Ontario [MTCS PIF #P264-076-2009]. Report on file, Ministry of Tourism, Culture and Sport, Toronto.
- 2011 Stage 2 Archaeological Resources Assessment (Property Assessment), St. Columban Wind Project, Municipality of Huron East, Huron County, Ontario. FIT-F1PW818 and F9YXBYJ [MTCS PIF #P057-664-2010]. Report on file, Ministry of Tourism, Culture and Sport, Toronto.

Belden & Co.

- 1879 *Illustrated Historical Atlas of the County of Huron, Ontario*. H. Belden & Co., Toronto.

Chapman, L. J. and F. Putnam

- 1984 *The Physiography of Southern Ontario*. Ontario Geological Survey, Special Volume 2. Ontario Ministry of Natural Resources, Toronto.

Ontario Agricultural College

- 1979 *Soils of Huron County, Ontario, South Sheet*. Soils Survey Report No. 13. Published in cooperation with the Experimental Farms Service, Dominion Department of Agriculture, Ottawa.

Ontario Ministry of Tourism and Culture (MTC)

- 2005 *Ontario Heritage Act*.
- 2011 *Standards and Guidelines for Consultant Archaeologists*. Queen's Printer for Ontario, Toronto. First published under the Ministry of Tourism and Culture.



8.0 MAPS

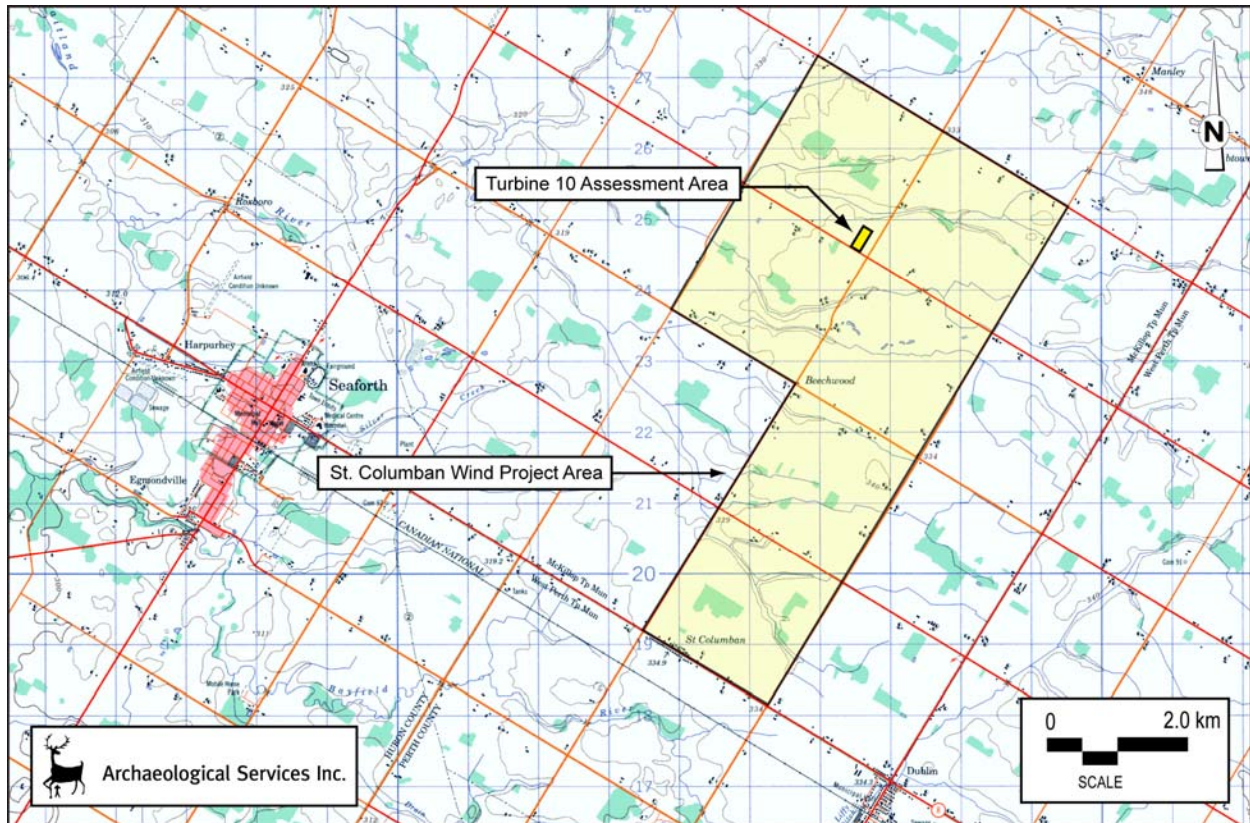


Figure 1: Location of the Project Area and Turbine 10 Assessment Area

Base Map: NTS Sheet 40 P/11 (Seaford)







KEY PLAN

N.T.S.

LEGEND

- Proposed Turbine
- Turbine
- Watercourse
- Previously Assessed (ASI 2011)
- Pedestrian Survey at 2.5 m Intervals
- Photo Location and Direction

BASE:

Zephyr North Ltd.
2010

0 150 Meters

SCALE

ASI PROJECT NO.: 10EA-400
DATE: June 29, 2012

DRAWN BY: J.F.
FILE: fig3_710EA-400_St_Columbine_T10

Archaeological Services Inc.
528 Bathurst St.
Toronto, Ontario
Canada, M5S 2P9

T 416-966-1069
F 416-966-9723
info@iASI.to/www.iAS±.to

Figure 3: St. Columban Wind Project - Results of Stage 2 Property Assessment (Turbine 10)

9.0 IMAGES



Plate 1: North-northeast view of visibility in field for proposed Turbine 10. Field is clear between rows of corn.



Plate 2: North-northeast view of location of proposed Turbine 10. Pedestrian survey at 5 m intervals was conducted. No archaeological resources found.



Attachment F

Screening Assessment of Potential Effects of the Design Change

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
<i>Heritage and Archaeological Resources</i>		
Protected Properties and Heritage Resources	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report, the Decommissioning Plan Report, and the Heritage Impact Assessment Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report and Heritage Impact Assessment Report – no additional measures are required as a result of the design change.
Archaeological Resources	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report, the Decommissioning Plan Report, and the Stage 2 Archaeological Assessment Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report and the Stage 2 Archaeological Assessment Report – no additional measures are required as a result of the design change.
<i>Natural Heritage Resources</i>		
<ul style="list-style-type: none"> Wetlands Areas of Natural and Scientific Interest Valleylands and Hazard Lands Woodlands Provincial Parks and Conservation Reserves Other Designated Natural Areas Significant Wildlife and Wildlife Habitat (<i>Significant Wildlife</i>) Significant Wildlife and Wildlife Habitat (<i>Animal Movement Corridors</i>) Significant Wildlife and Wildlife Habitat (<i>Amphibian Breeding</i>) Significant Wildlife and Wildlife Habitat (<i>Area Sensitive Species and Declining</i>) 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report, the Decommissioning Plan Report, and Natural Heritage Assessment and Environmental Impact Study and Addendum (2011 and 2012) – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report and Natural Heritage Assessment and Environmental Impact Study Addendum (2011 and 2012) – no additional measures are required as a result of the design change.

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
<i>Species)</i> <ul style="list-style-type: none"> • Other Wildlife and Wildlife Habitat • Significant Flora and Vegetation Communities • Other Flora and Vegetation Communities 		
Water Bodies and Aquatic Resources		
Groundwater	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report– no additional measures are required as a result of the design change.
Surface Water, Fish and Fish Habitat	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report, the Decommissioning Plan Report, and the Water Assessment and Water Body Report - no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report and the Water Assessment and Water Body Report - no additional measures are required as a result of the design change.
Air Quality and Environmental Noise		
Air Emissions	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report - no additional measures are required as a result of the design change.

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
Dust and Odour Emissions	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report - no additional measures are required as a result of the design change.
Environmental Noise	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report - no additional measures are required as a result of the design change.
Land Use and Socio-Economic Resources		
Areas Protected Under Provincial Plans & Policies	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change.
Existing Land Uses	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Recreation Areas & Cultural Features	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> No new negative effects are anticipated as a result of the design change. Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
	change.	
Agricultural Lands and Operations	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Mineral, Aggregate, and Petroleum Resources	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Game And Fishery Resources	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Local Traffic	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
Local Economy	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Existing Infrastructure		
Provincial and other major infrastructure	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Navigable Waters	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Municipal infrastructure	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
<i>Waste Management and Contaminated Lands</i>		
Landfill Sites	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Contaminated Lands	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Waste Generation	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.
Accidental Spills	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • No new negative effects are anticipated as a result of the design change. • Protection and mitigation measures are discussed in the Design and Operations Report – no additional measures are required as a result of the design change.

Attachment F: Screening of Additional Potential Environmental Effects and Mitigation Strategies

Environmental Feature	Construction and Decommissioning	Operation
Public Health and Safety		
Public Health and Safety	<ul style="list-style-type: none"> • The centre of the base of T10 is now 84m from Summerhill Road. • Adverse impacts to municipal road allowance may occur in the unlikely event of turbine collapse. • Adverse impacts due to ice throw from the turbine • Adverse impacts to agricultural land, including crop damage and soil compaction, may occur in the unlikely event of turbine collapse. • Protection and mitigation measures are discussed in the Construction Plan Report and the Decommissioning Plan Report – no additional measures are required as a result of the design change. 	<ul style="list-style-type: none"> • The centre of the base of T10 is now 84m from Summerhill Road • Adverse impacts to municipal road allowance may occur in the unlikely event of turbine collapse. • Adverse impacts due to ice throw from the turbine • Adverse impacts to agricultural land, including crop damage and soil compaction, may occur in the unlikely event of turbine collapse. • Protection and mitigation measures are discussed in the Property Line Setback Assessment (Appendix D) of the Design and Operations Report – no additional measures are required as a result of the design change.