MD OF PINCHER CREEK

August 27, 2018

TO: Municipal Planning Commission

FROM: Roland Milligan, Director of Development and Community Services

SUBJECT: Development Permit Applications No. 2018-67 through 2018-74

1. Application Information

Applicant: **Windy Point Wind Park Ltd.**
(Joint Venture between Boralex Inc. and Alberta Wind Energy Corporation)

Permit Application No., Land Location, Landowner, and Proposed Development

DP No.	Land Location – Parcel *(Owner)*		Proposed Development
2018-67	SW 12-8-29 W4M	*(Beverly Lorraine Wood)*	Turbines T1 and T2
2018-68	SE 2-8-29 W4M	*(Beverly Lorraine Wood)*	Turbines T3 and T4
2018-69	SW 2-8-29 W4M	*(Beverly Lorraine Wood)*	Turbine T5
2018-70	SE 3-8-29 W4M	*(Beverly Lorraine Wood)*	Turbines T6 and T7
2018-71	NE 35-7-29 W4M	*(Beverly Lorraine Wood)*	Turbines T8 and T9
2018-72	SE 35-7-29 W4M	*(Beverly Lorraine Wood)*	Turbine T10
2018-73	NE 26-7-29 W4M	*(Beverly Lorraine Wood)*	Turbine T11
2018-74	SE 34-7-29 W4M	*(Stuwart and Theresa Hann)*	Turbine T12

Division: **4**

Zoning: **Wind Farm Industrial - WFI**

Development: **Windy Point Wind Farm (12 Category 3 WECS)**

2. Background/Comment

- The applicant is submitting Development Permit Applications 2018-67 through 2018-74 for the Windy Point Wind Farm (the Project) ***(Enclosure No. 1)***.
- The project lands were rezoned to Wind Farm Industrial in January 2011. The rezoning was done by the adoption of Land Use Bylaw amending bylaw, Bylaw No. 1207-10.
- Windy Point is a standalone project and in an earlier configuration, has been approved by the MD.
- The original project was to consist of twenty (20) turbines placed on eleven (11) parcels of land ***(Enclosure No. 2)***. 63MW of total output.
- Development Permits 2011-40 through 2011-49 were issued on November 10, 2011.
- The project as previously permitted, has received numerous timeline suspensions to date.
- The timeline for the current project is currently on hold to November 10, 2018.
- If the new permits are approved, the previous permits will be requested to be cancelled.

- Due to the applicant's proposed changes in the project, new development permits are required.
- The project will consist of 12 Vestas V136, 4.2 MW wind turbines. Total project output of 50.4MW.
- The turbines to be used will have a hub height of 105 m.
- The rotor diameter is 136 m. Resulting in a total height of 173 m.
- The project substation is to be located on SE 27-7-29 W4M, adjacent to but separate from the existing Windy Point 112S substation, which services the existing Oldman 2 Wind Farm. The project substation has been designated the Boulder Run substation (501S) by the Alberta Electric System Operator (AESO). The location meets the setbacks as required within the land use district.
- The project will utilize the existing transmission line. No new transmission line will be required.

Discussion

- The following is a review of the information supplied by the applicant to meet the requirements outlined in Section 53 of the LUB.

WECS Application for Each Titled Parcel with Turbines

Submitted

LUB REQUIREMENTS FOR CATEGORY 3WECS APPLICATIONS

The following required information was supplied by the applicant and is within Development Permit Application document for the Windy Point Wind Farm. All Appendixes referred to form part of the Application Report. ***(Enclosure No. 1)***:

An Accurate Site Plan

There is a site plan with all separate Development Permit Applications.

These were taken from Appendix A of the Application Report

Appendix A contains the permit coordinates that were input into the MD GIS.

A Visual Representation of the Wind Farm

Appendix E, Visual Impact Assessment

Turbine Specifications

Section 4.1 (pg. 4.13) Application Document

Appendix F, Vestas Brochure

Noise Analysis

Section 8 (pg. 9) Application Document

Appendix G, Noise Impact Assessment

Potential for Shadow or flicker Analysis

Section 9 (pg. 10) Application Document

Appendix H, Shadow Flicker Assessment

Report Regarding Any Public Information Meetings

Section 11 (pg. 11) Application Document

Appendix J, Information Session Presentation

Appendix K, Information Session Poster Boards

Appendix M, List of Stakeholders

Appendix N, Public Information Process Information Package

Impacts to the Local Road System

Section 12 (pg. 20) Application Document

Road Use Agreement will be required if MD road are to be used.

Post-Construction Reclamation Plan

Section 15 (pg. 21) Application Document

Appendix O, Reclamation Strategy

Decommissioning Plans

Section 14 (pg. 21) Application Document

Appendix O, Reclamation Strategy

PRIOR TO MAKING A DECISION ON A DEVELOPMENT APPLICATION FOR A WECS, THE DEVELOPER SHALL PROVIDE COPIES OF APPROPRIATE REPORTS, COMMENTS AND REQUESTS FOR APPROVALS FROM THE FOLLOWING:

Transport Canada

Section 17 (pg. 24) Application Document

Transport Canada informed the Applicant that it will not be providing assessments earlier than 90 days prior to construction

NAV Canada

Section 17 (pg. 24) Application Document

Appendix Q, NAV Canada Approval

Alberta Culture and Tourism (Formerly Alberta Culture and Community Spirit)

Section 17 (pg. 24) Application Document

Appendix S, *Historical Resources Act* Approval with Conditions

Appendix T, Historical Resources Map

Alberta Environment and Parks (Formerly Alberta Environment)

Section 17 (pg. 23) Application Document

Appendix P, Response Report to AEP Review and Reassessment

Appendix O, Reclamation Strategy

Alberta Transportation

Section 17 (pg. 24) Application Document

Appendix R, Roadside Development Permit, Substation Location SE 27-7-29 W4M

Alberta Electric System Operator (AESO)

Section 17 (pg. 25) Application Document

Ongoing discussions and approvals are taking place.

M.D. of Pincher Creek No. 9 Utility Permit

No applications at this time. Utility Permits will be required for any MD road crossings prior to commencement of construction.

STARS

Section 17 (pg. 25) Application Document

Appendix U

SETBACKS

Appendix C, Setback Table for all turbine locations
According to the information supplied and outlined within the Setback Tables, the new project will ***NOT*** require any waivers of the required MD setbacks.

MINIMUM BLADE CLEARANCE FOR CATEGORY 3 WECS

The bottom of the rotor arc will be 37m above ground (minimum required is 7.5m).

TOWER ACCESS AND SAFETY FOR CATEGORY 3 WECS

Tubular towers with locked doors.

DISTRIBUTION LINES FOR CATEGORY 3 WECS

The applicant is proposing a 34.5kV underground system.

COLOUR AND FINISH FOR CATEGORY 3 WECS

The WECS will be finished in a non-reflective matte color. No advertising will appear on the towers or the blades.

ROAD USE AGREEMENT

A Road Use Agreement will be required prior to construction if any MD roads are used.

ALBERTA UTILITIES COMMISSION APPROVALS

The Applicant is currently undergoing the AUC approval process

Recommendation

That the Municipal Planning Commission review the information submitted with Development Permit Application Nos. 2018-67 through 2018-74, for the Windy Point Wind Farm, and schedule the required public meeting pursuant to Section 53.17 of Land Use By-Law 1140-08.

3. Enclosures

Supporting Documents:

ENCLOSURE No. 1 Permit Application Nos. 2018-67 through 2018-74 and supporting documents

ENCLOSURE No. 2 Revised Turbine Location Comparison

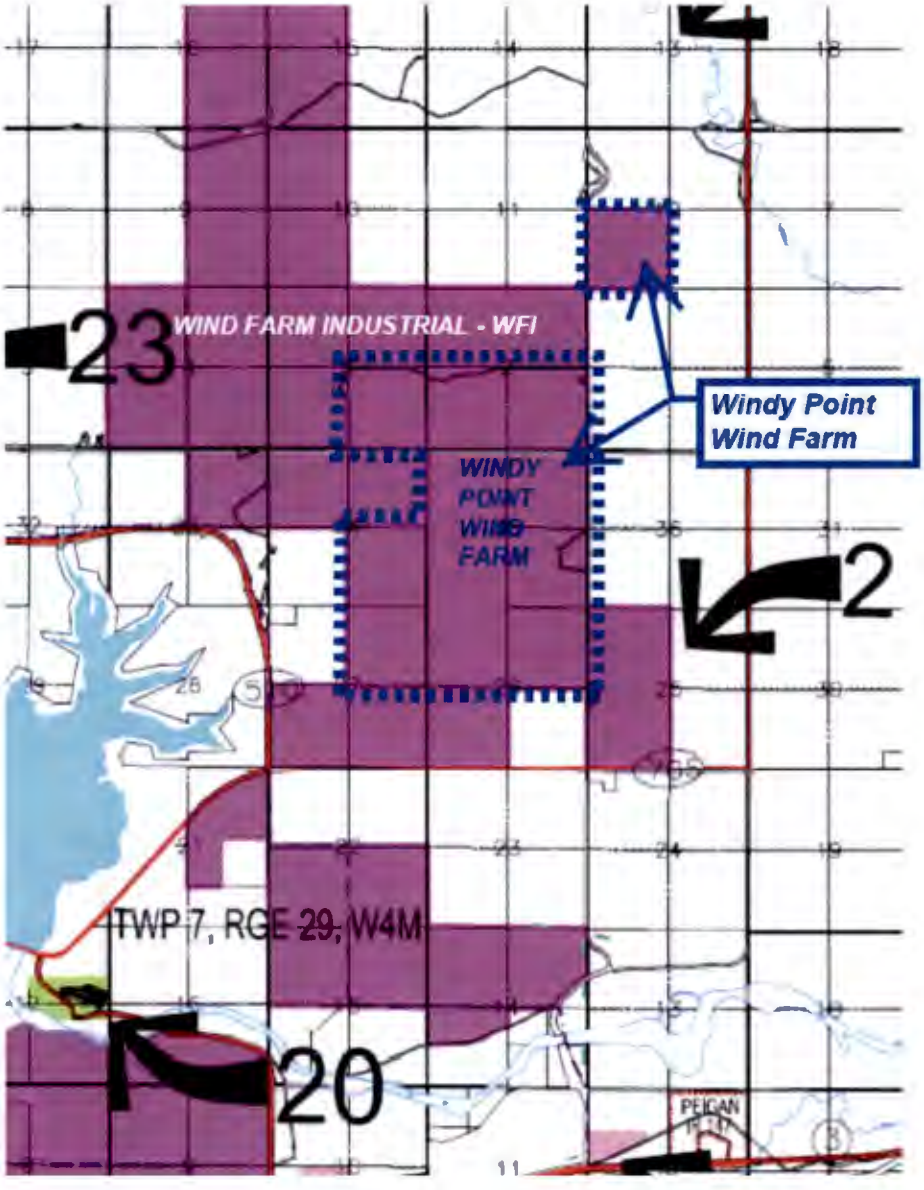
Respectfully Submitted,

Roland Milligan

30 August 18

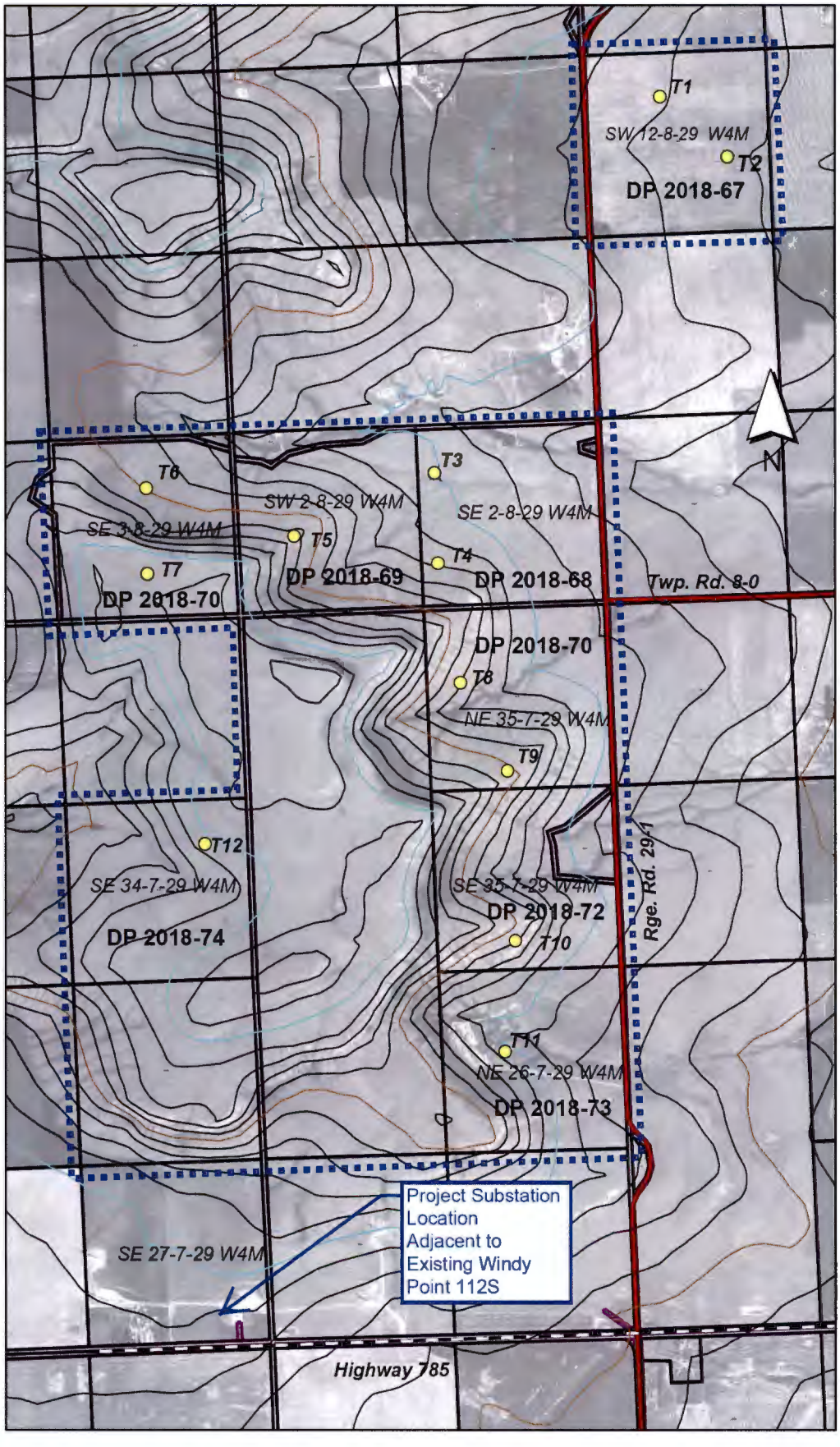
Reviewed by Sheldon Steinke, Interim CAO:

LOCATION OF PROJECT LANDS

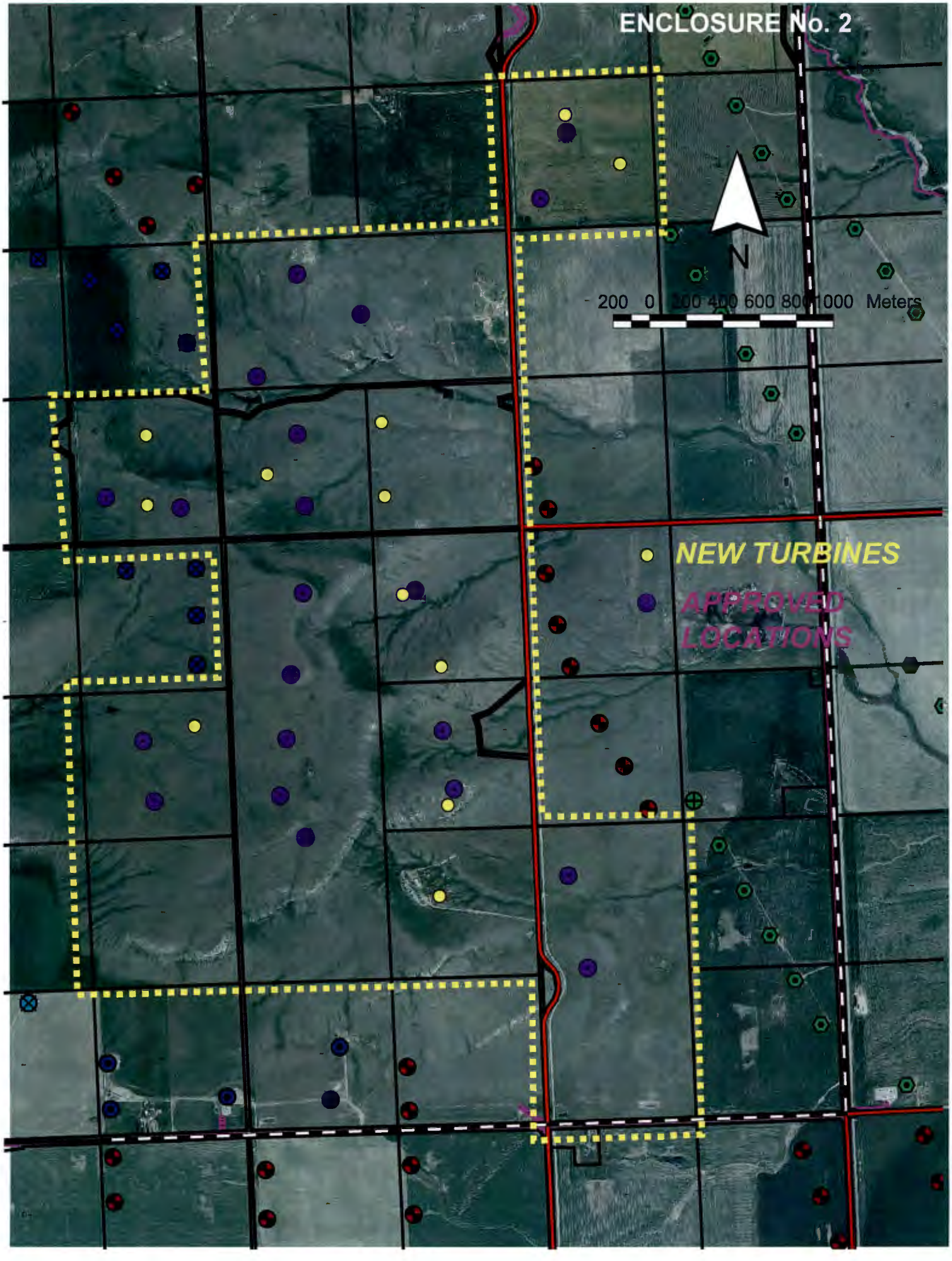


Project Lands were redesignated to Wind Farm Industrial in 2010 with the adoption of Land Use Bylaw amending bylaw, Bylaw No. 1207-10.

PROJECT DIAGRAM



Presented to MPC September 4, 2018


ENCLOSURE No. 2
N
200 0 200 400 600 800 1000 Meters
NEW TURBINES
APPROVED LOCATIONS

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 2018-67

Date Application Received 2018-03-09 PERMIT FEE 500

Date Application Accepted 2018-05-28 RECEIPT NO. 37959

SECTION 1: GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address: 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone 403-266-5635

Owner of Land (if different from _____

_____

Interest of Applicant (if not the owner): _____

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 2 (T1 & T2)

If expansion of existing, the overall total: _____

Legal Description of Lands to be Used: Lot(s) _____ Block(s) _____ Plan _____

Quarter Section 4;29;8;12;SW

Estimated Value of Construction: $15 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3 INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit.

I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: June 21, 2018.

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 2018-68

Date Application Received 2018-03-09

Date Application Accepted 2018-08-28

PERMIT FEE 500

RECEIPT NO. 37955

SECTION 1: GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address: 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone: 403-266-5635

Owner of Land (if different from _____

_____

Interest of Applicant (if not the owner): _____

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 2 (T3 + T4)

If expansion of existing, the overall total: _____

Legal Description of Lands to be Used: Lot(s) _____ Block(s) _____ Plan _____

Quarter Section 4;29;8;2;SE

Estimated Value of Construction: $15 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3 INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

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I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: June 21, 2018.

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 2018-69

Date Application Received 2018-03-05

Date Application Accepted 2018-08-28

PERMIT FEE 500

RECEIPT NO. 37951

SECTION 1: GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address: 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone: 403-266-5635

Owner of Land (if different from above): _____

_____

Interest of Applicant (if not the owner): _____

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 1 (T5)

If expansion of existing, the overall total: _____

Legal Description of Lands to be Used: Lot(s) _____ Block(s) _____ Plan _____

Quarter Section 4;29;8;2;SW

Estimated Value of Construction: $7.5 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3. INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit.

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DATE: June 21, 2018

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 208-70

Date Application Received 2018-03-09

PERMIT FEE 500

Date Application Accepted 2018-08-28

RECEIPT NO. 37959

SECTION 1. GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address: 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone: 403-266-5635

Owner of Land (if different from _____

_____

Interest of Applicant (if not the owner): _____

SECTION 2. PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 2 (T6 & T7)

If expansion of existing, the overall total: _____

Legal Description of Lands to be Used: Lot(s) _____ Block(s) _____ Plan _____

Quarter Section 4;29;8;3;SE

Estimated Value of Construction: $15 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3: INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit

I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: June 21, 2018

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 2018-71

Date Application Received 2018-03-09

Date Application Accepted 2018-08-28

PERMIT FEE 500

RECEIPT NO. 37959

SECTION 1: GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone: 403-266-5635

Owner of Land (if different from above):

Interest of Applicant (if not the owner):

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 2 (T8&T9)

If expansion of existing, the overall total:

Legal Description of Lands to be Used: Lot(s) Block(s) Plan

Quarter Section 4;29;7;35;NE

Estimated Value of Construction: $15 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3: INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit.

I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: June 21, 2018.

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 208-72

Date Application Received 2018-03-09

Date Application Accepted 2018-08-28

PERMIT FEE 500

RECEIPT NO. 37959

SECTION 1: GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address: 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone: 403-266-5635

Owner of Land (if different from

Interest of Applicant (if not the owner):

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 1 (T10)

If expansion of existing, the overall total:

Legal Description of Lands to be Used: Lot(s) Block(s) Plan

Quarter Section 4;29;7;35;SE

Estimated Value of Construction: $7.5 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3: INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit.

I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: June 21, 2018.

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 2018-73

Date Application Received 2018-03-09 PERMIT FEE 500

Date Application Accepted 2018-08-28 RECEIPT NO. 37959

SECTION 1 GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address 1320 - 396 11th Ave SW Calgary T2R 0C5 Telephone 403-266-5635

Owner of Land (if different from

Interest of Applicant (if not the owner):

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 1 (T11)

If expansion of existing, the overall total:

Legal Description of Lands to be Used: Lot(s) Block(s) Plan

Quarter Section 4;29;7;26;NE

Estimated Value of Construction: $7.5 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3: INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit.

I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: JUNE 21, 2018.

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

MUNICIPAL DISTRICT OF PINCHER CREEK NO. 9

DEVELOPMENT PERMIT APPLICATION FOR WIND ENERGY CONVERSION SYSTEMS

DEVELOPMENT PERMIT APPLICATION NO. 2018-74

Date Application Received 2018-03-09

Date Application Accepted 2018-08-28

PERMIT FEE 500

RECEIPT NO. 37955

SECTION 1: GENERAL INFORMATION (completed by all permit applicants)

Applicant: Windy Point Wind Park Ltd.

Address: 1320 - 396 11th Ave SW Calgary T2R 0C5 **Telephone:** 403-266-5635

Owner of Land (if different from above):

Interest of Applicant (if not the owner):

SECTION 2: PROPOSED DEVELOPMENT (completed by all permit applicants)

I/We hereby make application for a Development Permit in accordance with the plans and supporting information submitted.

A BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT IS AS FOLLOWS:

Total number of new WECS: 1 (T12)

If expansion of existing, the overall total:

Legal Description of Lands to be Used: Lot(s) _____ Block(s) _____ Plan _____

Quarter Section 4;29;7;34;SE

Estimated Value of Construction: $7.5 million

Estimated Commencement Date: September 1, 2019

Estimated Completion Date: December 31, 2020

SECTION 3. INFORMATION REQUIREMENTS

All of the following must be attached before the application is considered complete. The Development Officer shall determine completeness and refuse all applications that are incomplete.

LAND USE DISTRICT: WIND FARM INDUSTRIAL

Accurate Site Plan:	☑ Attached
Elevations or Scale:	☑ Attached
Photos or Representations of Proposed WECS:	☑ Attached
Manufacturers Specifications:	☑ Attached
Analysis of Visual Impact:	☑ Attached
Analysis of Noise:	☑ Attached
Report on any Public Consultation:	☑ Attached
Reclamation/Decommissioning Plan:	☑ Attached
Impact on Local Road System:	☑ Attached
Setback and Separation Distance Chart:	☑ Attached
Tower Access and Safety:	☑ Attached
Color and Finish:	☑ Attached

Results of Applicant Circulation to Other Government Levels:

Alberta Utilities Board	☑ Attached
Tranport Canada	☑ Attached
Nav Canada	☑ Attached
Alberta Tourism, Parks, Recreation and Culture	☑ Attached
Alberta Environment	☑ Attached
Alberta Infrastructure and Transportation	☑ Attached
Alberta Sustainable Resources	☑ Attached

SECTION 4: AUTHORIZATION

The information given on this form is full and complete and is, to the best of my knowledge, a true statement of the facts in relation to this application for a Development Permit.

I also consent to an authorized person designated by the municipality to enter upon the subject land and buildings for the purpose of an inspection during the processing of this application.

DATE: June 20/18

Applicant

Registered Owner

Information on this application form will become part of a file which will be considered at a public meeting. Any portion of the application determined to be incomplete by the Development Officer shall be rectified before the application is accepted and a public meeting date is set.

Development Permit Amendment Application Windy Point Wind Farm

Submitted by Windy Point Wind Park Ltd.

Submitted to:

Municipal District of Pincher Creek No. 9
Municipal Planning Committee
c/o Mr. Roland Milligan
Director of Development and Community Services

March 9, 2018

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Background

1. Windy Point Wind Park Ltd. (the “Applicant”) is a wholly owned subsidiary of Alberta Renewable Power Limited Partnership (the "Partnership"), a limited partnership between Boralex Inc. (“Boralex”) and Alberta Wind Energy Corporation (“AWEC”).

2. The Applicant is proposing the construction and operation of the Windy Point Wind Farm, a wind energy power project (the "Power Plant"), the Applicant owned Boulder Run 501S collector substation (the "Substation"), and associated infrastructure including underground collector cables, access roads, permanent meteorological tower and fences (collectively, the "Project"). The Project will be located approximately 13 km north-east of the Town of Pincher Creek, Alberta.

3. On August 16, 2011, The Applicant submitted a development permit application to the Municipality of Pincher Creek No. 9 (the "MDPC") for the Project.

4. On November 10, 2011, pursuant to Land Use Bylaw ("LUB") 1140-08, the MDPC granted the Applicant development permits DP 2011-40 thru DP 2011-49 (the "Permits") for the construction of the Project.

5. On September 7, 2016, the Applicant requested the suspension of the Permits. The MDPC Municipal Planning Committee (the "MPC") granted a one year suspension of the Permits to November 10, 2017 pursuant to Section 53.19 of the LUB.

6. On November 10, 2017, pursuant to Section 53.19(d) of the LUB, the MDPC MPC granted a one year suspension of the Permits to November 10, 2018 pursuant to Section 53.19 of the LUB.

7. The Applicant hereby submits an application ("Amendment Application"), pursuant to Section 22.4 of the LUB, to amend the Permits (the "Amendments") for the following:

    a. Amend the longitude and latitude coordinates for the centre of each structure supporting a Wind Energy Conversion System ("WECS"), from the currently approved locations, to the locations listed in Section 3 of this Application. WECS relocation is required to satisfy the AEP's requirement to situate WECS outside of wildlife setbacks, and to abide by AUC Rule 012 and municipal noise regulations.

    b. Amend the number of WECS locations from twenty-one (21) to twelve (12).

    c. Amend the Project site boundaries to reflect changes in land control. A revised Project map is provided in Appendix A.

    d. Amend the nominal capacity of the power plant from 63 megawatts ("MW") to 50.4 MW.

e. Amend the power generating equipment and associated facilities, including make, model and nominal capability. This amendment is required because the Siemens SWT-3.0-101 WTG for, which the power plant is currently approved, is no longer available from the manufacturer. Please see Section 5 for the updated WECS specifications.

f. Amend the construction commencement date to September 1, 2019.

g. Amend the construction completion date to December 31, 2020. This amendment is required for consistency with the anticipated Target COD date for the Renewable Energy Program ("REP") electricity procurement Round 3, for which the Applicant is intending to participate.

h. Addition of the Substation to the Permits. The Applicant had originally intended to interconnect the Project through the Oldman 2 (Windy Point 112S) substation. However, since that time, AESO informed the Applicant that the Substation must be a separate facility. Therefore, the Applicant will require an additional development permit for the Substation.

Project Overview

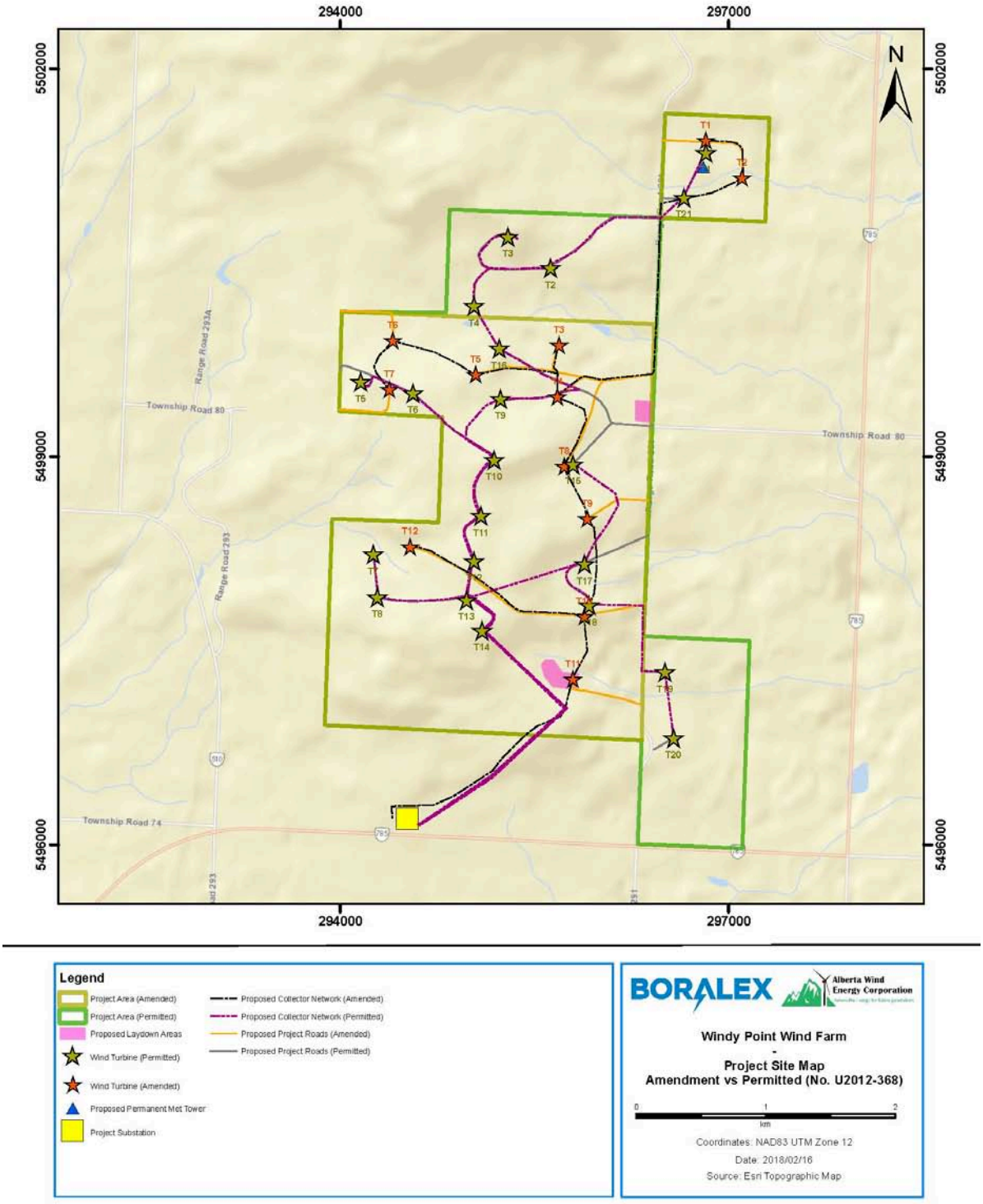
The Project will be situated on approximately 1920 acres (777 hectares) of privately owned agricultural lands under long term lease to the Applicant (the "Project Site").

The Project will consist of twelve (12) Category 3 WECS, collector lines, access roads, a permanent meteorological tower, storage area, temporary laydown area and potentially an operations and maintenance building.

The Substation will be situated on approximately 0.67 acres of privately owned agricultural lands and will consist of electrical equipment, including a power transformer, high and medium voltage circuit breakers and disconnect switches. The Substation will be used to increase the collector system voltage from 34.5kV to 138kV to connect the Power Plant to transmission line 893L of the Alberta Integrated Electrical System ("AIES"). The Substation has been designated the Boulder Run substation (501S) by the Alberta Electric System Operator (the "AESO") and will be located directly adjacent to the existing Oldman 2 Wind Farm substation (Windy Point Substation 112S).

Figure 1 provides an overview of the differences between the main components of the currently permitted Project and the proposed amended Project.

Figure 1: Permitted Project vs. Amended Project



Application Requirements

The following section provides the development permit application requirements for the Project, as required by the Municipal District of Pincher Creek No. Land Use Bylaw 1140-08 Section 53.21.

1. Accurate Site Plan

Application Requirement 53.21 (a): An accurate site plan reflecting the proposed Amendments and indicating the exact location of each existing and proposed WECS, Substation, collection and transmission system, terrain contours, access roads and setbacks as defined in Section 53.24-28 is provided in *Appendix A: Project Map*.

Application Requirement 53.21 (b): An accurate site plan reflecting the proposed Amendments and showing the titled parcels and location of each WECS is provided in *Appendix B: Leased Lands Map*.

2. Setback and Separation Distance Chart

The amended WECS locations respect all Municipal setbacks for roads, dwellings and property lines. A setback and separation distance chart is provided in *Appendix C: Setback Table*.

3. Location and Elevation Table

Application Requirement 53.21 (c): Each WECS location and base elevation is provided in EXCEL format in *Appendix D: Location and Elevation Table.*

4. Visual Representation

Application Requirement 53.21 (d): The Applicant completed a visual representation study (photo montage) for the previous WECS layout in 2011. Updated photographs were taken August 29 and 30, 2017, in support of the revised Visual Impact Assessment for the amended WECS locations. Photographs were taken from each residence within 2 km of the Project area, and from other selected vantage points in the area.

Since the amended WECS layout will reduce the number of turbines from 21 to 12 locations, the Visual Impact Assessment demonstrates a reduced impact. The updated Visual Impact Assessment is provided in *Appendix E: Visual Impact Assessment*.

5. Manufacturer's Specifications

Application Requirement 53.21 (e): The Applicant has selected the Vestas V136 as an updated WECS for the Project. The Vestas V136 has a rated output of 4200kW and incorporates the latest technology, which achieves a class leading sound power level of 103.9 dBA.

The warranted sound power levels are presented below with reference to the code IEC 61400-11:Ed.3. These values have been used in the Noise Impact Assessment (*Appendix G*). The following table shows the standard sound power levels (LWA) valid for the corresponding wind speeds referenced to hub height and a roughness length of 0.05 m as described in the IEC code.

Table 1: Sound Characteristics

Wind Speed (m/s)	3	4	5	6	7	8	9	10	Up to cut-out
Sound (dBA)	90.6	90.9	92.9	96.1	99.7	103	103.9	103.9	103.9

Additional modes of operation with reduced sound power levels will be available from the manufacturer.

The tower is made of rolled steel and the blades are made of fiberglass-reinforced epoxy. A brochure outlining the technical specifications is provided in *Appendix F: WECS Brochure.*

Table 2: Turbine Specifications Summary

Rated Power	4,200 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Maximum Sound Power	103.9 dB
Rotor Diameter	136 m
Rotor Swept area	14,527 m2
Tower Height	105 m
Total Height	173 m

6. Colour and Finish

In accordance with Sections 53.33 and 53.34 of the Land Use Bylaw 1140-08, the wind turbines will be finished in a non-reflective matte and the exterior components will be a shade of white, which minimizes the aesthetic impact. No lettering or advertising will appear on the towers or blades. The only lettering that may appear is the manufacturer's and/or the Applicant's identification on the side of the wind turbine nacelle, which will be presented to the MDPC development authority for approval prior to installation.

7. Safety Features

The wind turbines will use steel tubular towers with a locked door access. This will ensure public safety as only authorized personnel with keys will be able to enter the wind turbine. The Substation will be surrounded by a security fence and will display signage of electrical danger and prohibiting entry.

8. Potential for Noise

Application Requirement 53.21 (f)(1): A Noise Impact Assessment (NIA) for the Project is provided in *Appendix G.* The NIA includes simulations to demonstrate the expected sound pressure level at each

receptor using the sound contribution from the Project and the surrounding Energy Related Facilities, as requested by the AUC Rule 012, including:

a. Oldman 1 Wind Farm (operating)

b. Oldman 2 Wind Farm and substation (operating)

c. Summerview and Summerview II Wind Farm and substation (operating)

d. Welsch Wind Farm and substation (proposed)

e. Heritage Wind Farm and substation (proposed)

f. Fidler Substation (operating)

The NIA indicates the associated nighttime noise mitigation measures that are required to meet the criteria in AUC Rule 012 at all existing receptor dwellings within a 2000m radius from the Project. These mitigation measures include shutting down the wind turbine completely at some locations during specific periods. Each individual Vestas V-136 wind turbine will be equipped with a module within the control system that will allow the turbine to have the power (and therefore accordingly the sound emitted) to be limited during certain periods of the day or night as required. All of the noise reduction settings mentioned in the NIA will be available for all wind turbines proposed for the Project. The wind turbines will be operating with the appropriate sound level setting during both daytime and nighttime periods to ensure that the operation of the wind farm will be in compliance with AUC Rule 012.

The results indicate that the sound level at each receptor will be below the permissible level outlined in AUC Rule 012 when the noise management system is in place. Please note that the Applicant has signed an agreement to decommission the existing residence (Gifford residence) located at 4;29;7;26;NE prior to Project operation. Therefore, this residence has not been included in the NIA.

The NIA also includes an analysis of the Project's sound levels at the boundary of the development. The NIA confirms that on the Project boundaries, the sound levels do not exceed 45 dBA. Please refer to *Appendix G: Section 5.2 - page 22* for an analysis of noise levels and local bylaw requirements.

9. Shadow or Flicker

Application Requirement 53.21 (f)(2): The Applicant completed a shadow flicker impact assessment for the previous WECS layout in 2011. An updated Shadow Flicker Impact Assessment was completed in 2017 and is provided in *Appendix H: Shadow Flicker Assessment.*

There are currently no municipal or provincial thresholds for shadow flicker at residences. Where the worst case scenario number of hours of expected shadow flicker exceeds 30 hours (an internationally recognized standard for shadow flicker), the Applicant will undertake further analysis by way of an onsite validation to investigate the vegetation shelter and orientation of windows at the houses. If once validated, the number of hours of expected shadow flicker exceeds 30 hours, the Applicant will discuss mitigation measures with the landowners such as the installation of blinds and planting of vegetation.

10. Collector System and Interconnection

Each WECS will be interconnected using a 34.5kV collector system, expected to be situated entirely underground. An illustration of the collector system can be found in *Appendix A: Project Map.*

Each collection feeder in the Project will have a multi-function digital protection relay, which can be set to trip a circuit breaker during a short circuit, such as an earth fault. As a redundancy, the Project will also include breaker failure protection with the function to trip the next breaker, if the collector breaker fails to operate. Furthermore, there is fault protection on the 34.5kV busbars within the substation. If there is a fault on the substation busbar the entire wind farm is tripped off.

The circuit breakers and sophisticated protection relays proposed for the Project will detect even the slightest leakage current. Once the protection system has been triggered, there is no electrical risk to the arriving maintenance team. The electrical protection scheme proposed for the Project is significantly safer than what is typically used in distribution networks, which are less sensitive and require a large current to blow the fuse.

The Project will interconnect to the AIES through the proposed Substation to be located at a leased land parcel in the south-east quarter of Section 27 Township 7 Range 29 W4M. The Substation will be located directly adjacent to the existing Windy Point 112S substation, which services the existing Oldman 2 Wind Farm. The Substation will house a 34.5/138kV transformer, switching and protection equipment, metering equipment, power control electronics and will be surrounded by a security fence. *Appendix I* provides an illustration of the proposed Substation layout.

11. Public Consultation

Application Requirement 53.21 (g): The Proponent has conducted a Participant Involvement Program, in accordance with Alberta Utilities Commission (“AUC”) Rule 007.

Public Information Session

A public open house event ("Information Session") was held at 7:00pm on Wednesday, September 13, 2017 at Summerview Hall - Heritage Acres. Letters of invitation were sent to all landowners within the Notification Zone. In addition, public notifications of the Information Session were published in the *Pincher Creek Echo* and the *Shoot the Breeze* newspapers. Notifications for the Information Session were published in both newspapers on August 30 and September 6, 2017. In addition, written invitations were provided to other Stakeholders considered to have a significant interest in the Project.

The Information Session was an opportunity for Stakeholders to meet representatives of the Applicant, learn more about the Project, get questions answered, and voice concerns or suggestions. Applicant representatives included:

- Alistair Howard, Director of Development, Boralex Inc.
- Denis Legalais, Development Coordinator, Boralex Inc.
- Marc Stachiw, President, Alberta Wind Energy Corporation
- Stewart Duncan, CEO, Alberta Wind Energy Corporation
- Trevor Edwards, Project Lead, Alberta Wind Energy Corporation

A Power Point presentation was conducted by Mr. Howard and Mr. Stachiw during the Information Session and covered topics including:

- An overview of the Applicant
- Project history to date
- Project details, status and development schedule
- Proposed Amendments
- Overview of expected construction activities
- Benefits of the Project to the local community
- Update on the Alberta Electricity market
- Contact information for the Applicant

A copy of the presentation slides is provided in *Appendix J: Information Session Presentation.* Information regarding the Applicant and the Project were also displayed using display poster boards. Copies of the poster boards used at the Information Session are provided in *Appendix K: Information Session Poster Boards*. In addition, printed materials were available during the Information Session including:

- Copies of the Information Packages
- Project map
- Business cards of representatives of the Applicant
- AUC brochure: *Public involvement in a proposed utility development*

The Information Session was attended by six individuals, including the MDPC Director of Development and Community Services. The Applicant believes the low attendance at the Information session is due to the following reasons:

1. The Project has been in development for over ten years and is well known in the community.
2. The proposed Amendments to the Project are not significant enough to generate a high level of public interest.
3. The local community is familiar with the wind power industry and therefore open houses no longer generate a high level of public interest.

A sign-in form was provided for attendees to submit their names and contact information in order to be kept up to date on the Project. Table 3 provides a list of attendees at the Information Session.

Table 3: Information Session Attendees

Attendee	Status
J. Welsch	Landowner located within Personal Consultation Zone
K. Welsch	Landowner located within Personal Consultation Zone
G. Lewis	Landowner located within Personal Consultation Zone
L. Calder	Interested citizen located outside of Notification Zone
B. Yates	Interested citizen located outside of Notification Zone

R. Milligan	MDPC Director of Development

Feedback forms were available for attendees to submit their questions and concerns. Only one feedback form was received from L. Calder, which was supportive of the Project.

Table 4 provides a summary of the main questions and concerns recorded from the Information Session verbal question and answer period.

Table 4: Information Session - Questions and Concerns Summary

Question/Concern	Response by Applicant	Resolution or Follow-up
Stakeholder concerned they do not have a say in the Project	The Information Session and consultation process provides the public with an opportunity to voice questions and concerns about the Project.	None required.
Landowners do not have time to keep up with the development of the Project.	The Applicant has published a website to update the public on Project developments.	None required.
Stakeholders are tired of Projects changing hands between companies.	The Applicant is a partnership between AWEC and Boralex. Boralex's business model is to own and operate projects for the long term.	None required.
The Oldman Reservoir is used for water activities (such as kite surfing). Will there be any impact from the Project?	The Reservoir is normally upwind from the Project, so there will be no impact on wind speed for water activities.	None required.
What is the reclamation process for the Project?	The reclamation process includes removing all above-ground components, scrapping the metal and wiring, and leaving the below-ground components. Foundations are removed a minimum of 1 metre below	None required.

	depth and covered with topsoil. The intent is to leave the surface of the land in the same condition as prior to the Project.	
Will there be subsidies for the Project?	There are currently no direct subsidies for wind projects in Alberta. The REP procurement process contemplates using a contract for differences mechanism whereby if power prices in the market are below the contracted price, the proponent gets paid to make up the difference. Alternatively, if market prices are above the contract price, the proponent must pay into the pool. None of these payments will be made until the Project is in operation.	None required.
Are any parts sourced locally?	Currently turbine blades and most components are made outside of Canada. The Applicant will consider sourcing from local companies for other civil construction activities such as road building and concrete work, etc.	None required.

Personal Consultation with Project Landowners

The Applicant began approaching area landowners in the summer of 2005 for the development of the Project. The Applicant currently has surface leases with two landowners (the "Project Landowners") consisting of a total of 1,920 acres (777 hectares). Regular communication between the Applicant and the Project Landowners has been conducted since 2005, and is ongoing. Project Landowners were made aware of the proposed Amendments between May and July 2017 through face-to-face meetings and telephone conversations. Project Landowners expressed no objections to the proposed Amendments and were supportive of the Applicant's efforts to get the Project approved and constructed.

Personal Consultation with stakeholders in Personal Consultation Zone

Title searches of lands surrounding the Project Site were conducted in June and July 2017. Information from the title searches were complied to create a list of Stakeholders surrounding the Project. A map illustrating the Personal Consultation Zone (stakeholders within 800 metres of the Project Site boundary) and Notification Zone (stakeholders within 2000 metres of the Project Site Boundary) is provided in *Appendix L: Public Consultation Zone Map*. The consultation distances are mandated through the AUC Rule 007 (Appendix A1 - *Participant involvement guidelines for Power plants, 10 megawatts or greater, urban and rural*). A list of landowners, residents and occupants within the Personal Consultation and Notification Zone is provided in *Appendix M: List of Stakeholders*. The Applicant also conducted personal consultation with Stakeholders who are located just outside of the Personal Consultation Zone.

Personal consultation with Stakeholders within the Personal Consultation Zone was conducted by means of face-to-face meetings, telephone conversations or email correspondence.

Conversations with Stakeholders consisted of the following topics:

- A brief history of the Project development to date;
- Reasons why the Applicant is seeking the Amendments to the Project
- An explanation of the main components of the Amended Power Plant and its location relative to the affected Stakeholder;
- Information regarding timing of permit applications and proposed construction start dates;
- An opportunity to ask any questions or receive further information regarding the Project;
- An invitation to the Information Session; and
- An invitation to contact the Applicant with any further questions or concerns.

Table 5 provides a summary of the main concerns recorded from the personal consultation with Stakeholders.

Table 5: Personal Consultation - Main Concerns Summary

Stakeholder Concern	Response by Applicant	Resolution or Follow-up
Stakeholder concerned with visual impact of the Project turbines.	The number of WECS will be reduced from 21 to 12, decreasing the visual impact of the Project.	A Visual Impact Assessment will be made publically available on the website.
Stakeholder is concerned about potential turbine noise at their house.	All receptors (dwellings) within the Project Area will be under the sound level thresholds outlined in AUC Rule 012.	A Noise Impact Assessment will be publically available on the website.
Stakeholder concern regarding construction	Applicant agrees that traffic activity will be higher during	None required.

activity in the area.	construction period, but this will only last a few months and efforts will be made to minimize nuisance to local residents.	
Stakeholder concern regarding shadow flicker from turbines at residence.	Applicant will conduct a Shadow Flicker Impact Assessment. If any dwellings are subject to flicker greater than 30 hours per year (under worst case scenario), mitigation measures will be discussed.	A Shadow Flicker Impact Assessment will be made publically available on the website.
Stakeholder concern regarding turbine's affect on hawks.	Applicant has updated wildlife studies and turbines will be located outside of AEP wildlife setbacks. In addition, mitigation measures will be taken to reduce impacts on wildlife during construction and operation.	None required.
Project Landowner request to place permanent metrological tower in a non-cultivated area of the property	Applicant will consider this request when locating the permanent metrological tower.	None required.

Public Notification

On August 30, 2017, approximately 60 Information Packages were sent via regular mail to Stakeholders within the Notification Zone, as well as to other Stakeholders considered to have a significant interest in the Project. Information Packages contained details required as part of the Participant Involvement Program guidelines in AUC Rule 007 including: a Project information booklet, a Project map, a cover letter from the Applicant, and a copy of the AUC *Public involvement in a proposed utility development* pamphlet. A copy of the Information Package is provided in *Appendix N: PIP Information Package*.

Several Stakeholders within the Notification Zone but close to the Personal Consultation Zone were also personally consulted; please refer to *Appendix M: List of Stakeholders*. The Applicant received no feedback from Stakeholders as a result of the Information Packages mail-out.

Consultation with municipal, provincial and federal government, agencies and regulatory bodies

The following is a summary of the consultation conducted with municipal, provincial and federal government, agencies and regulatory bodies. Please note that several of these consultation activities are ongoing.

Local jurisdiction consultation

1. **Piikani First Nation:** The Project is located approximately 3 km west of the Piikani First Nation. A letter and Information Package was sent to the Piikani First Nation Band Council on August 30, 2017. An invitation to the Information Session was also sent to the Piikani First Nation; however, no representatives of the Piikani First Nation were in attendance at the Information Session.

Provincial government and agency consultation

1. **Alberta Environment and Parks:** Please refer to Section 17 of this Application.

2. **Alberta Culture and Tourism:** Please refer to Section 17 of this Application.

3. **Alberta Transportation:** Please refer to Section 17 of this Application.

4. **Alberta Electric System Operator:** Please refer to Section 17 of this Application.

5. **Shock Trauma Air Rescue Society ("STARS"):** Please refer to Section 17 of this submission.

6. **Local Member of the Alberta Legislative Assembly ("MLA"):** An Information Package and invitation to the Information Session was sent to the Constituency Office of Mr. Pat Stier, MLA for Livingston-Macleod on August 30, 2017. There was no further communication with Mr. Stier's Office.

Federal government and agency consultation

1. **NAV Canada:** Please refer to Section 17 of this submission.

2. **Transport Canada:** Please refer to Section 17 of this submission.

3. **Environment Canada - Metrological Service of Canada:** Environment Canada completed an assessment of the Project and on September 20, 2017, provided the Applicant with an email indicating that the potential interference from the Project will not be severe and therefore Environment Canada does not have any objections to the Project.

4. **Department of National Defence ("DND"):** DND operates radar and other defence equipment in Canada. An email was sent to DND on August 16, 2017 explaining the Project

and providing WECS coordinates for review. The Applicant has received no correspondence from DND.

5. **Royal Canadian Mounted Police ("RCMP"):** The RCMP operates radio communications equipment in Canada. An email was sent to RCMP on August 16, 2017 explaining the Project and providing WECS coordinates for review. On September 18, 2017, the Applicant received a letter indicating that the RCMP has no objection to the Project.

6. **Radio Advisory Board of Canada ("RABC"):** RABC provides information to the Government of Canada and industry on matters related to the management and use of the radio frequency spectrum in Canada. An email was sent to RABC on August 16, 2017 explaining the Project and providing WECS coordinates for review. The Applicant has received no correspondence from RABC.

7. **Natural Resources Canada ("NRCan"):** NRCan operates seismic detection equipment in Canada. An email was sent to NRCan on August 16, 2017 explaining the Project and providing WECS coordinates for review. The Applicant has received no correspondence from NRCan.

8. **Local Member of the House of Commons ("MP"):** An Information Package and invitation to the Information Session was sent to the Constituency Office of Mr. John Barlow, MP for Foothills, on August 30, 2017. There has been no further communication with Mr. Barlow's Office.

Consultation with business and industry

The following is a summary of the consultation conducted with businesses and industry in the vicinity of the Project. Please note that several of these consultation activities are ongoing.

1. **AltaLink L.P. ("AltaLink"):** AltaLink is responsible for the maintenance and operation of most of the electric transmission system in southern Alberta and has facilities in the vicinity of the Project. AltaLink has a full and detailed understanding of the Project. Applicant has been in regular communication with AltaLink since 2006 and AltaLink is the interconnection consultant to the Applicant. AltaLink is in support of the Project.

2. **Fortis Alberta ("Fortis"):** Fortis is the regulated electricity distribution utility operating in southern Alberta and has facilities in the vicinity of the Project. On September 20, 2011, the Applicant received Approval from Fortis under Section 101(2) of the Electric Utilities Act.

3. **Chief Mountain Gas Co-op Ltd ("CMGC"):** CMGC is a member owned natural gas distributor to provide gas service to rural customers in south-west Alberta. CMGC has facilities (low-pressure gas pipelines) in the Project area. Since low-pressure gas lines are not mapped by survey quality data, determining the exact minimum separation between the proposed

infrastructure and the existing pipeline is not possible at this time. The CMGC will be contacted through Alberta One Call before construction mobilization begins to ensure that no conflicts with turbine locations or road and collector system routes exist. The Applicant had discussions with, and on March 3, 2017, provided Project maps to management of CMGC. On March 10, 2017, the Applicant received a response that CMGC has no concerns or objections, provided Project facilities are setback from CMGC polyurethane pipelines by at least 20 metres and aluminium pipelines by at least 30 metres. If conflicts are encountered, the gas lines will be staked and mitigation measures will be taken in agreement with the CMGC and the Applicant.

4. **Telus Communications ("Telus"):** Telus operates telecommunications line and equipment in the Project area. Before construction mobilization begins, Telus will be contacted through Alberta One Call to ensure that no conflicts with WECS locations or road and collector system routes exist. If conflicts are encountered, the Telus lines will be staked and mitigation measures will be taken in agreement with Telus and the Applicant.

5. **ATCO Gas ("ATCO"):** ATCO Gas is a distributor of natural gas. Land titles searches indicate ATCO has a utility right of way in the area. An information package was mailed to ATCO on August 30, 2017. The Applicant has had previous conversations with ATCO on another project and ATCO has no concerns or objections provided wind farm facilities are setback from ATCO pipelines by at least 30 metres. The Applicant can confirm that no Project facilities will be located within the above indicated setback.

6. **NextEra Energy Canada ("NextEra"):** NextEra is a subsidiary of NextEra Energy Inc, a U.S. based renewable energy company. NextEra owns the Heritage Wind Farm, which is located immediately northwest, east and south of the Project Site. NextEra purchased the Heritage Wind Farm from Benign Energy Canada in 2016. The Applicant provided NextEra with a copy of the Information Package on August 30, 2017 and conducted a follow-up telephone call on October 19, 2017. NextEra had no questions or comments in regards to the Project.

7. **Welsch Wind Power Inc.** - Welsch Wind Power Inc. is a subsidiary of Enercon GmbH ("Enercon"). Enercon is a German based turbine manufacturer and wind farm developer with offices in Montreal. Enercon owns the Welsch Wind Farm, which is located immediately west of the Project Site. Enercon purchased the Welsch Wind Farm from Eolectric Inc. in 2015. The Applicant provided Enercon with a copy of the Information Package on August 30, 2017. Enercon had no questions or comments in regards to the Project. In addition to formal consultation, representatives of Enercon and the Applicant are in regular communication regarding the Project, activity coordination and the power industry in general.

8. **Oldman 2 Wind Farm Ltd -** Oldman 2 Wind Farm Ltd. is a subsidiary of IKEA Group ("IKEA"). IKEA owns the Oldman 2 Wind Farm, which is located immediately south of the Project Site.

The Applicant is currently in discussions with IKEA regarding integration between the Substation and the Oldman 2 Substation. A 'Facility Crossing Agreement' is in draft form and is being finalized between the Applicant and Oldman 2 Wind Farm Ltd.

9. **TransAlta Energy Corporation ("TransAlta") -** TransAlta is a Calgary based power company. TransAlta owns the Summerview 1 and Summerview 2 wind farms, located east of the Project Site. Summerview 1 and Summerview 2 wind farms became operational in 2004 and 2010, respectively. The Applicant provided TransAlta with a copy of the Information Package on October 24, 2017. In addition to the Information Package, the Applicant also provided a copy of the updated Noise Impact Assessment and a Radio-communications Study, as requested by TransAlta. On November 16, 2017, TransAlta requested the Applicant to provide an analysis of the potential production losses to Summerview 1 & 2 due to the installation of the Project. On November 29, 2017, the Applicant provided TransAlta with an analysis of estimated potential wake losses. Further information was shared on January 22, 2018. Consultation with TransAlta is ongoing.

12. Road Impacts

Application Requirement 53.21 (h): No permanent changes are anticipated to existing provincial roadways to accommodate the WECS installation. If temporary improvements need to be made, an application will be submitted to Alberta Transportation for a permit to upgrade highway access.

Access roads or trails will need to be constructed from MDPC roadways to the WECS foundations. Various road building techniques may be used to reduce environmental and visual impacts such as the use of matting or heavy duty landscaping fabric (geotextile). However, some impacts related to increased traffic volumes and dust generation is anticipated during the construction phase.

To as great an extent as possible, the access road layout will take advantage of existing trails and road allowances as well as common accesses to minimize the impact on the land. The estimated access road length is expected to be approximately 11 km in total. It is expected that a road width will be approximately 20 metres during construction to accommodate the largest vehicular traffic, which are the cranes required to assemble the towers, turbines and blades. The access roads will be reduced to approximately 6 metre wide roads once construction is complete.

A layout of the preliminary access road network is illustrated in Appendix A – Project Map. The final access road layout will be designed by the general contractor in consultation with landowners, the MPC, and Alberta Transportation to minimize potential impacts.

13. Integration with Other Wind Farms

The following wind farms are known to be in operation or proposed in the immediate area of the Project:

- Oldman 1 Wind Farm (operating): Owned by the Partnership
- Summerview and Summerview II Wind Farms (operating): Owned by TransAlta Wind
- Oldman 2 Wind Farm (operating): Owned by Ikea Group

- Welsch Wind Farm (proposed): Owned by Enercon
- Heritage Wind Farm (proposed): Owned by NextEra Canada

14. Decommissioning Plans

Application Requirement 53.21 (j): At the end of the useful life of the WECS, unless otherwise repowered, decommissioning activities will be implemented. The decommissioning and restoration process includes the removal of above-ground structures, removal of below-ground structures to a depth of approximately 1 metre below surface, and ground restoration (e.g., de-compaction, re-contouring, re-vegetation, and seeding). Re-vegetation and seeding will be completed in coordination with landowners.

Above ground structures include the WECS (including blades, nacelles, and towers), crane pads, substation, and access gates (if installed). Below ground structures include wind turbine pedestals and foundations, foundations for the substation, underground collector lines, and drainage structures.

The process of removing structures involves evaluating and categorizing all components and materials in categories of "recycled" or "to be disposed of at a certified landfill". For increased efficiency and minimal transportation effects, components and materials may be stored on-site or in a nearby pre-approved location until the bulk of similar components of materials are ready for transport. The components and materials will be transported to the appropriate facilities for reconditioning, salvage, recycling, and/or disposal.

When decommissioning occurs, reclamation standards at the time of decommissioning will be followed, but are generally expected to require the creation of temporary workspaces, use of access roads, and the use of equipment similar to that used for Project construction. Soil management will be incorporated in this process to facilitate site reclamation.

The removal of below-ground structures, which will be composed of inert materials (i.e., concrete foundations and de-energized cables) to a depth of 1 metre below ground surface, coupled with soil replacement and re-contouring, is expected to result in re-vegetation of the land to equivalent land-use capability for crop production or grazing.

Underground collectors will be de-energized and then terminated at connection points, and unless otherwise buried less than 1 metre in depth, they will remain in place in perpetuity, in a similar manner to decommissioned oil and gas pipelines. These inert cables, buried to a depth of at least 1 m are not anticipated to adversely affect farming practices.

Turbine concrete foundations and pedestals will also be removed to a depth of 1 m below ground surface, and the excavation will be backfilled with subsoil to match the natural grade and then topsoil will be applied. The inert concrete located greater than 1 m below ground level is not anticipated to adversely affect farming practices. Additional decommissioning measures at WECS locations will include the removal of surface gravels (i.e., parking pads), and soil de-compaction.

Following infrastructure removal, the turbine sites and access/collection system routes may be deep-ploughed as appropriate to alleviate soil compaction, and re-contoured to restore terrain profiles. Topsoil will be replaced and prepared for seeding by the landowner(s) on cultivated areas.

Following the final decommissioning, land owners will be consulted regarding any concerns that may arise, and the Applicant will attempt to resolve any outstanding concerns.

15. Post Construction Reclamation Plan

Application Requirement 53.21 (i): The primary goal of the reclamation strategy for the Project is to restore equivalent ecosystem status on all disturbed sites. This will help ensure that a variety of appropriate and functional ecosystems are represented within the Project areas, thereby mitigating Project effects to the largest degree possible. The approach to meeting this goal is largely based on information on pre-development site conditions and site restoration and reclamation strategies that are designed to minimize Project disturbance and support effective reclamation.

These restoration and reclamation strategies include re-contouring to compliment natural drainage patterns, general soil handling plans and replacement activities, and re-vegetation prescriptions. Specific reclamation strategies will be developed for all Project components, including: turbine clearing areas; underground transmission right of ways; Project roads; turbine foundation and transformer pads; crane pads; and substation. In all cases, the foremost priority will be stabilization of disturbed areas to minimize potential for soil movement through mass wasting or surface erosion. This will be achieved through the application of various re-vegetation strategies and techniques specific to the characteristics of each site. The secondary objective is to restore ecosystem attributes and associated vegetation communities that reflect pre-disturbance conditions to the largest degree possible.

The Applicant has developed a Reclamation Strategy, provided in *Appendix O*. Following final design, the Applicant will finalize the Reclamation Plan for implementation.

16. Project Schedule

Achieving these milestone dates depend upon numerous factors both within and outside the control of the Applicant. Table 6 provides a list of the Project's key milestones and target schedule:

Table 6: Target Project Schedule

Milestone	Target Date
MD Development Permit Application	March 2018
AUC Application Submission	March 2018
MD Development Permit Amendment (expected)	Q2 2018
AUC Amendment Approval (expected)	Q3 2018
Construction Begin (expected)	Q3 2019
Turbine Delivery (expected)	Q2 2020
Commercial Operation Date (expected)	Q4 2020

17. Other Permit Applications and Approvals

As outlined in the Municipal District of Pincher Creek No. Land Use Bylaw 1140-08 Section 53.22, the following section provides copies of appropriate reports, comments and requests for approvals from other regulatory agencies.

Alberta Utilities Commission (AUC)

An application[1] for the Amendments was to be made to the AUC on March 2 2018, with an approval expected to be awarded in Q3 2018. The MPC office will be notified when AUC approval is granted.

Alberta Environment and Parks (AEP)

The Applicant has been working closely with Alberta Environment and Parks ("AEP") Wildlife Branch throughout the development of the Project. Environmental studies for the Project were first conducted between 2006 and 2010. The Applicant received a favorable Wind Energy Referral Report from Alberta Environment and Sustainable Resource Development ("AESRD") on June 15, 2011.

In 2015, AEP requested that all environmental studies for the Project be redone, since the existing studies had become outdated. The Applicant completed updated environmental studies between Q2 2015 and Q2 2017. An *Environmental Evaluation Report* and *Environmental Management Plan* were provided to AEP on September 28, 2017 for their assessment. On November 30, 2017, AEP provided to the Commission the Windy Point Wind Park - AEP Review and Reassessment, which provided AEP's comments on the Environmental Evaluation of the Project. Since the Applicant was not given the opportunity to respond directly to AEP regarding the Reassessment Report, a Response Report was provided to the AUC. *Appendix P* provides a copy of the Response Report provided to the AUC.

[1] Application No. 23377-A001

Transport Canada

On August 16, 2017, the Applicant filed an application to Transport Canada for evaluation of the Amended Power Plant. On November 27, 2017, an email was sent from Transport Canada informing the Applicant that it will not be providing assessments earlier than 90 days prior to construction. Below is an excerpt from the email received from Transport Canada:

> *"Transport Canada will process 90 [days] prior to construction, we require the final drawing of the wind turbines locations. A letter has been sent to AUC that Transport Canada's role is not to* ***approve*** *the wind turbines our assessment forms is also* ***not a permit*** *and does not constitutes authority for construction. What we assess is the marking and lighting is correct."*

Therefore, the Applicant will be unable to provide a Transport Canada approval for this Application.

The Amended Power Plant is located over 11 km from the nearest registered aerodrome (Pincher Creek CZPC). The Applicant previously received Transport Canada signoff for the Project[2] in 2011, and will install lighting and marking schemes on the WTGs in accordance with Transport Canada Standard 621 Section 12.3. The Applicant does not foresee any issues in obtaining Transport Canada approval prior to construction of the Project.

Navigation Canada

On August 16, 2017, the Applicant filed an application to NAV Canada for evaluation of the Project (NAV Canada File No. 17-3101). On December 13, 2017, NAV Canada provided assessment letter #17-3101, indicating it had no objections to the Project (provided in *Appendix Q: NAV Canada Assessment*).

Alberta Transportation

The WECS will not be within 300m of a numbered highway. However, the Substation and a portion of the collector system will be within 300m of Highway #785. The Applicant made application to Alberta Transportation on August 16, 2017 and Alberta Transportation granted Permit #5101-17 on August 24, 2017 (provided in *Appendix R: Alberta Transportation Permit*)..

Alberta Culture and Tourism

A Historical Resources Application was made to Alberta Culture and Tourism ("ACT") for the Amended Project on August 17, 2017, and resubmitted with the required additional information on January 9, 2018.

A Historical Resources Act ("HRA") Approval with Conditions (HRA Number 4941-10-0003-003) was provided to the Applicant by ACT on January 18, 2018. A copy of the HRA Approval with Conditions is provided in *Appendix S.* The HRA Approval with Conditions indicates that "*Windy Point Wind Park development is granted Historical Resources Act approval to proceed. However, given that a proposed*

[2] Transport Canada Aeronautical Obstruction Clearance Form AOC 2011-501, dated April 29, 2011

collector line traverses archaeological site DjPk-119, care must be taken in this area to minimize ground disturbance and to not deviate from the proposed development footprint in the vicinity of DjPk-119."[3]

Updated historical resource mapping has also been completed for the new WECS layout and is provided in *Appendix T: Historical Resources Map*. The Historic Resources Impact Assessment and mapping was provided to ACT via email on December 20, 2017.

The Applicant confirms that it will meet the conditions outlined in the HRA Approval with Conditions, including special care to avoid archeological site DjPk-119, and that the WTG layout and Project infrastructure as currently proposed avoids all historical resources in the Project Area.

STARS

On April 25, 2011, the Applicant received a letter from STARS stating that the Project will not conflict with their operations. Please refer to *Appendix U.* On August 16 2017, the Applicant provided STARS with the amended WECS layout for the Project. The Applicant has received no further comments from STARS.

Alberta Electric System Operator (AESO)

AESO has been closely involved in the development of the Project since 2006. The Project is currently in Stage four of AESO six stage Interconnection Process. The process will be held in Stage four until the Project receives approval for the proposed AUC Amendment Application and Transmission Facility Operator (TFO) permit and licence. Stage five of the Interconnection Process includes construction of the interconnection facility, which is expected to begin in 2019.

[3] Historical Resources Act Approval with Conditions (HRA Number 4941-10-0003-003)

Windy Point Wind Park Ltd. - Suite 1320, 396-11th Ave. SW - Calgary, AB, T2R 0C5

March 9, 2018

VIA EMAIL
Municipal District of Pincher Creek No. 9
1037 Herron Avenue
Pincher Creek, AB T0K 1W0
Attn: Mr. Roland Milligan

Dear Mr. Milligan:

RE: AMMENDMENT TO DEVELOPMENT PERMITS FOR THE WINDY POINT WIND PARK

Windy Point Wind Park Ltd. (the "Applicant"), a joint venture between Boralex Inc. and Alberta Wind Energy Corporation, is filing an application with the Municipal District of Pincher Creek No. 9 Municipal Planning Committee ("MPC"), pursuant to Section 22.4 Land Use By-Law No. 1140-08 ("LUB"), to amend development permits DP2011-40 to DP2011-49 for the Windy Point Wind Park.

The Applicant requires changes to the current approval, which includes:

- amending the location of wind turbine generators ("WTGs");
- amending the number of WTG locations to twelve locations;
- amending the Project site boundaries to reflect changes in land control for the Applicant;
- amending the nominal capacity of the power plant to 50.4 MW;
- amending the make and model of the WTGs to the Vestas V-136;
- amending the construction completion date to December 31, 2020 and;
- adding the Substation to the Development Permit approval

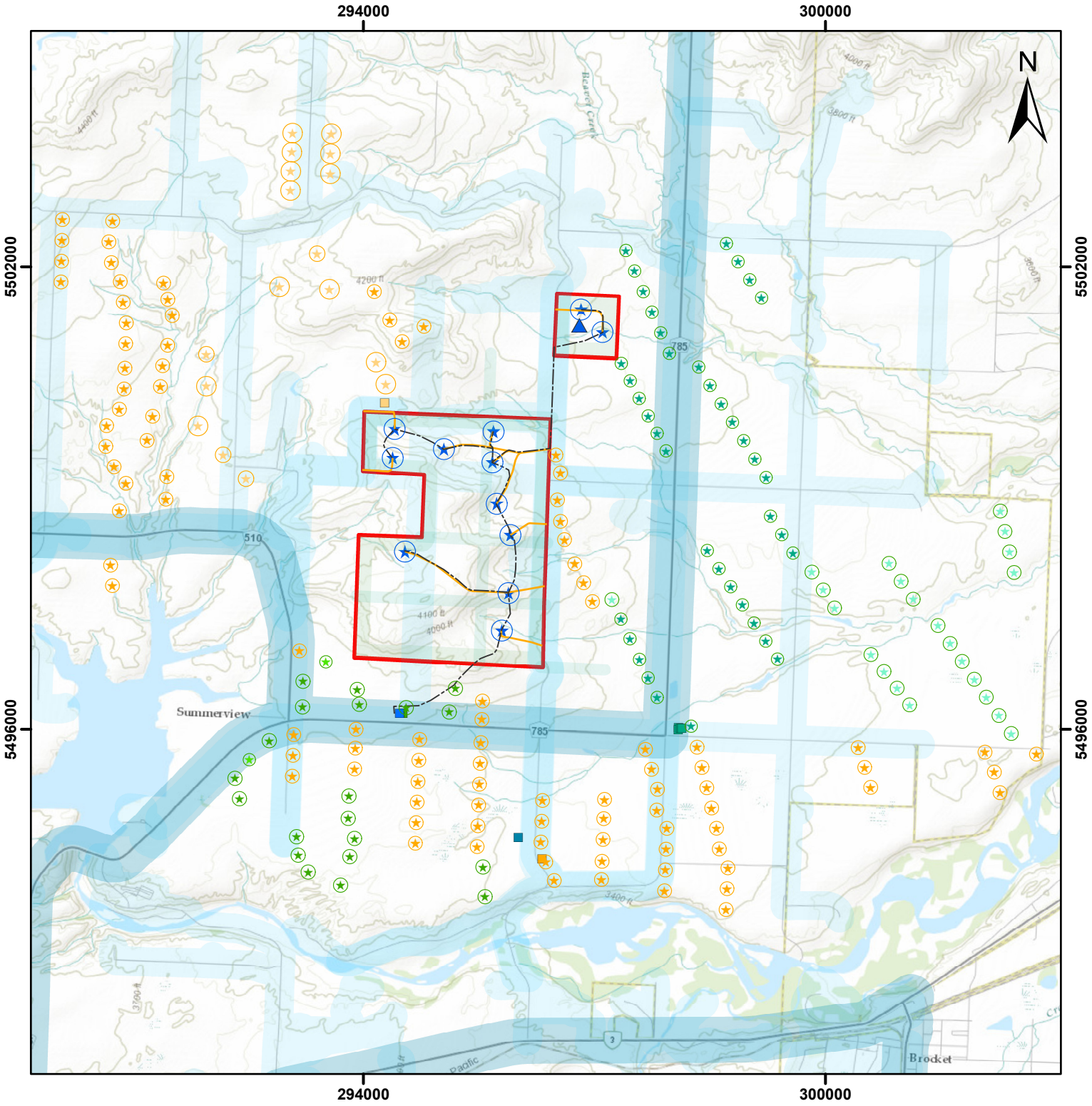
The Applicant is also filing a number of supporting appendices, as required under Section 53.21 of the LUB.

Should the MPC have any questions regarding this application or supporting documents, please feel free to contact the undersigned.

Sincerely,

Marc Stachiw
Director, Windy Point Wind Park Ltd.
(403) 266-5635

Appendix A: Project Map



Legend

- Project Area
- Windy Point
- Windy Point Rotor Arc
- Proposed Permanent Met Tower
- Project Substation
- Proposed Collector Network
- Proposed Project Roads
- Oldman 1 (Existing)
- Oldman 2 (Existing)
- Summerview 1 (Existing)
- Summerview 2 (Existing)
- Existing Wind Farms Rotor Arc
- Welsch (Proposed)
- Heritage (Proposed)
- Proposed Wind Farms Rotor Arc
- Oldman 2 Substation (Existing)
- Summerview 1&2 Substation (Existing)
- Fidler Substation (Existing)
- Welsch Substation (Proposed)
- Heritage Substation (Proposed)
- Municipal Roads & ROWs Setback (190m)
- Provincial Roads Setback (300m)
- Property Lines Setback (76m)
- Adjacent Properties Setback (190m)

BORALEX

Alberta Wind Energy Corporation
Renewable Energy for future generations

Appendix A
-
Project Map

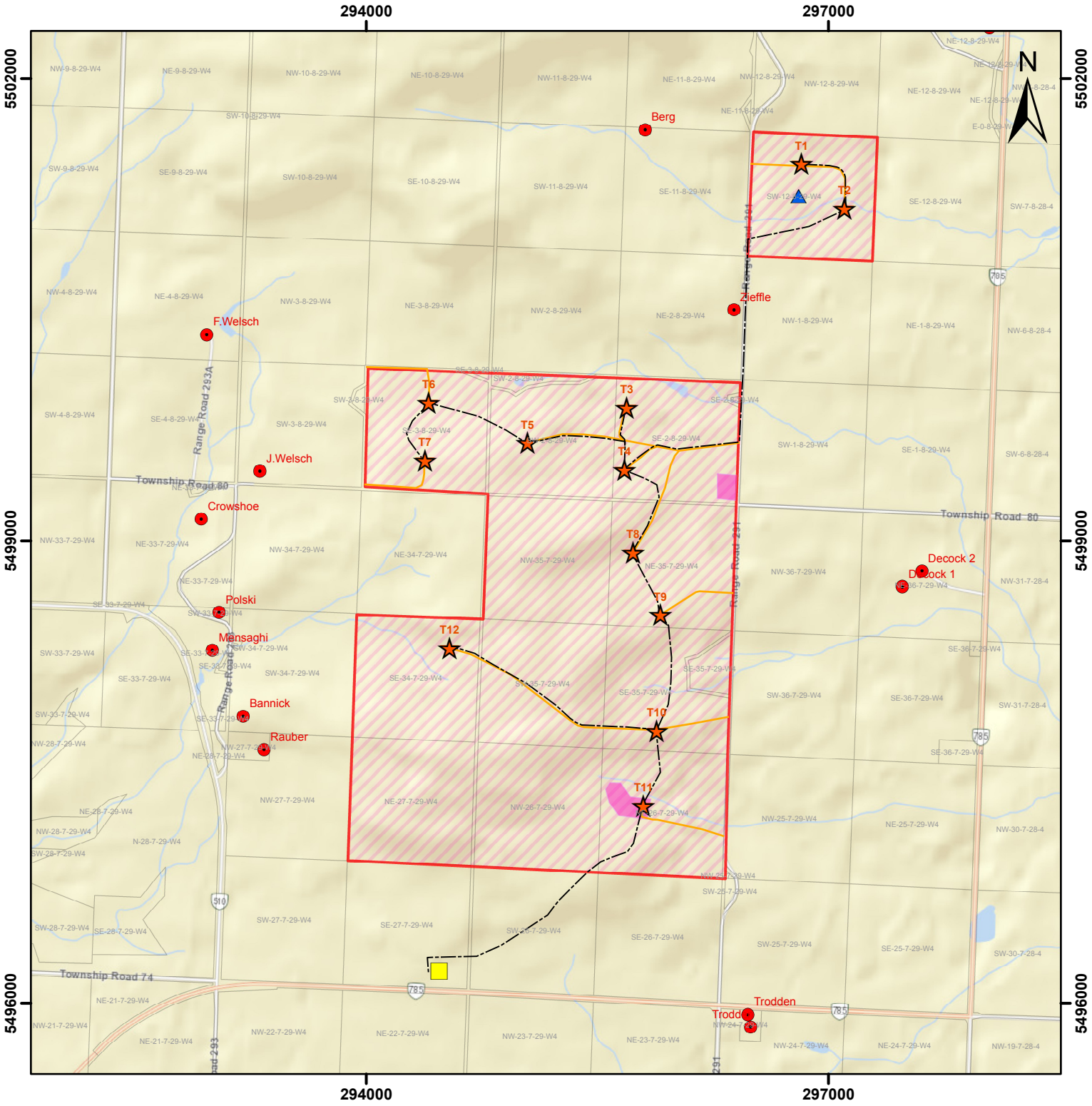
0 2 4
km

Coordinates: NAD83 UTM Zone 12

Date: 2018/03/07

Source: Esri Topographic Map

Appendix B: Leased Lands Map



Legend

- Project Area
- Proposed Laydown Areas
- Wind Turbine
- Proposed Permanent Met Tower
- Project Substation
- Dwellings
- Proposed Collector Network
- Proposed Project Roads
- Land Parcels
- Project Area

BORALEX

Alberta Wind Energy Corporation
Renewable Energy for future generations

Windy Point Wind Farm
-
Leased Lands Map

0 1 2
km

Coordinates: NAD83 UTM Zone 12

Date: 2018/02/16

Source: Esri Topographic Map

Appendix C: Setbacks Table

Pincher Creek MD Development Permit Setbacks Table

Windy Point Wind Park

Turbine Number	Land: Mer;Rng;Twp;Sec;Qtr	Land Owner	Type of Setback	Bylaw Section	Required (metres or dBA)	Actual (metres or dBA)	Delta (metres)	Notes
1	4;29;8;12;NW	W&A Lillico	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
1	4;29;8;12;NW	W&A Lillico	Property Line	53.28	190	195	-5	Adjacent property outside wind farm boundary
1	4;29;8;12;SE	S&E Hammond	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
1	4;29;8;12;SE	S&E Hammond	Property Line	53.28	190	481	-291	Adjacent property outside wind farm boundary
1	4;29;8;1;NW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
1	4;29;8;1;NW	D&F Decock	Property Line	53.28	190	611	-421	Adjacent property outside wind farm boundary
1	4;29;8;11;SE	B&D Berg	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
1	4;29;8;11;SE	B&D Berg	Property Line	53.28	190	344	-154	Adjacent property outside wind farm boundary
1	4;29;8;11;SE	MDPC	Municipal Road ROW	53.24	190	324	-134	Developed roadway
2	4;29;8;12;NW	W&A Lillico	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
2	4;29;8;12;NW	W&A Lillico	Property Line	53.28	190	474	-284	Adjacent property outside wind farm boundary
2	4;29;8;12;SE	S&E Hammond	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
2	4;29;8;12;SE	S&E Hammond	Property Line	53.28	190	191	-1	Adjacent property outside wind farm boundary
2	4;29;8;1;NW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
2	4;29;8;1;NW	D&F Decock	Property Line	53.28	190	332	-142	Adjacent property outside wind farm boundary
2	4;29;8;11;SE	B&D Berg	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
2	4;29;8;11;SE	B&D Berg	Property Line	53.28	190	633	-443	Adjacent property outside wind farm boundary
2	4;29;8;11;SE	MDPC	Municipal Road ROW	53.24	190	613	-423	Developed roadway
3	4;29;8;2;NE	D&S Zieffle	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
3	4;29;8;2;NE	D&S Zieffle	Property Line	53.28	190	210	-20	Adjacent property outside wind farm boundary
3	4;29;8;2;SE	MDPC	Municipal Road ROW	53.24	190	190.5	0	Undeveloped roadway
3	4;29;8;1;SW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
3	4;29;8;1;SW	D&F Decock	Property Line	53.28	190	751	-561	Adjacent property outside wind farm boundary
3	4;29;8;1;SW	MDPC	Municipal Road ROW	53.24	190	655	-465	Developed roadway
3	4;29;7;35;NE	Beverly Wood Estate	Property Line	53.27	76	610	-535	Adjacent property within wind farm boundary
3	4;29;7;35;NE	MDPC	Municipal Road ROW	53.24	190	590	-400	Undeveloped roadway
3	4;29;8;2;SW	Beverly Wood Estate	Property Line	53.27	76	76	0	Adjacent property within wind farm boundary
4	4;29;8;2;NE	D&S Zieffle	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
4	4;29;8;2;NE	D&S Zieffle	Property Line	53.28	190	610	-420	Adjacent property outside wind farm boundary
4	4;29;8;2;NE	MDPC	Municipal Road ROW	53.24	190	590	-400	Undeveloped roadway
4	4;29;8;1;SW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
4	4;29;8;1;SW	D&F Decock	Property Line	53.28	190	751	-561	Adjacent property outside wind farm boundary
4	4;29;8;1;SW	MDPC	Municipal Road ROW	53.24	190	730	-540	Developed roadway
4	4;29;7;35;NE	Beverly Wood Estate	Property Line	53.27	76	210	-135	Adjacent property within wind farm boundary
4	4;29;7;35;NE	MDPC	Municipal Road ROW	53.24	190	190	0	Undeveloped roadway
4	4;29;8;2;SW	Beverly Wood Estate	Property Line	53.27	76	75.5	0	Adjacent property within wind farm boundary
5	4;29;8;2;NW	D&S Zieffle	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
5	4;29;8;2;NW	D&S Zieffle	Property Line	53.28	190	463	-273	Adjacent property outside wind farm boundary
5	4;29;8;2;SW	MDPC	Municipal Road ROW	53.24	190	311	-121	Undeveloped roadway
5	4;29;8;2;SE	Beverly Wood Estate	Property Line	53.27	76	562	-487	Adjacent property within wind farm boundary
5	4;29;7;35;NW	Beverly Wood Estate	Property Line	53.27	76	354	-279	Adjacent property within wind farm boundary

Turbine Number	Land: Mer;Rng;Twp;Sec;Qtr	Land Owner	Type of Setback	Bylaw Section	Required (metres or dBA)	Actual (metres or dBA)	Delta (metres)	Notes
5	4;29;7;35;NW	MDPC	Municipal Road ROW	53.24	190	334	-144	Undeveloped roadway
5	4;29;8;3;SE	Beverly Wood Estate	Property Line	53.27	76	265	-190	Adjacent property within wind farm boundary
5	4;29;8;3;SE	MDPC	Municipal Road ROW	53.24	190	245	-55	Undeveloped roadway
6	4;29;8;3;NE	J Welsch	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
6	4;29;8;3;NE	J Welsch	Property Line	53.28	190	227	-37	Adjacent property outside wind farm boundary
6	4;29;8;3;NE	MDPC	Municipal Road ROW	53.24	190	207	-17	Undeveloped roadway
6	4;29;8;2;SW	MDPC	Municipal Road ROW	53.24	190	285	-95	Undeveloped roadway
6	4;29;8;2;SW	Beverly Wood Estate	Property Line	53.27	76	402	-327	Adjacent property within wind farm boundary
6	4;29;8;2;SW	Beverly Wood Estate	Municipal Road ROW	53.24	190	382	-192	Undeveloped roadway
6	4;29;7;34;NE	F Welsch	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
6	4;29;7;34;NE	MDPC	Municipal Road ROW	53.24	190	588	-398	Undeveloped roadway
6	4;29;7;34;NE	F Welsch	Property Line	53.28	190	568	-378	Adjacent property outside wind farm boundary
6	4;29;8;3;SW	J Welsch	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
6	4;29;8;3;SW	J Welsch	Property Line	53.28	190	417	-227	Adjacent property outside wind farm boundary
6	4;29;8;3;SW	MDPC	Municipal Road ROW	53.24	190	411	-221	Undeveloped roadway
7	4;29;8;3;NE	J Welsch	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
7	4;29;8;3;NE	J Welsch	Property Line	53.28	190	604	-414	Adjacent property outside wind farm boundary
7	4;29;8;3;NE	MDPC	Municipal Road ROW	53.24	190	584	-394	Undeveloped roadway
7	4;29;8;2;SW	MDPC	Municipal Road ROW	53.24	190	619	-429	Undeveloped roadway
7	4;29;8;2;SW	Beverly Wood Estate	Property Line	53.27	76	416	-341	Adjacent property within wind farm boundary
7	4;29;8;2;SW	Beverly Wood Estate	Municipal Road ROW	53.24	190	396	-206	Undeveloped roadway
7	4;29;7;34;NE	F Welsch	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
7	4;29;7;34;NE	MDPC	Municipal Road ROW	53.24	190	211	-21	Undeveloped roadway
7	4;29;7;34;NE	F Welsch	Property Line	53.28	190	191	-1	Adjacent property outside wind farm boundary
7	4;29;8;3;SW	J Welsch	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
7	4;29;8;3;SW	J Welsch	Property Line	53.28	190	408	-218	Adjacent property outside wind farm boundary
7	4;29;8;3;SW	MDPC	Municipal Road ROW	53.24	190	388	-198	Undeveloped roadway
8	4;29;8;2;SE	Beverly Wood Estate	Property Line	53.27	76	345	-270	Adjacent property within wind farm boundary
8	4;29;8;2;SE	MDPC	Municipal Road ROW	53.24	190	325	-135	Undeveloped roadway
8	4;29;7;36;NW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
8	4;29;7;36;NW	D&F Decock	Property Line	53.28	190	676	-486	Adjacent property outside wind farm boundary
8	4;29;7;36;NW	MDPC	Municipal Road ROW	53.24	190	656	-466	Developed roadway
8	4;29;7;35;SE	Beverly Wood Estate	Property Line	53.27	76	476	-401	Adjacent property within wind farm boundary
8	4;29;7;35;NW	Beverly Wood Estate	Property Line	53.27	76	149	-74	Adjacent property within wind farm boundary
9	4;29;8;2;SE	Beverly Wood Estate	Property Line	53.27	76	743	-668	Adjacent property within wind farm boundary
9	4;29;8;2;SE	MDPC	Municipal Road ROW	53.24	190	723	-533	Undeveloped roadway
9	4;29;7;36;NW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
9	4;29;7;36;NW	D&F Decock	Property Line	53.28	190	483	-293	Adjacent property outside wind farm boundary
9	4;29;7;36;NW	MDPC	Municipal Road ROW	53.24	190	463	-273	Developed roadway
9	4;29;7;35;SE	Beverly Wood Estate	Property Line	53.27	76	79	-4	Adjacent property within wind farm boundary
9	4;29;7;35;NW	Beverly Wood Estate	Property Line	53.27	76	342	-267	Adjacent property within wind farm boundary
10	4;29;7;35;NE	Beverly Wood Estate	Property Line	53.27	76	673	-598	Adjacent property within wind farm boundary
10	4;29;7;35;SE	MDPC	Municipal Road ROW	53.24	190	326	-136	Undeveloped roadway
10	4;29;7;36;SW	D&F Decock	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary

Turbine Number	Land: Mer;Rng;Twp;Sec;Qtr	Land Owner	Type of Setback	Bylaw Section	Required (metres or dBA)	Actual (metres or dBA)	Delta (metres)	Notes
10	4;29;7;36;SW	D&F Decock	Property Line	53.28	190	481	-291	Adjacent property outside wind farm boundary
10	4;29;7;36;SW	MDPC	Municipal Road ROW	53.24	190	461	-271	Developed roadway
10	4;29;7;26;NE	Beverly Wood Estate	Property Line	53.27	76	128	-53	Adjacent property within wind farm boundary
10	4;29;7;35;SW	Beverly Wood Estate	Property Line	53.27	76	346	-271	Adjacent property within wind farm boundary
11	4;29;7;35;SE	Beverly Wood Estate	Property Line	53.27	76	361	-286	Adjacent property within wind farm boundary
11	4;29;7;25;NW	F D & S Zieffle	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
11	4;29;7;25;NW	F D & S Zieffle	Property Line	53.28	190	548	-358	Adjacent property outside wind farm boundary
11	4;29;7;25;NW	MDPC	Municipal Road ROW	53.24	190	528	-338	Developed roadway
11	4;29;7;26;SE	HL&M Welsch	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
11	4;29;7;26;SE	HL&M Welsch	Property Line	53.28	190	443	-253	Adjacent property outside wind farm boundary
11	4;29;7;26;SE	Provincial	Alberta Highway	53.25	300	1247	-947	Numbered highway 785
11	4;29;7;26;NW	Beverly Wood Estate	Property Line	53.27	76	279	-204	Adjacent property within wind farm boundary
12	4;29;7;34;NE	F Welsch	Sound	53.26	45 dBA	<45 dBA		Other wind farm lease existis on this parcel
12	4;29;7;34;NE	F Welsch	Property Line	53.28	190	197	-7	Adjacent property outside wind farm boundary
12	4;29;7;35;SW	Beverly Wood Estate	Property Line	53.27	76	210	-135	Adjacent property within wind farm boundary
12	4;29;7;35;SW	MDPC	Municipal Road ROW	53.24	190	190	0	Undeveloped roadway
12	4;29;7;27;NE	S&T Hann	Property Line	53.27	76	602	-527	Adjacent property within wind farm boundary
12	4;29;7;34;SW	WD Bannick	Sound	53.26	45 dBA	<45 dBA		Adjacent property outside wind farm boundary
12	4;29;7;34;SW	WD Bannick	Property Line	53.28	190	611	-421	Adjacent property outside wind farm boundary

Location and Elevation Table

Windy Point Wind Farm

Turbine	UTM NAD83 Z12		UTM NAD83 Z12		NAD83		Elevation	Structure Height	Elevation	Structure Height
Number	Easting	Northing	Latitude	Longitude	Latitude	Longitude	mASL	mASL	ft ASL	ft ASL
V-01	296826	5501448	49.6314	-113.8137	49°37'52.89"N	113°48'49.36"W	1131.0	1304.0	3710.6	4278.2
V-02	297104	5501156	49.6288	-113.8097	49°37'43.81"N	113°48'34.92"W	1123.1	1296.1	3684.7	4252.3
V-03	295691	5499864	49.6168	-113.8286	49°37'0.31"N	113°49'42.90"W	1150.8	1323.8	3775.6	4343.2
V-04	295677	5499465	49.6132	-113.8286	49°36'47.36"N	113°49'42.85"W	1167.9	1340.9	3831.7	4399.3
V-05	295046	5499637	49.6145	-113.8374	49°36'52.15"N	113°50'14.53"W	1212.7	1385.7	3978.7	4546.3
V-06	294405	5499899	49.6166	-113.8464	49°36'59.84"N	113°50'46.93"W	1199.2	1372.2	3934.4	4502.0
V-07	294381	5499521	49.6132	-113.8465	49°36'47.62"N	113°50'47.41"W	1256.4	1429.4	4122.0	4689.6
V-08	295731	5498927	49.6083	-113.8275	49°36'30.03"N	113°49'39.11"W	1181.8	1354.8	3877.3	4444.9
V-09	295910	5498520	49.6048	-113.8249	49°36'17.11"N	113°49'29.49"W	1203.5	1376.5	3948.5	4516.1
V-10	295885	5497768	49.5980	-113.8248	49°35'52.73"N	113°49'29.32"W	1195.0	1368.0	3920.6	4488.2
V-11	295799	5497281	49.5936	-113.8257	49°35'36.91"N	113°49'32.69"W	1155.4	1328.4	3790.7	4358.3
V-12	294540	5498306	49.6024	-113.8437	49°36'8.52"N	113°50'37.21"W	1244.3	1417.3	4082.3	4649.9

Appendix E: Visual Impact Assessment

BORALEX

Alberta Wind Energy Corporation

Renewable Energy for future generations

Windy Point Wind Farm - Visual Impact Assessment

December 2017

Executive Summary

The Windy Point Wind Farm project (the "Project") is being developed by Windy Point Wind Park Ltd. ("WPWPL"), owned in partnership by Boralex Inc. and the Alberta Wind Energy Corporation ("AWEC"). The Project is located in Municipal District of Pincher Creek, Alberta (the "Municipality"), approximately 13km north-East of the town of Pincher Creek.

As required for the Municipal District of Pincher Creek application for a wind farm development permit, an analysis of the visual impact of the Project has been conducted to give a realistic representation of how the landscape will appear with the proposed wind farm installed.

The aim of this report is to present the developed photomontages for the Project and the associated methodology.

Table of Contents

List of Figures

1 Introduction

The Windy Point Wind Farm project (the "Project") is being developed by Windy Point Wind Park Ltd. ("WPWPL"), owned in partnership by Boralex Inc. and the Alberta Wind Energy Corporation ("AWEC"). The Project is located in Municipal District of Pincher Creek, Alberta (the "Municipality"), approximately 13km north-East of the town of Pincher Creek.

The proposed Project consists of up to 14 wind turbines (see Figure 1). The Project is located next to four existing wind farms (see Figure 2): Oldman 1 (2 turbines), Oldman 2 (20 turbines), Summerview 1 (39 turbines) and Summerview 2 (22 turbines).

As required for the Municipal District of Pincher Creek application for a wind farm development permit, an analysis of the visual impact of the Project has been conducted to give a realistic representation of how the landscape will appear with the proposed Project installed.

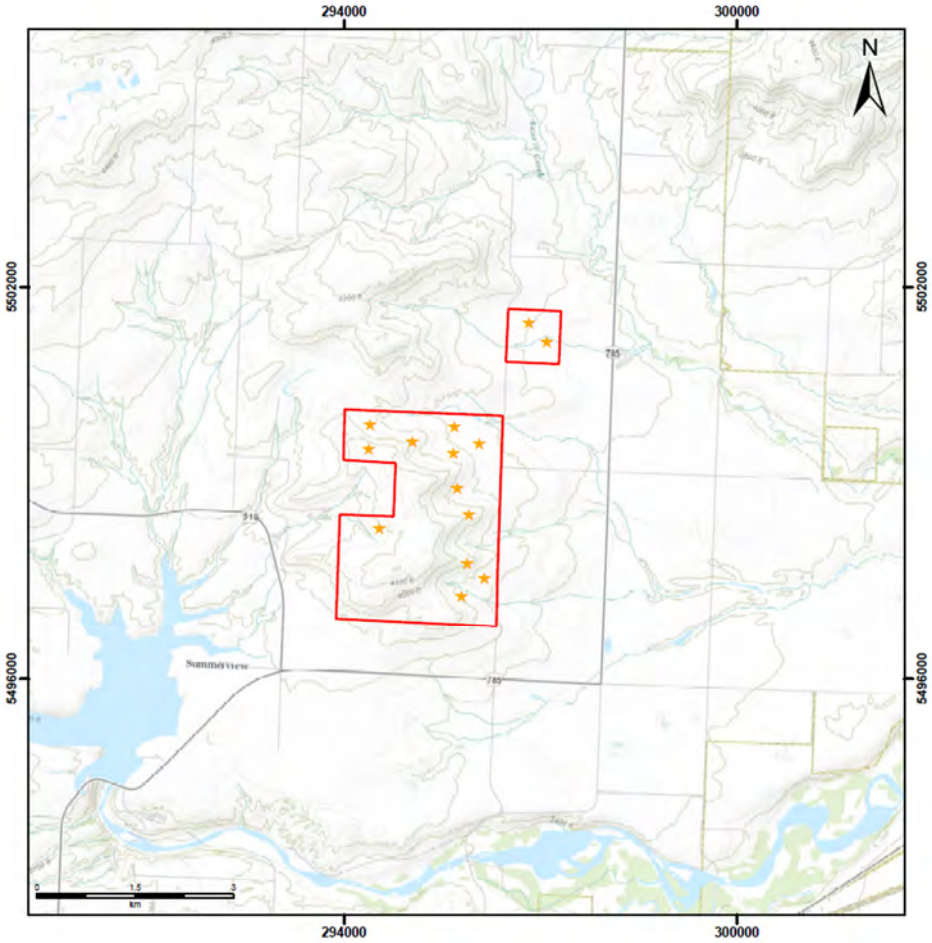


Figure 1: Windy Point Wind Farm - Project Location

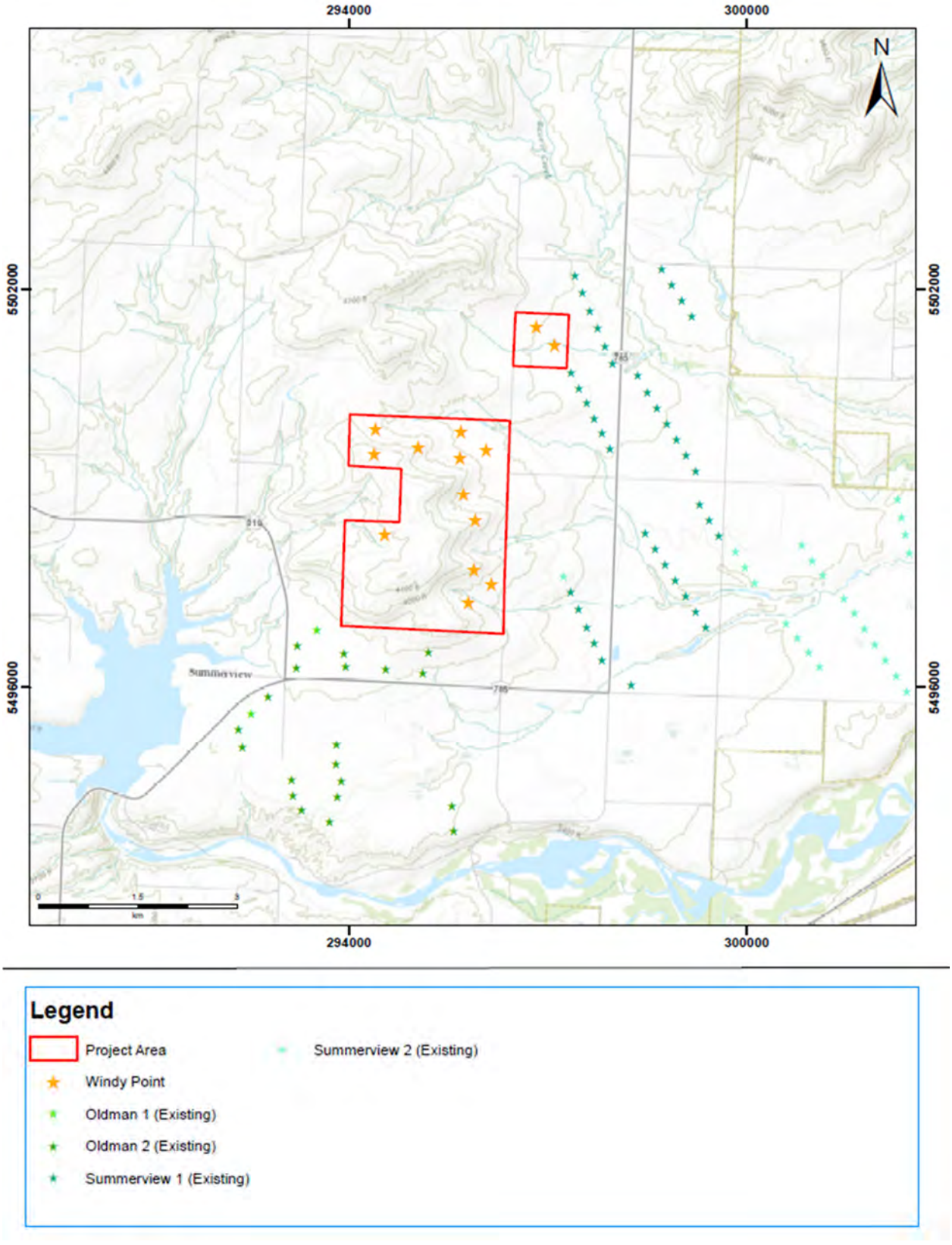


Figure 2: Windy Point Wind Farm and Existing projects

2 Methodology and Parameters

2.1 LAYOUT AND TURBINE MODEL

WPWPL has chosen the Vestas V136 4.2 MW turbine for the Project. The Project layout will consist of 12 turbines with 2 alternative locations. This analysis will demonstrate the impact from the higher number of locations under consideration (14), thereby illustrating a worst - case scenario impact on the viewscape.

Therefore, the layout represented in the photomontages consists of 14 Vestas V136 wind turbines at 105m hub height, 136m blade diameter and 173m total height.

The 14 turbine Project layout has been designed considering all the natural, environmental and regulatory setbacks. The turbines will be located to best fit in the remaining buildable area outside of these constraints, where the wind resource is the best.

Picture and dimension of a Vestas turbine are shown below.

Figure 2: Vestas Turbine (V80 – 67m hub height) [1]

[1] AWEC, Oldman Wind Farm, 2011.

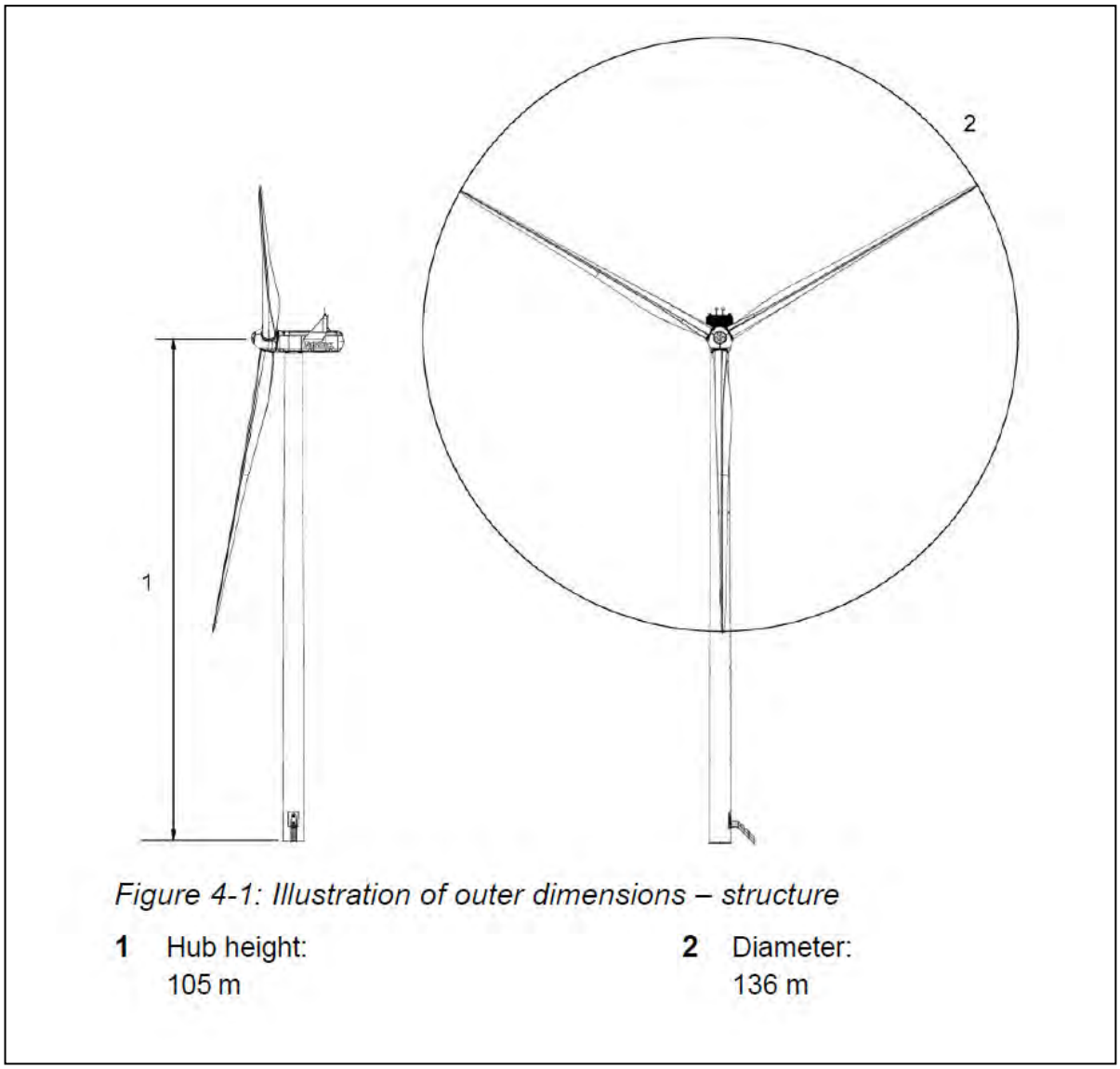


Figure 3: Vestas V136 4.2MW - Turbine Dimensions[2]

[2] Vestas, General Description 4MW Platform, 2017.

2.2 VIEWPOINT – PICTURE LOCATIONS

As per the Municipality development permit application requirements, the aim of the visual analysis is to realistically represent the landscape with the expected wind turbines from various visual perspectives around the Project site. The locations of the points of view used for the photomontages follow the Municipality requirements and include visual perspectives from dwellings (permanent, semi-permanent and seasonal dwellings), main roads intersections and recreative areas.

Generally, photographs used in a visual impact assessment are taken from an area up to 2km from the Project boundary. However, to give a larger representation of the visual impacts of the Project, some of the photo locations used in this analysis are beyond this distance. Also, based on the Project configuration, several visualisations have been used from the same point of view. The twenty-four point of view locations are summarised and illustrated in the table and the figure below:

Picture Name	Easting (m) *(UTM NAD83 Z12)*	Northing (m) *(UTM NAD83 Z12)*	Distance to the nearest turbine (m)
A	292345	5500053	2072
B	292323	5499404	2040
C	292941	5499159	1460
D	293017	5498491	1533
E	293007	5498301	1524
F	293217	5497878	1383
G	293336	5497628	1359
H	293020	5496077	2655
I	294060	5496176	2038
J	296480	5495938	1473
K	296468	5495849	1557
L	297926	5495900	2413
M	297609	5498793	726
N	296395	5500501	935
O	296385	5500484	953
P	295825	5501664	1025
Q	295816	5501661	1838
R	296813	5502716	1308
S	298050	5502305	1530
T	296472	5503726	2354
U	292432	5502423	3241
V	292995	5495289	3332
W	291221	5495035	4593
X	290072	5494337	5880

Table 1: Point of view Locations (Coordinates)

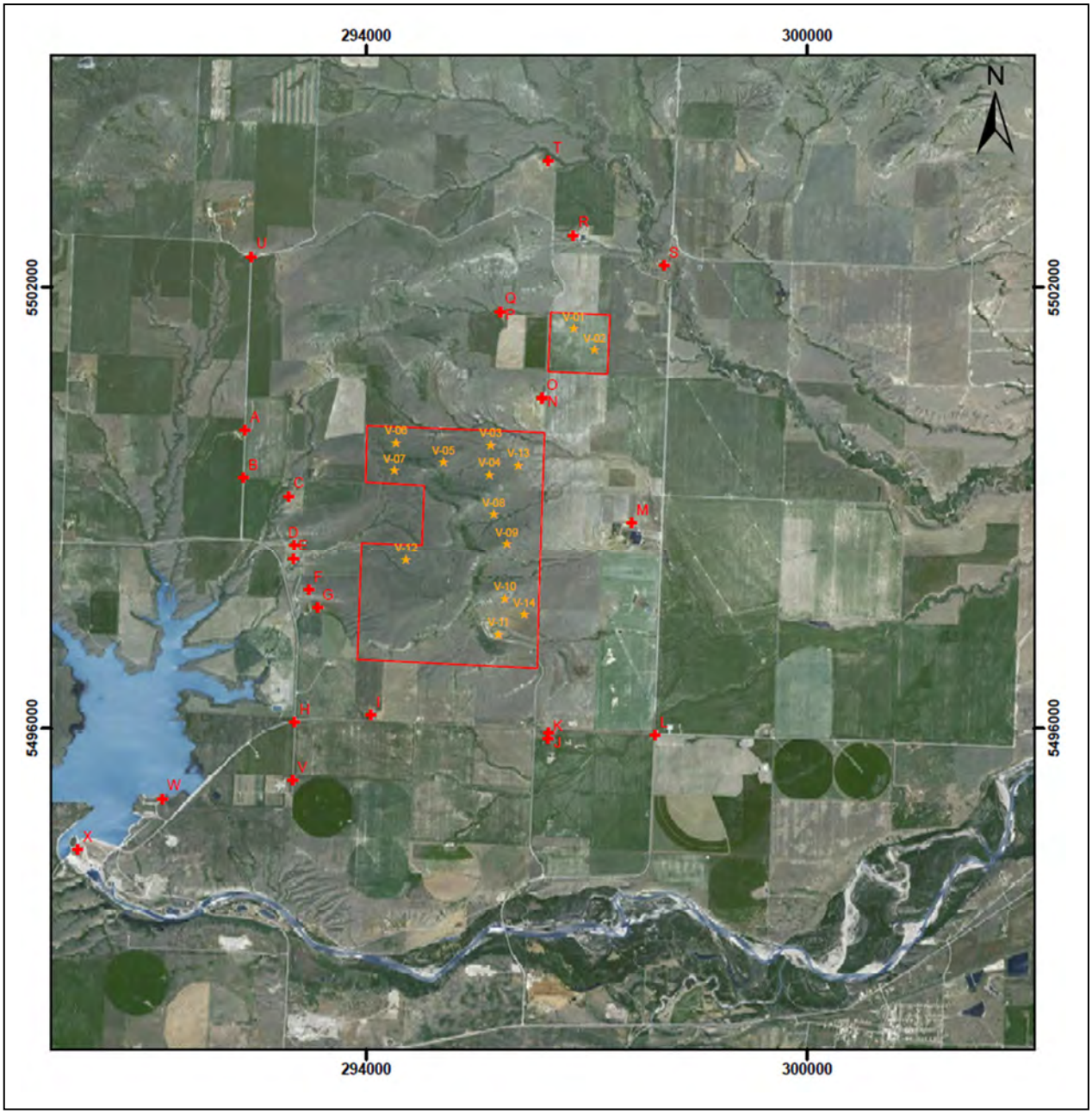


Figure 4: Point of view Locations

2.3 PICTURE INFORMATION

Each photomontage has been developed using photographs taken from the above-mentioned locations on 29th of August, 2017, between 12:00 am and 5:00 pm and on 30th of August, 2017, between 10:00 am and 2:30 pm.

The photograph locations were chosen based on the knowledge of the area by the WPWPL staff. Moreover, some locations were added once on site, to improve the visual assessment coverage.

The weather on August 29th and 30th was relatively smoky (with a low level of forest fire smoke) but sunny, resulting in good quality photographs with good visibility. Where possible, the pictures have been taken with the sun in the back to avoid impacting quality.

The camera used was a Nikon D90 with adjustable focal length, which is standard to take photographs for the analysis. To keep consistency between the photographs, a tripod with a built-in level was used, resulting in the same photograph height and to avoid declination deviation. The tripod height was 1.6m above the ground, which is representative of the eyes height of a person.

A GPS, with a compass, was used to determine the exact location and direction (field of view) of each photograph.

To help with calibration of the photomontage, wood sticks with red flags were used on-site to represent control points. Control points are used during the simulation to help the software locate the photographs in the space.

A "Site Picture Form" was completed by the photographer on-site for each photograph in order to get all the pertinent information including climatic conditions, time of day, photograph coordinates, height and direction, and other considerations for the photomontage simulation.

2.4 COMPUTER SIMULATION

The photomontages have been developed using windPRO, version 3.1 software[3]. This software, developed by EMD International A/S, is specialized for this application and is a standard software package used extensively in the wind power industry. The software consists of several modules including one specific for the development of photomontages to be used for visual impact assessments.

[3] https://www.emd.dk/windpro/

To realize a photomontage with windPRO, the following information and data are required:

- Original Pictures;
- Picture information (date, hour, focal length, coordinates…);
- Coordinates of the proposed wind turbines;
- Coordinates of surrounding wind turbines, if any;
- Height contour lines;
- Wind direction.

Height contour lines are necessary to calibrate the simulation. The software creates a horizon line, which is necessary to fit with the horizon observed on the picture. Thus, precise contour lines are preferable to do an efficient calibration. For this analysis, LIDAR15 DEM from AltaLIS have been used, which is among the most reliable source in Alberta[4].

The wind direction information is used by the software to depict the direction of the turbines in the photomontage. The prevailing west-south-west wind direction in the area was mainly chosen for the simulation since it represents the situation that will occur most of the time. Based on the meteorological tower data at the Project site, the prevailing wind direction is 255° (WSW). However, when existing turbines appeared on a photo, the real wind direction was considered.

The photomontage is developed using three steps, which are briefly explained below.

2.4.1 CAMERA/PICTURE INFORMATION

The first step is to enter all the information about the camera and the photograph. The information discussed in the Section 2.3 is included here. The figures below show how the information is included in the software.

[4] http://www.altalis.com/products/terrain/lidar15_dem.html

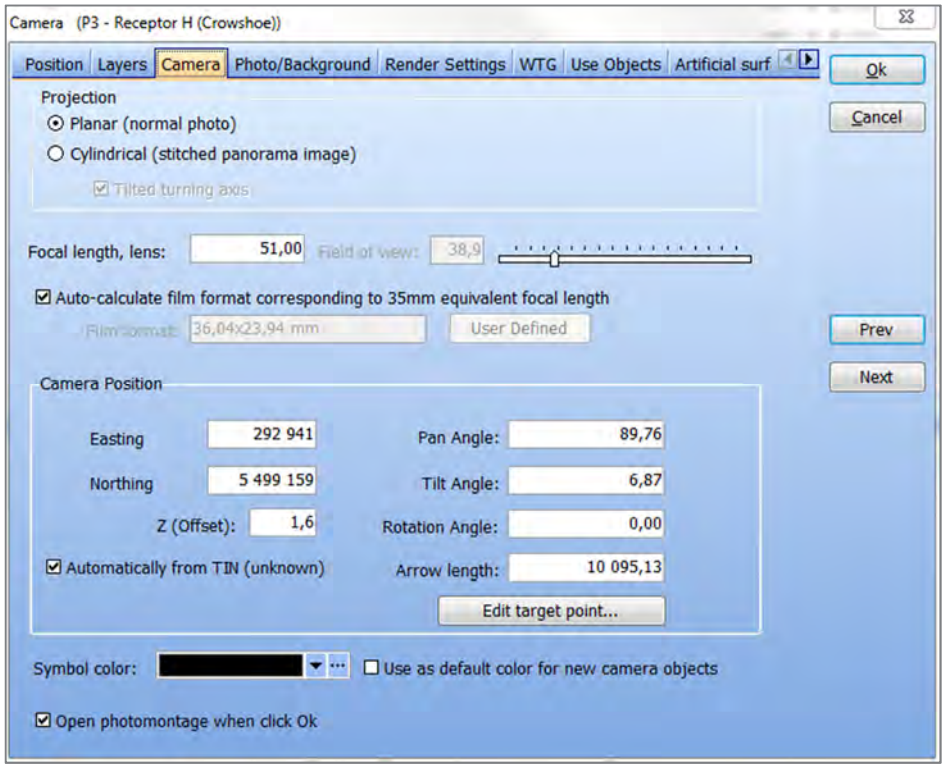


Figure 5: windPRO - Camera Information

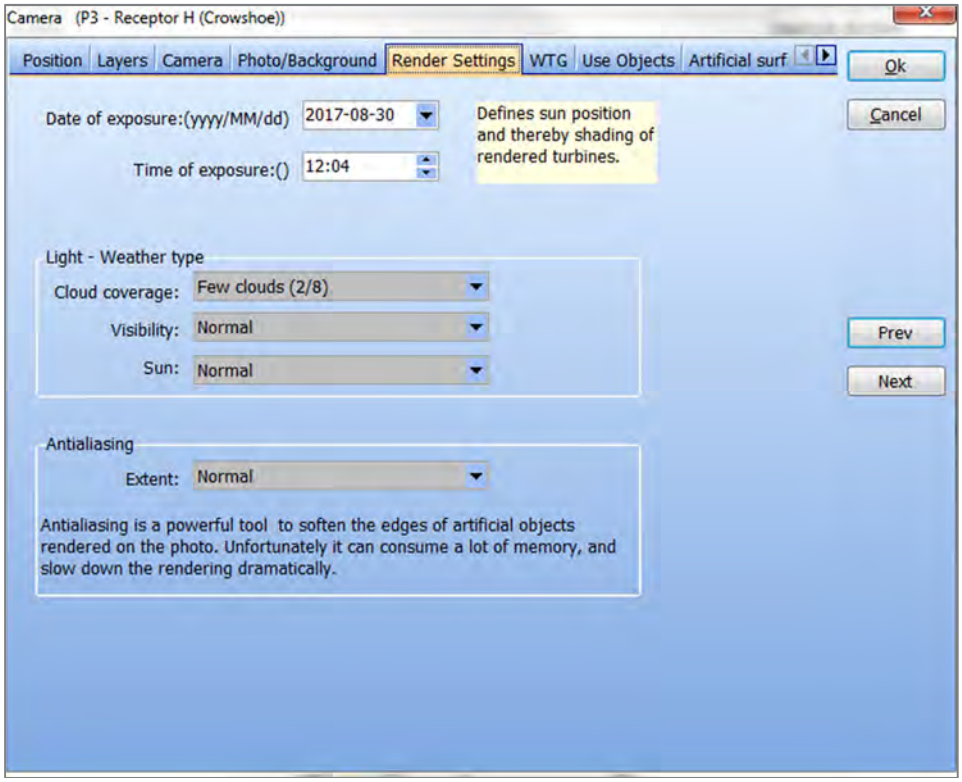


Figure 6: windPRO - Picture Information

2.4.2 PICTURE CALIBRATION

The second step is to calibrate the photograph to be sure that the software correctly identifies the wind turbines locations and the right dimensions within the picture. As discussed previously, the calibration of the photograph is achieved with several tools including the horizon line (yellow line in the figure below). The following figure shows how the calibration is done in the software.

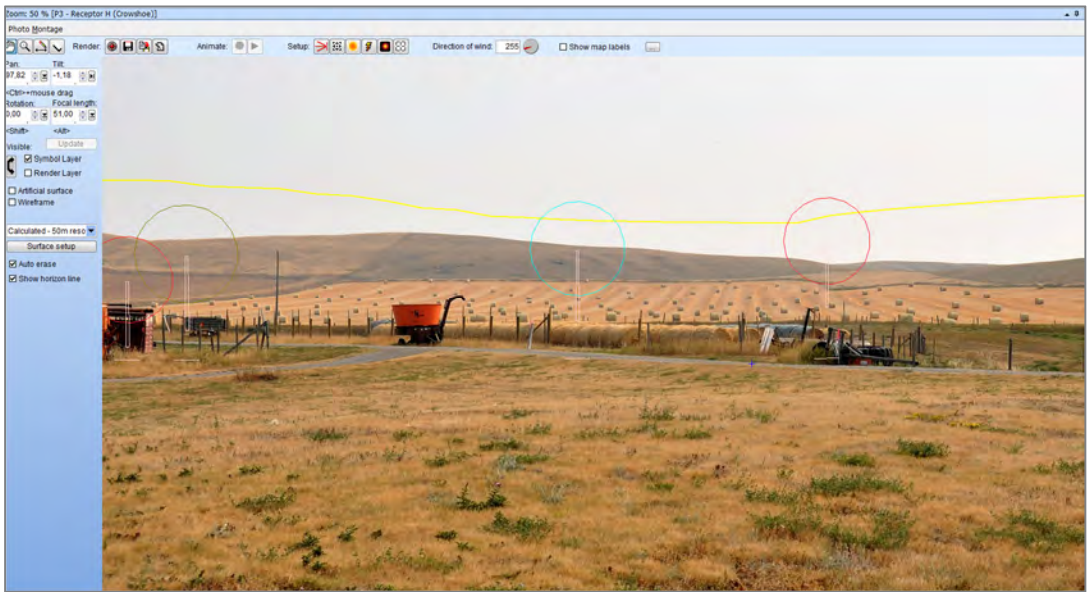


Figure 7: windPRO - Picture Calibration

2.4.3 SIMULATION - PHOTOMONTAGE

The third step is the conducting the simulation. This creates the results of the photomontage and allows to make minor adjustments if required. For example, it is sometimes necessary to erase turbine parts (towers or blades) that would be masked by a building. It's also possible to modify the weather conditions to adjust the luminosity and improve the quality of the photomontage. The figures below show the result of the photomontage created by the software.

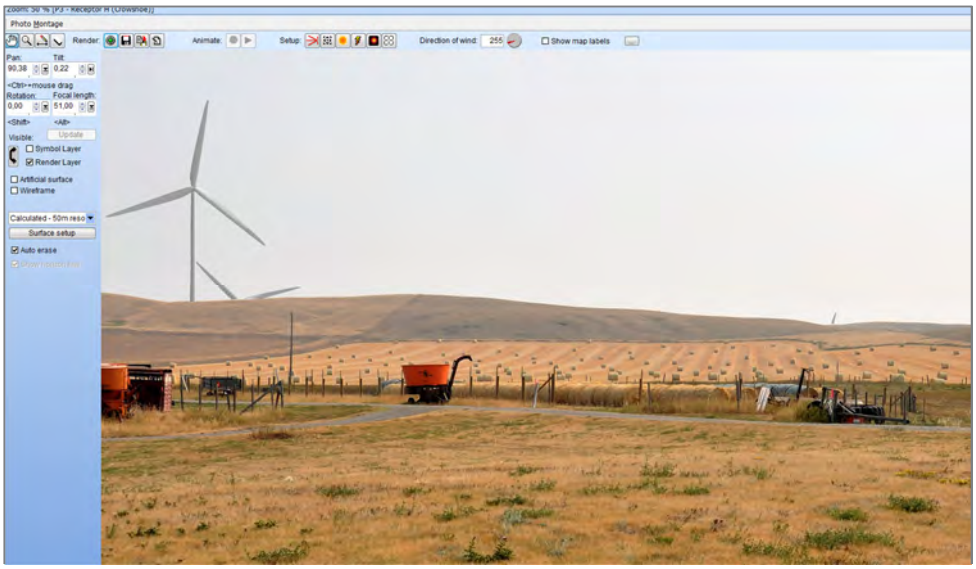


Figure 8: windPRO - Photomontage Result

Figure 9: windPRO - Turbine Luminosity Adjustment

3 Final Photomontages

The original photographs and the final photomontages are shown in this section. The points of view represented in the photomontage are the following:

Picture Name	Points of view Name
A	Receptor I (F.Welsch) – Road 293
B	Receptor G (J.Welsch) / Intersection Road 80 – Road 293A
C	Receptor H (Crowshoe)
D	Receptor D (Polski)
E	Receptor F (Mensaghi 2)
F	Receptor E (Bannick)
G	Receptor C (Rauber)
H	Intersection Road 758 – Road 510
I	Hann Dwelling
J	Receptor V (R.Trodden)
K	Receptor A (R.Trodden)
L	Intersection Road 785 – Road 290
M	Receptors K-L (Decock)
N	Receptor J (Zieffle) – North view
O	Receptor J (Zieffle) – South view
P	Receptor M (Berg) – East view
Q	Receptor M (Berg) – South view
R	Receptor N (Lillico 1)
S	Receptor O (M.D. Hammond)
T	Receptor T (J.L. Hammond)
U	Intersection Road 293 – Road 82
V	Oldman Antiques Entrance
W	Oldman Reservoir – Recreative Area
X	Oldman Dam – Observation Area

Table 2: Point of view Locations (Name)

3.1 A – RECEPTOR I (F.WELSCH) – ROAD 293

2017/08/30 – 11:21	**Field of View:** 106°	**Wind Direction:** 255°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V06, V05, V07.			

3.2 B – RECEPTOR G (J.WELSCH)

2017/08/30 – 11:36	**Field of View:** 95°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V05, V07, V12.			

3.3 C – RECEPTOR H (CROWSHOE)

2017/08/30 – 12:04	**Field of View:** 90°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V07, V05.			

3.4 D – RECEPTOR D (POLSKI)

2017/08/30 – 12:36	**Field of View:** 57°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V07.			

3.5 E – RECEPTOR F (MENSAGHI 2)

2017/08/30 – 13:05	**Field of View:** 79°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V12.			

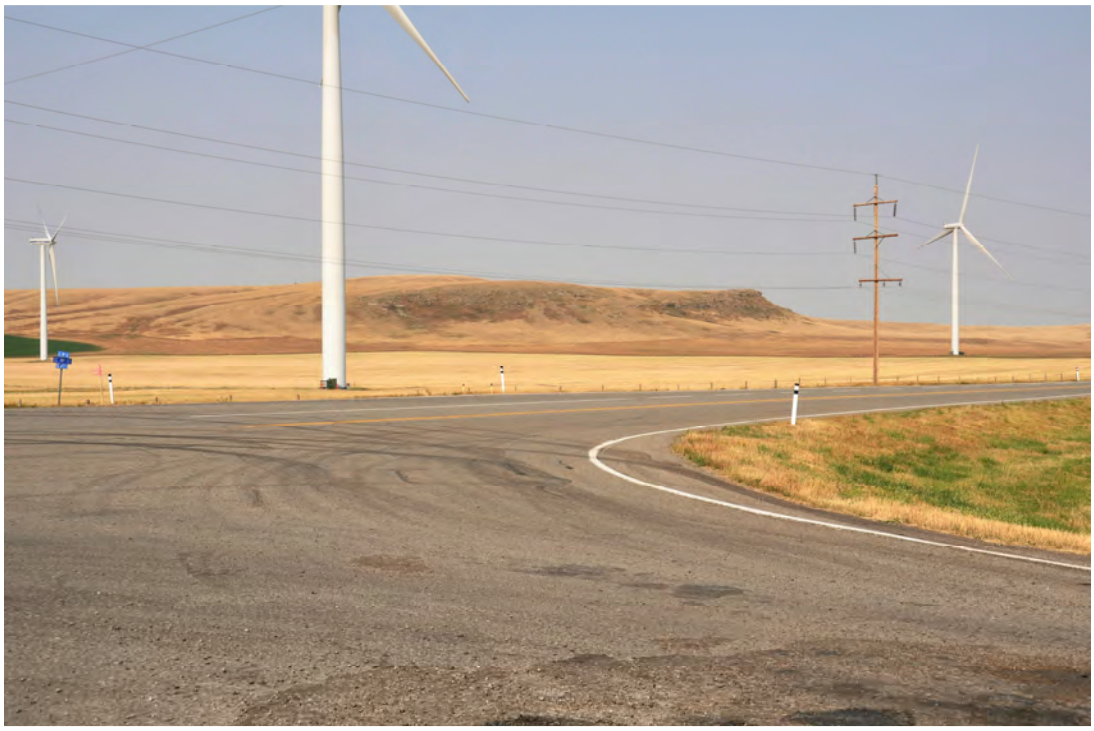
3.6 F – RECEPTOR E (BANNICK)

2017/08/30 – 13:31	**Field of View:** 57°	**Wind Direction:** 255°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V05, V12, V09.			

3.7 G – RECEPTOR C (RAUBER)

2017/08/30 – 13:53	**Field of View:** 71°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V12.			

3.8 H – INTERSECTION ROAD 758 – ROAD 510



2017/08/29 – 16:52	**Field of View:** 47°	**Wind Direction:** 105°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V12, V10, V14, V11.			

3.9 I – HANN DWELLING

2017/08/29 – 16:37	**Field of View:** 33°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V10.			

3.10 J – RECEPTOR V (R.TRODDEN)

2017/08/29 – 16:09	**Field of View:** 342°	**Wind Direction:** 255°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V11, V10, V08, V09, V14.			

3.11 K – RECEPTOR A (R.TRODDEN)

2017/08/29 – 16:19	**Field of View:** 339°	**Wind Direction:** 255°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V11, V10, V08, V09, V14.			

3.12 L – INTERSECTION ROAD 785 – ROAD 290

2017/08/29 – 15:40	**Field of View:** 326°	**Wind Direction:** 85°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V10, V14, V05, V09, V08, V04, V03, V13.			

3.13 M – RECEPTORS K-L (DECOCK)

2017/08/29 – 15:10	**Field of View:** 275°	**Wind Direction:** 255°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V09, V12, V08, V07, V05, V04.			

3.14 N – RECEPTOR J (ZIEFFLE) – NORTH VIEW

2017/08/30 – 10:09	**Field of View:** 30°	**Wind Direction:** 275°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V01, V02.			

3.15 O – RECEPTOR J (ZIEFFLE) – SOUTH VIEW

2017/08/30 – 10:15	**Field of View:** 195°	**Wind Direction:** 255°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V14, V11, V10, V09, V13, V08, V04.			

3.16 P – RECEPTOR M (BERG) – EAST VIEW

2017/08/29 – 13:24	**Field of View:** 110°	**Wind Direction:** 95°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V01, V02.			

3.17 Q – RECEPTOR M (BERG) – SOUTH VIEW

2017/08/29 – 13:16	**Field of View:** 182°	**Wind Direction:** 252°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V13, V14, V09, V10, V11, V06, V04, V03, V12, V05.			

3.18 R – RECEPTOR N (LILLICO 1)

2017/08/29 – 13:57	**Field of View:** 183°	**Wind Direction:** 95°	**Equi. Focal Length:** 30mm
Wind Turbines (From Left to Right): V02, V01, V14, V11, V10, V09, V13, V08, V04.			

3.19 S – RECEPTOR O (M.D. HAMMOND)

2017/08/29 – 14:29	**Field of View:** 228°	**Wind Direction:** 110°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V02, V01.			

3.20 T – RECEPTOR T (J.L. HAMMOND)

2017/08/29 – 12:32	**Field of View:** 176°	**Wind Direction:** 105°	**Equi. Focal Length :** 52mm
Wind Turbines (From Left to Right): V02, V01.			

3.21 U – INTERSECTION ROAD 293 – ROAD 82

2017/08/30 – 11:08	**Field of View:** 142°	**Wind Direction:** 255°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V05, V09, V06, V10, V07, V12.			

3.22 V – OLDMAN ANTIQUES ENTRANCE

2017/08/29 – 17:10	**Field of View:** 40°	**Wind Direction:** 115°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V12, V10, V14, V11.			

3.23 W – OLDMAN RESERVOIR – RECREATIVE AREA

2017/08/30 – 13:30	**Field of View:** 57°	**Wind Direction:** 280°	**Equi. Focal Length :** 53mm
Wind Turbines (From Left to Right): V12, V10, V14, V11.			

3.24 X – OLDMAN DAM – OBSERVATION AREA

2017/08/30 – 14:32	**Field of View:** 50°	**Wind Direction:** 300°	**Equi. Focal Length :** 51mm
Wind Turbines (From Left to Right): V06, V07, V05, V12, V10, V14, V11.			

Appendix F: WECS Brochure

V136-4.2 MW™ IEC IIB/IEC S

Facts & figures

POWER REGULATION — Pitch regulated with variable speed

OPERATING DATA

Rated power	4,000 kW/4,200 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Re cut-in wind speed	23 m/s
Wind class	IEC IIB/IEC S

Standard operating temperature range from -20°C* to +45°C with de-rating above 30°C (4,000 kW)

*subject to different temperature options

SOUND POWER

Maximum	103.9 dB(A)**

**Sound Optimised modes dependent on site and country

ROTOR

Rotor diameter	136 m
Swept area	14,527 m²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	Site and country specific

NACELLE DIMENSIONS

Height for transport	3.4 m
Height installed (incl. CoolerTop®)	6.9 m
Length	12.8 m
Width	4.2 m

HUB DIMENSIONS

Max. transport height	3.8 m
Max. transport width	3.8 m
Max. transport length	5.5 m

BLADE DIMENSIONS

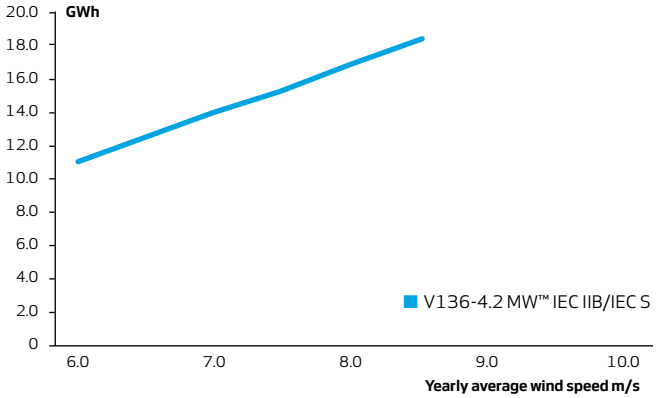
Length	66.7 m
Max. chord	4.1 m

Max. weight per unit for transportation	70 metric tonnes

TURBINE OPTIONS

- High Wind Operation
- 4.2 MW Power Optimised Mode (site specific)
- Load Optimised Modes down to 3.6 MW
- Condition Monitoring System
- Service Personnel Lift
- Vestas Ice Detection
- Low Temperature Operation to - 30°C
- Fire Suppression
- Shadow detection
- Increased Cut-In
- Aviation Lights
- Aviation Markings on the Blades
- Vestas InteliLight®

ANNUAL ENERGY PRODUCTION



Assumptions
One wind turbine, 100% availability, 0% losses, k factor = 2, Standard air density = 1.225, wind speed at hub height

Appendix G: NIA Report

DNV·GL

WINDY POINT WIND FARM

Noise Impact Assessment

Windy Point Wind Park Ltd.

Document No.: 10034449-CAMO-R-01
Issue: B**, Status:** FINAL
Date: 13 October 2017

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Project name:	Windy Point Wind Farm
Report title:	Noise Impact Assessment
Customer:	Windy Point Wind Park Ltd. 36 Rue Lajeunesse Kingsey Falls (Québec) J0A 1B0
Contact person:	Nicolas Martinez
Date of issue:	13 October 2017
Project No.:	10034449
Document No.:	10034449-CAMO-R-01
Issue/Status	B/FINAL

DNV GL - Energy
Advisory Americas
4100 Rue Molson, Suite 100
Montreal, QC, H1Y 3N1 CANADA
Phone: +1 514 272 2175
Fax: +1 514 272 0410
Enterprise No.: 860480037

Prepared by:	Verified by:	Approved by:
A. Nercessian Analyst Development and Engineering Services	A. Danaitis GIS Analyst Environmental Permitting Services	S. Dokouzian, P.Eng. Senior Project Manager Development and Engineering Services

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Issue	Date	Reason for Issue	Prepared by	Verified by	Approved by
A	11 October 2017	Draft	A. Nercessian	A. Danaitis	S. Dokouzian
A	13 October 2017	Final	A. Nercessian	A. Danaitis	S. Dokouzian

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Abbreviation	Meaning
agl	above ground level
amsl	above mean sea level
AUC	Alberta Utility Commission
AWSL	Ambient Wind Sound Level
BSL	Basic Sound Level
dBA	decibel A-scale
DNV GL	GL Garrad Hassan Canada, Inc.
NIA	Noise Impact Assessment
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
kW	kilowatt
Leq	Energy equivalent sound level
L90	Sound pressure level exceeded 90% of the time during a given time period (90^{th} percentile)
m	metre
m/s	metres per second
MW	megawatt
N/A	not applicable or not available
PWL	Sound Power Level
PSL	Permissible Sound Level
SPL	Sound Pressure Level

1 INTRODUCTION

GL Garrad Hassan Canada, Inc. ("**DNV GL**") was retained by the Windy Point Wind Park Ltd. ("the **Customer**") to prepare a Noise Impact Assessment (NIA) of the **Windy Point Wind Farm** ("**Project**") in accordance with the Alberta Utilities Commission (AUC) Rule 012 [1].

The Project is a wind farm development, consisting of 14 Vestas V136 4.2 MW Wind Turbine Generators (WTGs), including 2 alternate locations. The expected final rated capacity of the project is 50.4 MW. The Project is located approximately 15 km north east of the town of Pincher Creek, and 70 km west of Lethbridge.

The purpose of this NIA is to ensure that possible noise impacts are assessed before the Project is constructed or in operation. Specifically, the objectives of this assessment are:

- To determine the permissible sound level (PSL);
- To assess the sound level from the Project at several noise receptors (within 1.5 km of the proposed wind farm noise sources and beyond); and
- To compare the predicted sound level from the Project with the PSL.

In the context of this NIA, ambient measurements were undertaken to apply for a Class C2 adjustment at one receptor.

The NIA provides information on the noise source, the prediction method and the parameters used for the assessment.

1.1 Licensee information

The Licensee for the Windy Point Wind Farm is Boralex Inc.

Contact Information is as follows:

Nicolas Martinez
Boralex Inc.
36, rue Lajeunesse
Kingsley Falls, Quebec
J0A 1B0
T: 819-363-6352
Nicolas.martinez@boralex.com

2 PROJECT GENERAL DESCRIPTION

2.1 General characteristics

The Project is a wind farm development consisting of up to 14 Vestas V136 4.2 MW Wind Turbine Generators (WTG), including 2 alternate locations, for a total expected final rated capacity of 50.4 MW; the project includes a substation and its cumulative impact is included in this analysis. The Project is located approximately 15 km north east of the town of Pincher Creek, and 70 km west of Lethbridge.

The area is relatively uninhabited, with the exception of a few dwellings surrounding the Project area. Ambient sound levels in the Project area and on adjacent lands are typical of rural-agricultural, with sounds originating from residential activities, agricultural activities (tractors and other machinery), vehicle traffic, and ambient natural noise (wind in the trees, leaves, birds, etc.). Existing wind farms in operation in the surrounding area also contribute to the ambient sound levels.

Figure 2-1 Approximate location of the Windy Point Wind Farm

2.2 Land use

The major existing land uses in the area are grazing and dry land farming. As the area is sparsely populated, there is little human activity. Permitted uses include farming and dwellings. Discretionary uses include farm-related uses and confined livestock feeding operations.

3 DESCRIPTION OF RECEPTORS

3.1 Description of receptors

All dwellings (i.e. noise receptors) considered for the NIA were identified by the Customer through field reconnaissance to verify locations and building types. DNV GL performed a desktop analysis with aerial imagery to validate the Client's receptor list and confirm the presence of any additional receptor locations. DNV GL also performed a site visit to perform ambient noise measurements, as described in the following subsection .

The locations of the dwellings are shown in Table 3-1 and on maps in Appendix A. A total of 21 noise receptors in the vicinity of the proposed wind energy project (turbines and transformer) have been included in this noise model. Modeling has been undertaken at a height of 1.5 m agl. Noise receptor elevations vary from 1,072 and 1,248 m amsl. The distance between a Project WTG and the nearest noise receptor varies from 941 m to 3,770 m. None of these receptors are considered sensitive (e.g. daycares, schools, hospitals, senior's centres) as per AUC Rule 012 [1].

Within the study area, the main sources of ambient sound that currently exist include:

- Vehicular traffic on secondary highways 510 and 785, and on the local roads;
- Occasional sounds due to agricultural activities;
- Occasional sounds due to anthropogenic domestic activities;
- Operational wind farms; and
- Natural sounds.

Table 3-1 List of noise receptors and coordinates (UTM12 NAD83)

Noise Receptor ID	Description	Easting [m]	Northing [m]
A	Trodden	296493	5495850
C	Rauber	293335	5497650
D	Polski	293044	5498540
E	Bannick	293200	5497860
F	Mensaghi	293000	5498290
G	J.Welsch	293309	5499450
H	Crowshoe	292928	5499140
I	F.Welsch	292964	5500340
J	Zieffle	296384	5500500
K	Decock 1	297477	5498700
L	Decock 2	297605	5498800
M	Berg	295809	5501670
N	Lillico	296796	5502720
O	M.D Hammond	298042	5502330
Q	Lifekraft Investments Ltd.	299349	5495970
R	B.L Hammond	299254	5503670
S	R.J McInnis & S. Allen & M. Inkster	298187	5504140
T	J.L Hammond	296465	5503760
U	MH Feedlot	291974	5502780
V	Trodden	296475	5495930
W	DNV GL Desktop	296402	5503710

3.2 Determination of permissible sound level

As stated in the AUC Rule 012, the Permissible Sound Level (PSL) for a wind farm is calculated as follows:

Permissible sound level	=	Basic sound level (BSL)	+	Daytime adjustment	+	Class A adjustment	+	Class B adjustment	+	Class C adjustment

As mentioned in Rule 012, the default average rural ambient sound level in Alberta is approximately 35 dBA Leq at night. Therefore, the minimum nighttime BSL is determined to be 40 dBA Leq (5 dBA Leq above ambient).

The Daytime adjustment adds 10 dBA to the PSL during the hours of 7am and 10pm. Class A adjustments are based on the nature of the activity and/or the actual ambient sound level in an area. Class B adjustments are applicable if the activity will only be of a temporary duration.

Class C adjustments account for sound caused by wind near a dwelling resulting in the wind masking the noise level of a wind turbine at certain wind speeds. In the case of the present NIA, a Class C2 adjustment has been applied to receptor J for night time operation when ground level wind speeds are ≥ 5 m/s. Refer to Section 3.3 for details.

For all other receptors, the applicable PSL is considered equivalent to the BSL of each respective dwelling unit.

It is also noted that the day time operation of the wind farm (at all wind speeds) will be identical to the night time operation at ground level wind speeds ≥ 5 m/s, as explained in the following sections.

3.3 Ambient wind sound level survey (AWSL)

As discussed above, the Project is applying for a C2 adjustment at receptor J, in order to take into account the measured and realistic ambient sound at this receptor. As the wind increases, so does the wind-induced sound, which in turn allows a higher PSL due to the wind masking of Project noise.

In order to apply for a C2 adjustment at receptor J, an ambient wind sound level survey was conducted as detailed in the following sections, per the requirements in Rule 012.

3.3.1 Data Collection

Ambient sound levels were measured at Receptor J, over a period of 3 weeks. Data was collected from midday 9 May 2017 through to the afternoon of 31 May 2017 in various wind conditions, during day and night.

The microphone was placed approximately 20m west of the façade of the residence, as agreed with the landowner and away from any large reflecting surfaces. Refer to Figure 3-1 for placement of measurement equipment at Receptor J and pictures of the sound equipment station are included in Appendix E.

Figure 3-1 Location of AWSL survey

The microphone was installed on a tripod approximately 1.8 m above ground, and site calibration was performed at the beginning, mid-point and end of the monitoring period. The differential calibration was not greater than 0.5 dBA. Relevant calibration logs are shown in Table 3-2.

Table 3-2 Field Calibration log

Monitoring location	**Mid-campaign site calibration**		**End-of-campaign site calibration**	
	Date	Differential (dB)	Date	Differential (dB)
Receptor J	19 May 2017	0.25	31 May 2017	0.20

Sound measurements were made continuously using a FAST response setting and were averaged and stored every 10 minutes, along with the relevant statistics for the periods. Sound events greater than 60 dBA were recorded for analysis and possible filtering. At the beginning of every 10 minute record and during events above 60 dBA, the audio sound was recorded to facilitate future data analysis.

The measurements included A-weighted sound as L_{10}, L_{50}, L_{90} and Leq, third octave band measurements ranging from 16 Hz to 8000 Hz, and C-weighted broadband sound.

The measurement station included a foam wind screen, as per industry standards. This enabled the measurement of sound (without significant wind-induced sound effects on the microphone) in winds up to 5.5 m/s.

In addition to wind speed and wind direction, temperature, relative humidity and precipitation at the microphone height and location were recorded by the weather station, with synchronized 10-minute intervals.

3.3.2 Instrumentation

The instrumentation used for the AWSL survey included the following:

- Larson Davis soundmeters model 831 Class 1;
- FreeField ½ inch microphone model 377B02;
- Preamplifier model PRM831;
- Vaisala Weather Transmitter model SEN-031;
- Larson Davis Precision Acoustic on-site Calibrator model CAL200; and
- Complete kit for outside sound measurement (including large tripods, wind and rain screen, protective Pelican case and long range batteries).

The sound meters meet the IEC 61672 Class 1 specifications. All instruments had a valid calibration, and calibration sheets are included in Appendix F of this document. Table 3-3 below summarizes the equipment used at Receptor J.

Table 3-3 Monitoring Equipment Serial Numbers

Monitoring location	Sound Level Meter	Preamplifier	Microphone	Field Calibrator
J	3142	19225	17112	8048

3.3.3 Analysis and Results

As per Rule 012, L90 – 10 minute data points were analysed, and data with the following Criteria were excluded:

- Data from 7 am to 10 pm (day time);
- 10-minute wind speed at microphone level ≥ 5.5 m/s;
- Precipitation; and
- Extraneous events, such as at instrument set-up, intervention and dismantle.

The remaining data was sorted per wind speed bin, with 1 m/s bins centred on integer wind speeds, and per 90-degree wind direction, centred on 0, 90, 180 and 270 degrees. As per Rule 012 definition, downwind is defined as the direction between source to receiver within ± 45 degrees. Subsequently, a statistical test to assess the minimum valid number of samples for each wind speed/wind direction bin was undertaken, as per Appendix 9 of Rule 012.

Table 3-4 provides the arithmetic mean of L90 10 minute data samples, for the wind speed/wind direction bins which satisfy the statistical valid sample test. Details of the statistical analysis can be found in Appendix G.

Table 3-4 Valid L90 bin average (dBA)

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	27.7	27.2	27.4	27.0
2	30.4	33.5	N/A	28.1
3	33.0	N/A	28.7	30.8
4	36.8	N/A	31.6	33.9
5	38.7	N/A	N/A	**36.7**

N/A: wind speed/wind direction bin with insufficient samples according to the statistical test

The closest Project wind turbine to Receptor J is V-03, and it is located within the 270-degree bin. As such, for a wind speed within the 5 m/s bin and above, the ambient wind sound level is above 35 dBA. In accordance with the PSL determination formula in Section 3.2, the resulting night time PSL at Receptor J, with the C2 adjustment, is 41.7 dBA. For wind speeds below 5 m/s, the PSL remains at 40 dBA.

It shall be noted that the contribution of the Summerview wind farm to the L90 measurements are considered insignificant for the 270 degree bin, since the measurement station was directly upwind and over 1km from the nearest Summerview turbines.

3.4 Curtailment Hub height wind speed

The Vestas wind turbine proposed for the Project is equipped with a SCADA system and nacelle mounted anemometry. As described in this report, a select number of wind turbines, V-01, V-02, V-03, V-04 and V-13, will be curtailed at night until a ground level wind speed of 5 m/s or more (as stated in Section 3.3.3) is reached at receptor J.

In order to establish the relationship between the ground level wind speed at receptor J and the wind turbine hub height wind speed, a concurrent 10 minute data correlation was performed between the AWSL weather sensor at receptor J and the Project wind monitoring tower. Concurrent data at the Project 80 m tower No. 906, situated in proximity of turbine location V-09, was extrapolated to a hub height of 105 m. The location of the 80 m tower can be found on the maps in Appendix A. The data was then correlated to the 1.8 m high weather sensor at receptor J. Through a best linear fit, it was determined that the low end of the 5 m/s bin (i.e. 4.5 m/s), was reached at a hub height wind speed of 9.5 m/s.

In summary, wind turbines V-01, V-02, V-03, V-04 and V-13 will be curtailed during night time, until a hub height wind speed of 9.5 m/s (and above) is reached. The wind speed will be monitored by the wind turbine SCADA system and nacelle anemometry.

4 DESCRIPTION OF SOURCES

For the purpose of this NIA, different sources of noise were considered: the wind turbines and the substation that are planned to be constructed as part of the project, the neighbouring proposed and operational wind turbines and substations, and other energy-related facilities in the area.

4.1 Wind turbines

4.1.1 Wind turbine model

The Vestas V136 4.2 MW turbine is currently being considered for this Project. A technical description is shown in Appendix B and Acoustic specifications of the turbine are shown in Appendix D. A layout of 14 V136 4.2 MW wind turbines was used for the purpose of this NIA. Coordinates of the 14 turbine locations (including 2 alternate locations) are listed in Appendix C. The hub height is assumed to be 105 m and the rotor diameter is 136 m. All turbines are assumed to be equipped with serrated trailing edge (STE) blades.

4.1.2 Wind turbine noise emission rating

Broadband sound power levels ("PWL") and octave band sound power levels of the V136 4.2 MW STE wind turbine were provided by the wind turbine manufacturer. The A-weighted octave band PWL for each hub height wind speed from 3 m/s to 20 m/s were provided for all operational modes of the V136 4.2 wind turbine (Appendix D). The wind turbine sound power level is provided according to IEC 61400-11 Ed 3 [2].

As indicated in AUC Rule 12, the worst-case noise parameters were used in the noise simulation. For the V136 4.2 MW STE, this corresponds to the broadband PWL of 103.9 dBA at a hub height wind speed of 9 m/s.

The octave band sound power levels used for the simulation in this NIA are those stated for each octave band centre frequency in Table 4-1.

Table 4-1 Octave band sound power levels for the V136 4.2 MW

PWL [dB(A)]	**Octave Band Sound Power Levels**									**Broadband**
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Sound Power Level	75.4	86.7	92.0	95.3	97.2	98.6	97.6	89.4	69.1	103.9

4.2 Substation

The effect the substation would have on nearby receptors has been considered. Noise emission from the substation mainly originates from one high-voltage step-up transformer.

The coordinates of the transformer can be found in Appendix C.

The equipment proposed for the substation will be compliant with applicable standards (CAN/CSA-C88-M90 [3], IEEE C57.12.90 [4]) for a winding voltage of 138/34.5 kV and maximum rating of approximately 58 MVA. The transformer has been modeled as a point source located at the substation center at a 4.5 m height agl with a sound power level of 102.0 dBA. As a worst-case scenario, the noise level is based on the

maximum noise emission rating per the CSA standard [3], and a measurement surface area (S) typical for transformers of similar voltage and rating [4]. It is located directly beside the existing Old Man 2 Wind Farm substation transformer, described in section 4.3.1.

A generic octave band sound power level spectrum for large transformers [5] was used and scaled to match the maximum broadband sound power level.

The octave band sound power levels of the transformer are shown below in Table 4-2.

Table 4-2 Windy Point Transformer Sound Power Level

PWL dB[A]	**Octave Band Sound Power Levels**									**Broadband**
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	59.2	78.4	90.5	93.0	98.4	95.6	91.8	96.6	77.5	102.0

4.3 Other wind power projects

A total of 4 neighbouring wind farms have been included in the noise model. Two operational wind farms consisting of two phases each (Old Man 1 & 2, Summerview 1 & 2) and two proposed but not yet constructed wind farms (Heritage wind farm and Welsch wind farm), along with their respective transformers, were included. The following subsections describe each wind farm and its components.

4.3.1 Old Man Wind Farm

The 49.6 MW Old Man Wind Farm, consisting of 2 phases, which was built in 2007 (phase 1) and 2014 (phase 2) and is located directly south of the Windy Point project. Phase 1 is currently owned by the Alberta Renewable Power Limited Partnership and phase 2 is currently owned by Ikea. The corresponding most recent noise report was prepared by HFP in 2012 [6].

The project consists of 2 Vestas V80 1.8 MW (phase 1) and 20 Siemens SWT 2.3-101 (phase 2) wind turbines with a hub height of 67 m and 80 m respectively. Their maximum broadband sound power levels are 104.4 dBA and 106.0 dBA respectively.

Table 4-3 presents the octave band sound power levels used for the Old Man turbines, as modeled in [6].

Table 4-3 Octave band sound power levels for the Old Man 1 and 2 turbines

PWL [dB(A)]	**Octave Band Sound Power Levels**								**Broadband**
Frequency [Hz]	63	125	250	500	1000	2000	4000	8000	
Vestas V80 1.8 MW	86.9	93.3	97.0	99.3	98.6	95.5	87.6	80.4	104.4
SWT 2.3-101	82.5	93.4	97.1	101.1	101.1	97.4	90.2	86.2	106.0

The Old Man substation was also included. It is located immediately beside the proposed Windy Point substation transformer and has a rating of 50 MVA and 138 kV. Table 4-4 presents the octave band sound power levels used for the Old Man project's substation transformer, as modelled in [6].

Table 4-4 Old Man 1 and 2 Transformer Sound Power Level

PWL dB[A]	Octave Band Sound Power Levels									Broadband
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	57.2	76.4	88.5	91.0	96.4	93.6	89.8	94.6	75.5	100.0

The coordinates of the turbines and transformer are shown in Appendix C.

4.3.2 Summerview Wind Farm

Transalta is currently operating the 136.2 MW Summerview Wind Farm, consisting of 2 phases, which was built in 2004 (Phase 1) and 2010 (Phase 2) and is located directly east of the Windy Point project. The corresponding most recent noise report was prepared by Transalta in 2008 [7].

The project consists of 39 Vestas V80 1.8 MW and 22 Vestas V90 3 MW wind turbines with a hub height of 67 m and 80 m respectively. Their maximum broadband sound power levels are 104.4 dBA and 107.0 dBA respectively.

Table 4-5 presents the octave band sound power levels used for the Summerview turbines, as modeled in [7].

Table 4-5 Octave band sound power levels for the Summerview 1 and 2 turbines

PWL [dB(A)]	Octave Band Sound Power Levels								Broadband
Frequency [Hz]	63	125	250	500	1000	2000	4000	8000	
Vestas V80 1.8 MW	86.9	93.3	97.0	99.3	98.6	95.5	87.6	80.4	104.4
V90 3 MW mode 0	91.8	94.0	97.3	99.6	101.8	100.5	96.7	86.7	107.0

The Summerview step-up transformers were not included in the 2008 analysis by Transalta. HFP included the Summerview transformers in the Old Man 2 analysis [6] and stated the following in their report: *"The Summerview substation will contain four transformer units which Mainstream believe will also be rated at 138/34.5 kV and 30/40/50 MVA.".* The Summerview transformers were added to the current modeling.

Table 4-6 presents the octave band sound power levels used for the Summerview project's substation transformers, as modelled in [6].

Table 4-6 Summerview 1 and 2 Transformer Sound Power Level

PWL dB[A]	Octave Band Sound Power Levels									Broadband
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	57.2	76.4	88.5	91.0	96.4	93.6	89.8	94.6	75.5	100.0

The coordinates of the turbines and transformers are shown in Appendix C.

4.3.3 Heritage Wind Farm

The Heritage wind farm is a proposed 291 MW wind farm consisting of 97 Vestas V90 3 MW turbines, located directly south and west of the Windy Point Project.

Nextera currently owns the Heritage wind farm, after purchasing it in early 2017. This is an approved but not yet built wind farm for which the most recent noise report was prepared by GL GH (currently DNV GL) in August 2010 [8]. It should be noted that this project has requested extensions from the AUC, and will likely not be constructed as currently permitted.

DNV GL has included this project in the analysis in its currently permitted form, according to the night time operational scenario outlined in Table 8 and Figure 2 of [8], assuming that secondary Highways 510 and 785 are not "heavily trafficked". Night time operation only includes a portion of the layout with the turbines operating in mode 1 or mode 2.

Table 4-7 Octave band sound power levels for the Heritage wind farm turbines at night

PWL [dB(A)]	**Octave Band Sound Power Levels**									**Broadband**
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
V90 3 MW mode 1	82.0	91.6	92.8	95.5	98.3	101.2	99.3	95.1	84.5	105.9
V90 3 MW mode 2	81.1	90.7	91.9	94.6	97.4	100.3	98.4	94.2	83.6	105.0

Two transformers, each rated 240/34.5 kV and 120/160/200 MVA, were included in the current analysis according to [8].

Table 4-8 Heritage Transformer Sound Power Level

PWL dB[A]	**Octave Band Sound Power Levels**									**Broadband**
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	62.4	69.7	86.5	90.4	104.4	93.9	76.2	72.1	66.0	105.0

The coordinates of the turbines and transformers are shown in Appendix C.

4.3.4 Welsch Wind Farm

The Welsch wind farm, located directly west of the Windy Point project, is a proposed wind farm currently designed to have a capacity of approximately 68 MW, consisting of 18 Enercon turbines in various operational modes.

This project is currently being developed by Enercon Canada Ltd. While its valid AUC permit dates back to 2011, a more recent noise report was prepared by Stantec and was submitted in June 2016 [9].

Table 4-9 provides the acoustic specifications of all the turbine models and modes that were included in the current analysis. All sound power data were taken from [9], except for the E126 mode 0, for which DNV GL has used a more recent octave band sound power level distribution obtained by the Customer.

Table 4-9 Octave band sound power levels for the Welsch turbines

PWL [dB(A)]	Octave Band Sound Power Levels									Broadband
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
E126 mode 0	77.1	87.9	93.1	95.6	98.7	100.3	98.0	89.0	69.0	105.0
E126 mode 3500 kW	N/A	84.9	93.0	95.5	98.9	100.1	95.3	84.1	79.0	104.4
E126 mode 2500 kW	N/A	83.9	91.0	93.5	96.9	99.1	93.3	82.1	77.0	103.5
E126 mode 2	N/A	83.7	91.8	94.3	97.7	98.9	94.1	81.9	77.8	103.2
E101 mode 0	N/A	84.8	92.9	95.4	98.8	100.0	95.2	83.0	78.9	104.3
E101 mode 3 MW	N/A	83.6	91.7	94.2	97.6	99.8	94.0	82.8	77.7	103.5
E101 mode 2500 kW	N/A	83.9	91.0	93.5	96.9	99.1	93.3	82.1	77.0	102.8

The Welsch transformer is assumed to be approximately 70 MVA and 138 kV. The sound power level was taken from [9], which references the 2011 Welsch NIA report prepared by Geilectric Inc. as the source for the transformer sound power information.

Table 4-10 Welsch Transformer Sound Power Level

PWL dB[A]	Octave Band Sound Power Levels									Broadband
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	38.5	50.9	72.3	76.4	83.1	70.6	64.1	76.1	67.4	85.1

The coordinates of the turbines and transformers are shown in Appendix C.

4.4 Other energy-related facilities

As per Rule 012 of the AUC, "other energy-related facilities" have to be considered in the cumulative noise effect on identified receptors. This section describes the facilities that were considered

4.4.1 Fidler Substation

One major energy related facility with noise producing potential was identified within 3 km of the project turbines or transformer. The Fidler substation is owned and operated by Altalink and its most recent noise report is from 2010 [10].

According to [10]: "the Fidler Substation is expected to have one transformer unit rated at 240/138 kV and 240/320/400 MVA."

Table 4-11 and Table 4-12 outline the position and sound specification of the Fidler substation transformer that were used in the current analysis.

Table 4-11 List of energy-related facilities and coordinates (UTM12 NAD83)

Description	Sound Power Level [dBA]	Easting [m]	Northing [m]	Height [m agl]
Fidler substation transformer	101.7	296011	5494594	5

Table 4-12 Fidler Transformer Sound Power Level

PWL dB[A]	Octave Band Sound Power Levels									Broadband
Frequency [Hz]	31.5	63	125	250	500	1000	2000	4000	8000	
Transformer	57.1	74.3	87.4	92.9	98.3	95.5	91.7	86.5	76.4	101.7

5 IMPACT ASSESSMENT

5.1 Wind farm operation

5.1.1 Noise simulation methodology

The predicted overall (cumulative) sound pressure levels at each critical noise receptor for the aggregate of all wind turbines and the substation associated with the Project were calculated based on the ISO 9613 method [11][12], using the CadnaA software[1]. The simulation was run with the noise emission ratings of the wind turbines, substation transformers, and energy related facilities as specified in Section 4.

The ISO 9613-2 standard provides a prediction of the equivalent continuous A-weighted sound pressure level at a distance from one or more point sources under meteorological conditions favorable to propagation from sources of sound emission. These conditions are for downwind propagation, or, equivalently, propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs at night. Downwind propagation conditions assume a wind direction within an angle of + 45° of the direction connecting the center of the dominant sound source and the center of the specified receiver region, with the wind blowing from source to receiver.

The method consists of octave-band algorithms (i.e. with nominal midband frequencies from 31.5 Hz to 8 kHz) for calculating the attenuation of the emitted sound. The algorithm takes into account the following physical effects:

- Geometrical divergence – attenuation due to spherical spreading from the sound source;
- Atmospheric absorption – attenuation due to absorption by the atmosphere; and
- Ground effect –attenuation due to the acoustical properties of the ground.

The following ISO-9613-2 parameters were set as follows, for a realistic worst case scenario:

- Ambient Air Temperature: 10°C
- Ambient Barometric Pressure: 101.32 kPa
- Relative Humidity: 70%
- Topography: National topographical data from the NTDB[2]
- Ground Attenuation (G): 0.7 (site conditions considered as "mixed ground")
- The effect of topography was included.

Additional calculations concerning propagation through foliage were not performed in this impact assessment, implying that the values calculated for sound attenuation are likely to be conservative in areas where there is foliage present in the line of sight between any turbine and a noise receptor. In addition, the ISO 9613-2 model conservatively assumes that the propagation of the sound from the WTGs to the source is downwind for all the WTGs at the same time. Consequently, the values calculated for sound attenuation are likely to be overestimated in those cases where the line of sight between a turbine and a noise receptor is blocked by trees or shrubs or if the wind direction is taken into account in the noise impact assessment.

[1] There is no grid spacing embedded in the CadnaA software, nor in the ISO 9613-2 model. The noise levels are calculated at their exact positions without interpolation.

[2] The model's ground elevation resolution data was 20 m X 20 m, horizontal grid. The vertical resolution accuracy surpasses any model requirements.

The predicted sound level was calculated at a height of 1.5 m for all of the dwellings in the vicinity of the Project area. The farthest dwelling considered from a wind turbine is located 3.8 km away from T18.

As per AUC Rule 12, the predicted cumulative sound level for each receptor was then added to the average rural ambient sound level of 35 dBA, or the measured ambient sound level for receptor J, and the combined sound level was compared to the permissible sound level as discussed in Section 3.2.

5.1.2 Results

5.1.2.1 Noise simulation

Table 5-1 shows the cumulative night time sound levels produced by the wind farm and adjacent energy related facilities at ground level wind speeds ≥ 5 m/s. This scenario includes all Project turbines operating at maximum capacity and the application of a C2 adjustment at receptor J. The sound levels produced by the Project under this scenario are also applicable to day time operation.

Table 5-2 shows the cumulative night time sound levels produced by the wind farm and adjacent energy related facilities at ground level wind speeds < 5 m/s. Five Project turbines (V-01, V-02, V-03, V-04, V-13) are completely curtailed for this scenario and it does not include any C2 adjustments.

The following considerations were also taken into account:

- The acoustic impact of external wind farms and energy related facilities is shown separately;
- A net increase of ≤ 0.4 dB caused by the additional acoustic contribution of the Windy Point Project at any receptor is considered equivalent to causing a no net increase, as defined by AUC Rule 12.

Table 5-1 Night time noise levels at receptors at wind speeds ≥ 5 m/s at ground level

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Receptor ID	Easting [m]	Northing [m]	Distance from nearest Project noise source[m]	ID of nearest Project noise source	Assumed or measured ambient sound level [dBA]	Applicable night time PSL [dBA]	External Energy Related Facility contribution without ambient sound [dBA]	External Energy Related Facility contribution plus ambient sound [dBA]	Windy Point Project contribution without ambient sound [dBA]	Predicted Cumulative sound level without ambient sound [dBA]**	Predicted Cumulative sound level with ambient sound [dBA]**	Column L minus Column I	Apply no net increase?	Compliant? (Yes/No) ***
A	296493	5495850	1591	V-11	35	40	38.7	40.2	29.2	39.1	40.5	0.3	Yes	Yes
C	293335	5497650	1372	V-12	35	40	38.3	40.0	26.6	38.6	40.2	0.2	Yes	Yes
D	293044	5498540	1514	V-12	35	40	35.1	38.1	27.7	35.9	38.5	0.4		Yes
E	293200	5497860	1412	V-12	35	40	37.4	39.4	27.8	37.8	39.7	0.3		Yes
F	293000	5498290	1540	V-12	35	40	36.1	38.6	27.8	36.7	39.0	0.4		Yes
G	293309	5499450	1074	V-07	35	40	37.3	39.3	31.6	38.4	40.0	0.7		Yes
H	292928	5499140	1502	V-07	35	40	39.7	41.0	28.6	40.1	41.2	0.2	Yes	Yes
I	292964	5500340	1507	V-06	35	40	38.3	40.0	28.5	38.8	40.3	0.3	Yes	Yes
J	296384	5500500	941	V-03	36.7*	41.7	37.8	40.3	36.2	40.1	41.7	1.4		Yes
K	297477	5498700	1578	V-09	35	40	39.8	41.0	31.0	40.3	41.4	0.4	Yes	Yes
L	297605	5498800	1719	V-09	35	40	40.2	41.3	30.4	40.6	41.7	0.4	Yes	Yes
M	295809	5501670	1040	V-01	35	40	35.5	38.3	31.8	37.1	39.2	0.9		Yes
N	296796	5502720	1273	V-01	35	40	36.5	38.8	28.2	37.1	39.2	0.4		Yes
O	298042	5502330	1503	V-02	35	40	41.6	42.4	27.3	41.7	42.6	0.2	Yes	Yes
Q	299349	5495970	3570	V-14	35	40	39.4	40.7	19.9	39.4	40.8	0.1	Yes	Yes
R	299254	5503670	3293	V-01	35	40	31.8	36.7	16.9	31.9	36.7	0.0		Yes
S	298187	5504140	3018	V-01	35	40	30.6	36.3	18.2	30.8	36.4	0.1		Yes
T	296465	5503760	2341	V-01	35	40	31.3	36.6	21.9	31.8	36.7	0.1		Yes
U	291974	5502780	3770	V-06	35	40	39.1	40.6	17.1	39.2	40.6	0.0	Yes	Yes
V	296475	5495930	1511	V-11	35	40	38.8	40.3	29.5	39.2	40.6	0.3	Yes	Yes
W	296402	5503710	2302	V-01	35	40	31.5	36.6	22.0	31.9	36.7	0.1		Yes

* Ambient night time sound level at receptor J = 36.7 dBA in 270 degree bin at ≥ 5 m/s at ground level.
**Cumulative sound level includes contribution of neighbouring wind farms and energy related facilities.
*** Compliant if Column L ≤ Column G or if No net increase applicable (Column N)

If the C2 adjustment had not been applied to receptor J, and an ambient sound level of 35 dBA was assumed instead, the cumulative sound level at receptor J would be 35 dBA +40.1 = 41.2 dBA.

It should be noted that the WP project will operate at all wind speeds during the daytime with the same turbine operational configuration as it does at night time, with wind speeds ≥ 5 m/s at ground level, as described above.

It should also be noted that the current layout contains 2 potentially alternative positions that will not be constructed; therefore, the actual sound levels caused by the final layout will be even lower.

Table 5-2 Night time noise levels at receptors at wind speeds < 5 m/s at ground level

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Receptor ID	Easting [m]	Northing [m]	Distance from nearest Project noise source[m]	ID of nearest Project noise source*	Assumed or measured ambient sound level [dBA]	Applicable night time PSL [dBA]	External Energy Related Facility contribution without ambient sound [dBA]	External Energy Related Facility contribution plus ambient noise) [dBA]	Windy Point Project contribution* without ambient sound [dBA]	Predicted Cumulative sound level without ambient sound [dBA]**	Predicted Cumulative sound level with ambient sound [dBA]**	Column L minus Column I	Apply no net increase?	Compliant? (Yes/No) ***
A	296493	5495850	1591	V-11	35	40	38.7	40.2	29.1	39.0	40.5	0.3	Yes	Yes
C	293335	5497650	1372	V-12	35	40	38.3	40.0	26.2	38.6	40.2	0.2	Yes	Yes
D	293044	5498540	1514	V-12	35	40	35.1	38.1	27.3	35.8	38.4	0.3		Yes
E	293200	5497860	1412	V-12	35	40	37.4	39.4	27.5	37.8	39.6	0.2		Yes
F	293000	5498290	1540	V-12	35	40	36.1	38.6	27.4	36.7	38.9	0.3		Yes
G	293309	5499450	1074	V-07	35	40	37.3	39.3	31.3	38.3	40.0	0.7		Yes
H	292928	5499140	1502	V-07	35	40	39.7	41.0	28.2	40.0	41.2	0.2	Yes	Yes
I	292964	5500340	1507	V-06	35	40	38.3	40.0	27.7	38.7	40.2	0.2	Yes	Yes
J	296384	5500500	1593	V-05	35	40	37.8	39.6	28.8	38.3	40.0	0.4		Yes
K	297477	5498700	1578	V-09	35	40	39.8	41.0	29.2	40.1	41.3	0.3	Yes	Yes
L	297605	5498800	1719	V-09	35	40	40.2	41.3	28.3	40.5	41.5	0.2	Yes	Yes
M	295809	5501670	2172	V-05	35	40	35.5	38.3	24.7	35.9	38.5	0.2		Yes
N	296796	5502720	3546	V-05	35	40	36.5	38.8	17.1	36.5	38.8	0.0		Yes
O	298042	5502330	4029	V-05	35	40	41.6	42.4	16.9	41.6	42.4	0.0	Yes	Yes
Q	299349	5495970	3570	V-14	35	40	39.4	40.7	19.5	39.4	40.8	0.1	Yes	Yes
R	299254	5503670	5829	V-05	35	40	31.8	36.7	-	31.8	36.7	0.0		Yes
S	298187	5504140	5491	V-05	35	40	30.6	36.3	-	30.6	36.3	0.0		Yes
T	296465	5503760	4361	V-05	35	40	31.3	36.6	14.0	31.4	36.6	0.0		Yes
U	291974	5502780	3770	V-06	35	40	39.1	40.6	16.3	39.2	40.6	0.0	Yes	Yes
V	296475	5495930	1511	V-11	35	40	38.8	40.3	29.3	39.2	40.6	0.3	Yes	Yes
W	296402	5503710	4294	V-05	35	40	31.5	36.6	13.4	31.5	36.6	0.0		Yes

*Does not consider turbines that are shut down (V-01, V-02, V-03, V-04, V-13)
**Cumulative noise includes contribution of neighbouring wind farms and energy related facilities.
*** Compliant if Column L ≤ Column G or if No net increase applicable (Column N)

It should be noted that the current layout contains 2 potentially alternative positions that will not be constructed; therefore, the actual sound levels caused by the final layout will be even lower.

Table 5-3 Daytime noise levels at receptors

A	B	C	D	E	F	G	H	I	J	K	L	O
Receptor ID	Easting [m]	Northing [m]	Distance from nearest Project noise source[m]	ID of nearest Project noise source	Assumed or measured ambient sound level [dBA]	Applicable daytime PSL [dBA]	External Energy Related Facility contribution without ambient sound [dBA]	External Energy Related Facility contribution plus ambient sound) [dBA]	Windy Point Project contribution without ambient sound [dBA]	Predicted Cumulative sound level without ambient sound [dBA]**	Predicted Cumulative sound level with ambient sound [dBA]**	Compliant? (Yes/No) ***
A	296493	5495850	1591	V-11	45	50	44.6	47.8	29.2	44.7	47.9	Yes
C	293335	5497650	1372	V-12	45	50	41.2	46.5	26.6	41.3	46.5	Yes
D	293044	5498540	1514	V-12	45	50	37.3	45.7	27.7	37.7	45.7	Yes
E	293200	5497860	1412	V-12	45	50	40.0	46.2	27.8	40.2	46.3	Yes
F	293000	5498290	1540	V-12	45	50	38.3	45.8	27.8	38.7	45.9	Yes
G	293309	5499450	1074	V-07	45	50	38.9	46.0	31.6	39.7	46.1	Yes
H	292928	5499140	1502	V-07	45	50	41.3	46.5	28.6	41.5	46.6	Yes
I	292964	5500340	1507	V-06	45	50	39.5	46.1	28.5	39.8	46.1	Yes
J	296384	5500500	941	V-03	45	50	40.1	46.2	36.2	41.6	46.6	Yes
K	297477	5498700	1578	V-09	45	50	43.1	47.2	31.0	43.4	47.3	Yes
L	297605	5498800	1719	V-09	45	50	42.7	47.0	30.4	43.0	47.1	Yes
M	295809	5501670	1040	V-01	45	50	37.5	45.7	31.8	38.6	45.9	Yes
N	296796	5502720	1273	V-01	45	50	36.9	45.6	28.2	37.4	45.7	Yes
O	298042	5502330	1503	V-02	45	50	41.6	46.6	27.3	41.8	46.7	Yes
Q	299349	5495970	3570	V-14	45	50	43.0	47.1	19.9	43.0	47.1	Yes
R	299254	5503670	3293	V-01	45	50	31.9	45.2	16.9	32.0	45.2	Yes
S	298187	5504140	3018	V-01	45	50	30.8	45.2	18.2	31.0	45.2	Yes
T	296465	5503760	2341	V-01	45	50	31.7	45.2	21.9	32.1	45.2	Yes
U	291974	5502780	3770	V-06	45	50	40.7	46.4	17.1	40.8	46.4	Yes
V	296475	5495930	1511	V-11	45	50	44.4	47.7	29.5	44.5	47.8	Yes
W	296402	5503710	2302	V-01	45	50	31.7	45.2	22.0	32.2	45.2	Yes

**Cumulative noise includes contribution of neighbouring wind farms and energy related facilities.
*** Compliant if Column L ≤ Column G

It should be noted that the current layout contains 2 potentially alternative positions that will not be constructed; therefore, the actual sound levels caused by the final layout will be even lower.

5.1.2.2 Low Frequency Noise considerations

The 1/3 octave band sound power level spectrum of the turbine has been analyzed as per Rule 012 Section 3.2 (11).

Rule 012 defines a low frequency tone as:

a) Occurring at frequencies lower than 250 Hz, and;

b) Evident if there is a greater than 10 dB drop within 2 bandwidths on one side, and 5 dB drop within 2 bandwidths on the other side.

The third octave sound power levels of every turbine considered in this report for the worst case wind speed of 9 m/s are shown in Figure 5-1. It can be seen that no individual third octave band value at any frequency (including low frequencies) satisfies condition b) above; there is no clear tonal component generated by the proposed wind turbines at a frequency below 250 Hz.

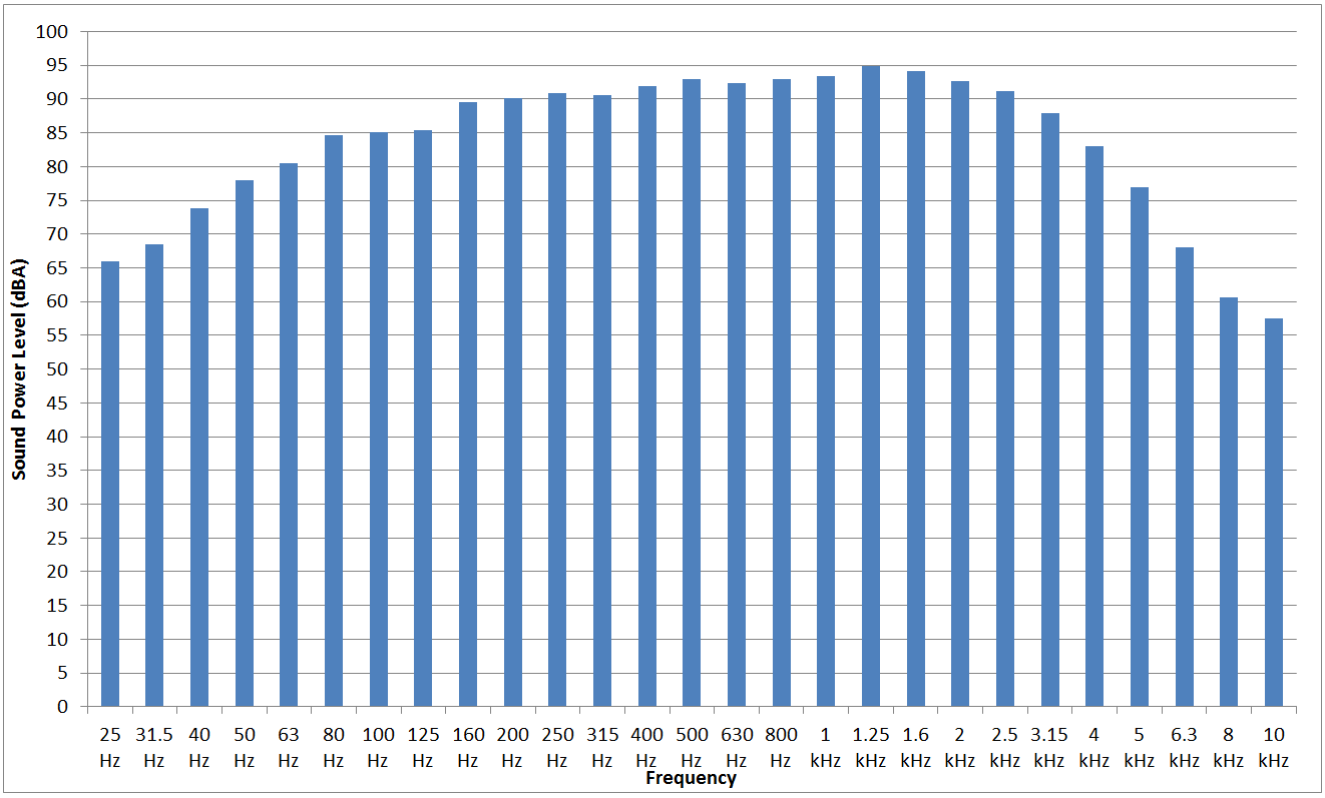


Figure 5-1 Third octave low frequency analysis for the V136 4.2 MW STE

Additionally, the difference between dBC and dBA for all receptors for both nigh time scenarios is shown in Table 5-4.

Table 5-4 C-Weighted and A-Weighted night time sound pressure level comparison

Receptor ID	Scenario 1 – ≥ 5 m/s			Scenario 2 – < 5 m/s		
	dB(A)	dB(C)	Difference	dB(A)	dB(C)	Difference
A	39.1	59.3	20.2	39.0	59.2	20.2
C	38.6	57.5	18.9	38.6	57.5	18.9
D	35.9	57.6	21.7	35.8	57.5	21.7
E	37.8	58.5	20.7	37.8	58.4	20.6
F	36.7	58.4	21.7	36.7	58.4	21.7
G	38.4	59.6	21.2	38.3	59.6	21.3
H	40.1	60.0	19.9	40.0	60.0	20.0
I	38.8	58.7	19.9	38.7	58.6	19.9
J	40.1	58.9	18.8	38.3	57.2	18.9
K	40.3	59.0	18.7	40.1	58.7	18.6
L	40.6	59.2	18.6	40.5	59.0	18.5
M	37.1	57.6	20.5	35.9	56.6	20.7
N	37.1	55.0	17.9	36.5	54.1	17.6
O	41.7	58.1	16.4	41.6	57.7	16.1
Q	39.4	58.6	19.2	39.4	58.6	19.2
R	31.9	50.5	18.6	31.8	50.2	18.4
S	30.8	51.1	20.3	30.6	50.7	20.1
T	31.8	52.8	21.0	31.4	52.3	20.9
U	39.2	61.1	21.9	39.2	61.1	21.9
V	39.2	59.2	20.0	39.2	59.2	20.0
W	31.9	52.9	21.0	31.5	52.4	20.9

These results are inclusive of neighboring project turbines and transformer but exclude ambient noise.

It can be seen that, in Scenario 1 and Scenario 2, some receptors experience differences in dBC levels that are marginally higher than 20 dB compared to their corresponding dBA levels (exclusive of ambient noise). However, dBC levels do not exceed 60 dBC for any receptors, except receptor U, which is almost 3.8 km from a Windy Point turbine and has negligible impact from it (17.1 dBA).

As a result, the conditions for low frequency are not present for this Project.

5.2 Local bylaw requirements

Section 53.21(f) (1) of the Land Use Bylaw 1140-08 of the Municipal District (M.D.) of Pincher Creek No. 9 ("the Bylaw") [13] requires that an analysis of the potential for wind farm sound at the following areas of interest be submitted with the development application:

- The site of the tower;
- The boundary of the development; and
- At any habitable or occupied residence within 2.0 km (1.2 miles) of any turbine.

Additionally, the Bylaw states in section 53.26 the following: "at no time shall the modeled sound level of a [wind energy conversion system] WECS at the wind farm boundary exceed 45.0 dB(A) unless (a) an easement, as approved by the Municipal Planning Commission, is agreed to by the affected land owner and registered on the affected title, or (b) the affected landowner is the crown or an agent of the crown, excluding statutory roads or road plans, and will be asked for comment under a different clause in this bylaw." The following is provided to address these requirements of the Bylaw:

- The potential for sound at the site of a tower (wind turbine) ranges from 55.0 dB(A) to 60.0 dB(A), depending on the turbine's emission rating, wind speed and environmental conditions. At maximum sound output, the predicted sound level for the turbine proposed for this Project at the base of the tower is approximately 53 dB(A).
- Based on the Project's layout and the turbine type, it is expected that predicted sound contribution the Windy Point turbines at the boundaries of the wind farm (lot lines) will not exceed the required 45.0 dB(A). See Map 3 in Appendix A.

5.3 Wind farm construction

Construction activities will generate noise from the use of heavy machinery and vehicles. Access road and site preparations, foundation construction, delivery of materials and erection of turbines are the activities that will create the most noise. The contribution to noise levels is only expected on site – a low population density area – and during a short period of time, i.e. the few months of planned work during the construction period. The Customer commits to abide to all Rule 012 requirements related to the construction phase. It should be noted that no turbines are found closer than 940 m from a residence on this project, and thus construction noise effects from turbine sites are anticipated to be low.

In order to minimize any effects during construction, the following measures can be implemented if deemed necessary to address potential noise complaints:

- A construction and traffic management plan;
- Most construction activities can be limited to daytime and early evening hours;
- Vehicle speeds on access roads can be limited to 40 km/hr;
- Nearby residents can be advised of significant noise-causing activities and these events will be scheduled to reduce disruption to them;
- All internal combustion engines can be fitted with appropriate muffler systems;
- When possible, acoustical screening from existing on-site buildings can be considered to shield dwellings from construction equipment noise;

- It is anticipated that work will be undertaken at several turbine sites in parallel, in order to limit the construction period. The local community will also be informed of the construction schedule and activities in order to minimize impacts;
- All construction activities will comply with Rule 012 requirements unless they jeopardize health and safety regulations;
- Loading and unloading activities will occur mainly during scheduled hours (07:00 to 19:00). Loading and unloading activities after scheduled working hours are anticipated to be infrequent, and will be minimized as much as possible. Additionally, any particular changes to the construction schedule and activities will be communicated to the local community in order to minimize noise; and
- There could be a concrete batch plant installed on site. The location of the batch plant, if implemented, will be at least 800 m away from residences, and will be in compliance with Rule 012. The current NIA focuses on the noise emission from the wind power plant during operation. The batch plant is a temporary facility and is no longer used once turbines begin operation. Because of this it will not contribute to the cumulative noise effect after construction is completed.

Given the noise created by existing large scale cultivation equipment, farm and ranching vehicles and local traffic in the area, and with the implementation of appropriate complaint driven mitigation measures as outlined above, the residual effects of construction noise on the residents, livestock and wildlife will be confined to short periods and should be minimal.

6 CONCLUSION

When modeled according to the ISO 9613-2 standard and the conditions specified in AUC Rule 012, the predicted cumulative sound levels[3] were found to be in compliance at all the noise receptors in the vicinity of the project, combined with ambient noise.

The results of this NIA were calculated for a 14 WTG layout and considering the effect of the substation transformer, the neighbouring wind farms and nearby energy related facility. It should be noted that 2 turbine positions are currently being considered as alternatives. 12 total turbines will likely be built. Therefore, it can be concluded that the predicted sound levels in this report are conservative in the vicinity of the Project turbines.

[3] Noise produced by the turbines, wind farm substation and other related energy facilities, combined with the applicable (assumed or measured) ambient sound level

7 REFERENCES

[1] Alberta Utilities Commission (AUC), Rule 012 – Noise Control. July 4, 2017.

[2] International Electrotechnical Commission (IEC), 2011. IEC 61400 – 11 Ed. 3.0 Wind turbine generator systems – Part 11.

[3] CAN/CSA-C88-M90 (R2014) - Power Transformers and Reactors.

[4] IEEE C57.12.90 – Distribution, Power, and Regulating Transformers. 2010

[5] Handbook of Acoustics. Edited by Malcolm J. Crocker. John Wiley & Sons. 1998.

[6] HFP Acoustical Consultants Corp., Mainstream Renewable Power Proposed Oldman 2 Wind Farm, Noise Impact Assessment– March, 2012, Version C.

[7] Transalta. Phase II Expansion of the Summerview Wind Farm. Environmental Noise Impact Analysis. July 2008.

[8] GL Garrad Hassan Canada Inc. Cumulative sound level assessment at Heritage Wind Farm. 102661/VT/01 – Issue B.

[9] Stantec. Welsch Windfarm Project Noise Impact Assessment. June 3, 2016

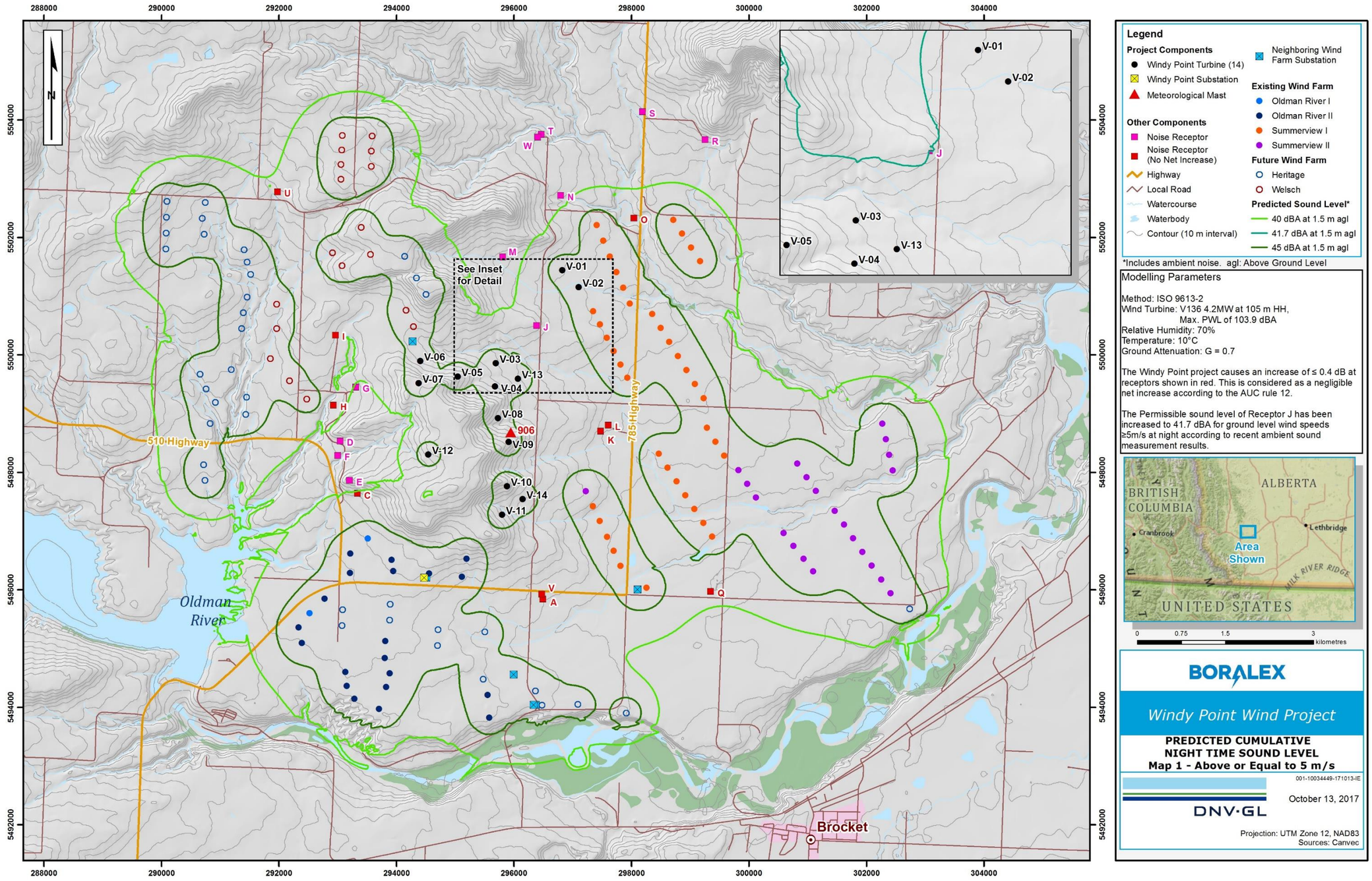
[10] Noise Impact Assessment for Fidler 312S Substation Site B – Version 1.1, Altalink. May 26, 2010.

[11] International Organization for Standardization (ISO), 1993. Acoustics - Attenuation of Sound During Propagation Outdoors - Calculation of the Absorption of Sound by the Atmosphere. ISO 9613-1. 33p.

[12] International Organization for Standardization (ISO), 1996. Acoustics - Attenuation of Sound During Propagation Outdoors - General Method of Calculation. ISO 9613-2. 25 p.

[13] Municipal District of Pincher Creek No. 9. Land Use Bylaw No. 1140-08. March 2017.

APPENDIX A – NOISE ISO-CONTOUR MAPS



Legend

Project Components
- Windy Point Turbine (14)
- Windy Point Substation
- Meteorological Mast

Other Components
- Noise Receptor
- Noise Receptor (No Net Increase)
- Highway
- Local Road
- Watercourse
- Waterbody
- Contour (10 m interval)
- Neighboring Wind Farm Substation

Existing Wind Farm
- Oldman River I
- Oldman River II
- Summerview I
- Summerview II

Future Wind Farm
- Heritage
- Welsch

Predicted Sound Level*
- 40 dBA at 1.5 m agl
- 41.7 dBA at 1.5 m agl
- 45 dBA at 1.5 m agl

*Includes ambient noise. agl: Above Ground Level

Modelling Parameters

Method: ISO 9613-2
Wind Turbine: V136 4.2MW at 105 m HH,
Max. PWL of 103.9 dBA
Relative Humidity: 70%
Temperature: 10°C
Ground Attenuation: G = 0.7

The Windy Point project causes an increase of ≤ 0.4 dB at receptors shown in red. This is considered as a negligible net increase according to the AUC rule 12.

The Permissible sound level of Receptor J has been increased to 41.7 dBA for ground level wind speeds ≥5m/s at night according to recent ambient sound measurement results.

BORALEX

Windy Point Wind Project

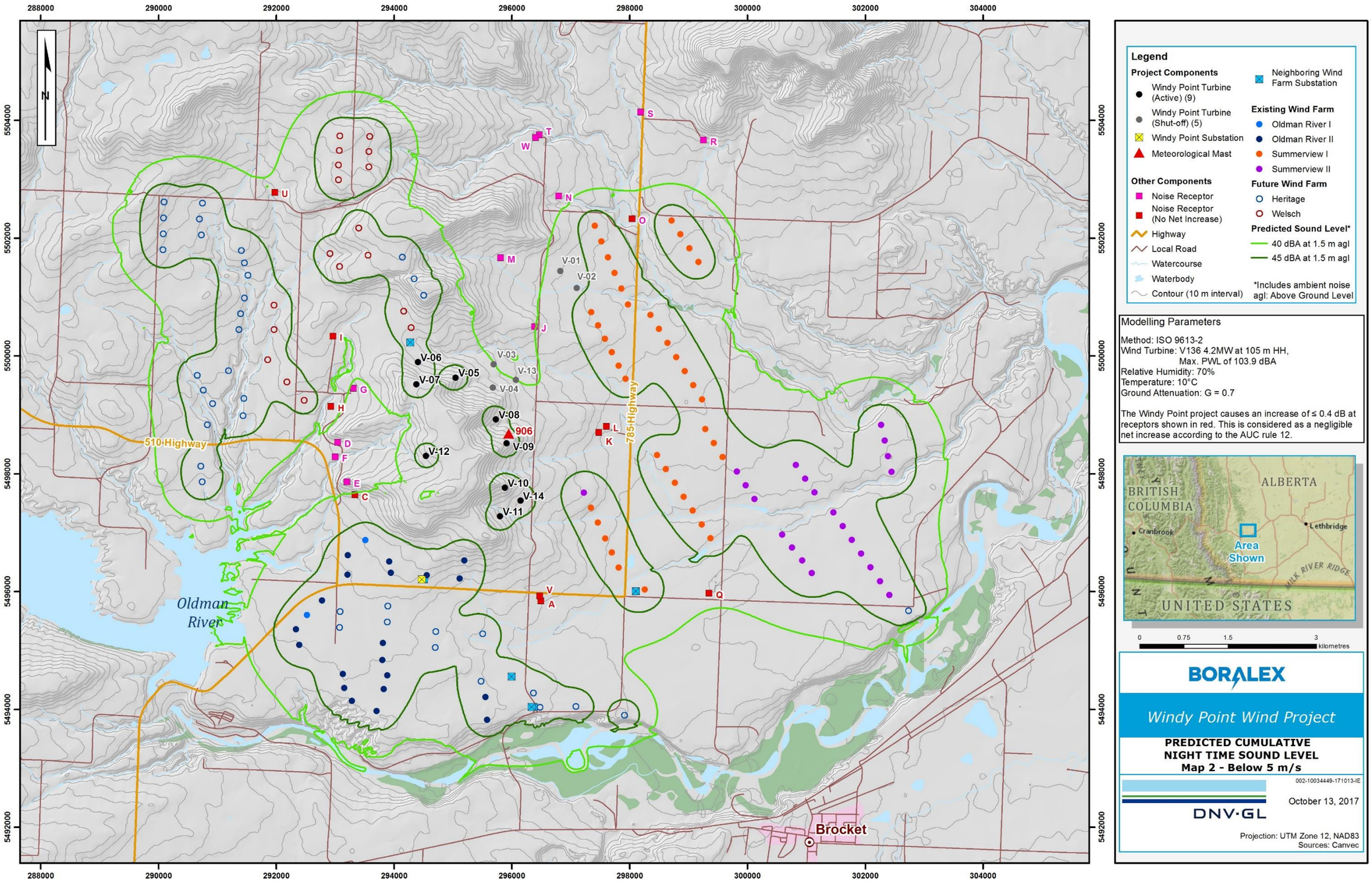
PREDICTED CUMULATIVE NIGHT TIME SOUND LEVEL
Map 1 - Above or Equal to 5 m/s

001-10034449-171013-IE

October 13, 2017

DNV·GL

Projection: UTM Zone 12, NAD83
Sources: Canvec



Legend

Project Components
- Windy Point Turbine (Active) (9)
- Windy Point Turbine (Shut-off) (5)
- Windy Point Substation
- Meteorological Mast

Other Components
- Noise Receptor
- Noise Receptor (No Net Increase)
- Highway
- Local Road
- Watercourse
- Waterbody
- Contour (10 m interval)
- Neighboring Wind Farm Substation

Existing Wind Farm
- Oldman River I
- Oldman River II
- Summerview I
- Summerview II

Future Wind Farm
- Heritage
- Welsch

Predicted Sound Level*
- 40 dBA at 1.5 m agl
- 45 dBA at 1.5 m agl

*Includes ambient noise agl: Above Ground Level

Modelling Parameters

Method: ISO 9613-2
Wind Turbine: V136 4.2MW at 105 m HH,
Max. PWL of 103.9 dBA
Relative Humidity: 70%
Temperature: 10°C
Ground Attenuation: G = 0.7

The Windy Point project causes an increase of ≤ 0.4 dB at receptors shown in red. This is considered as a negligible net increase according to the AUC rule 12.

0 0.75 1.5 3 kilometres

BORALEX

Windy Point Wind Project

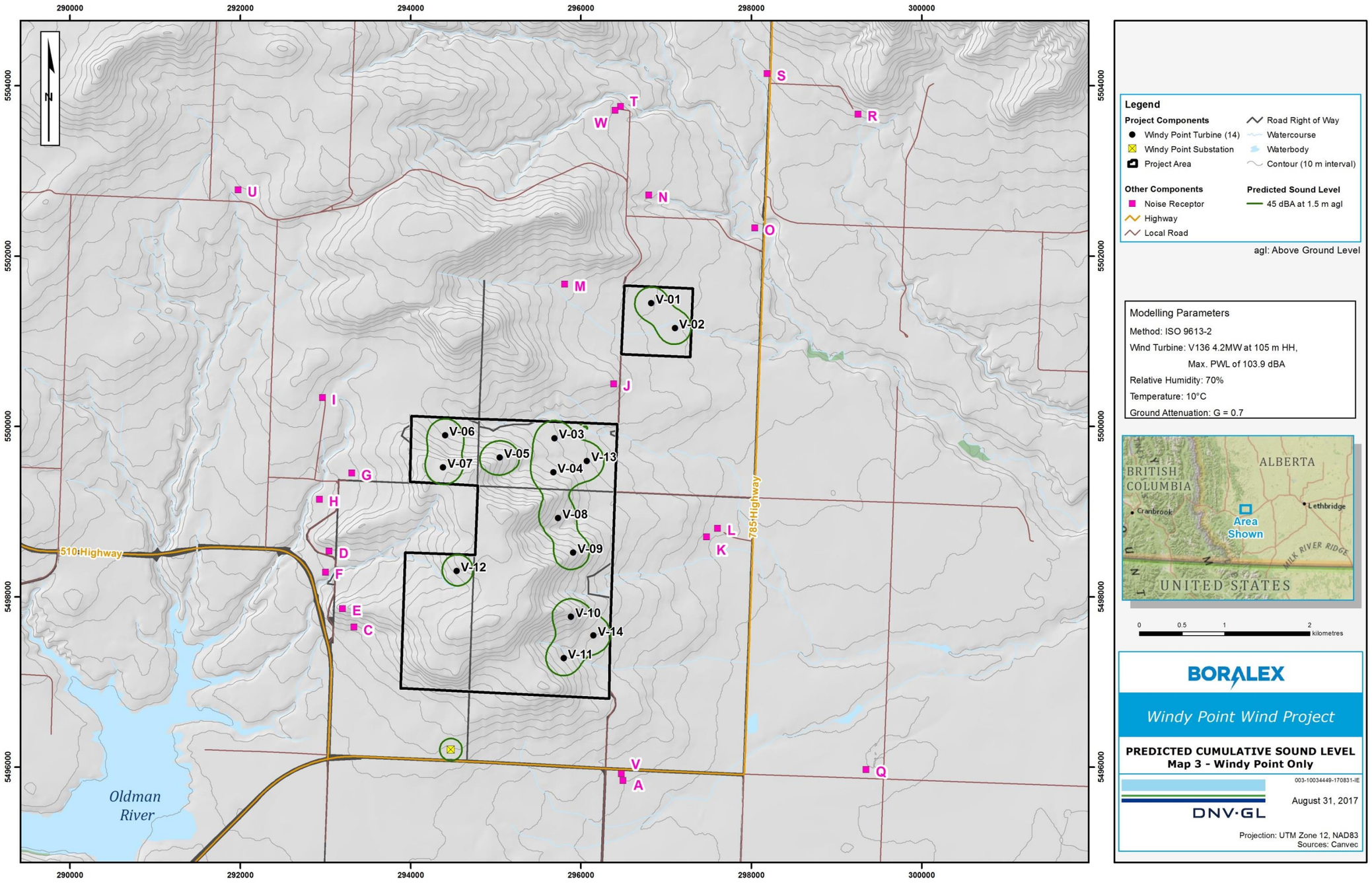
PREDICTED CUMULATIVE NIGHT TIME SOUND LEVEL Map 2 - Below 5 m/s

002-10034449-171013-IE

October 13, 2017

DNV·GL

Projection: UTM Zone 12, NAD83
Sources: Canvec


290000
292000
294000
296000
298000
300000
5504000
5502000
5500000
5498000
5496000
N
S
T
W
R
U
N
O
M
V-01
V-02
J
I
V-06
V-03
V-05
V-13
V-07
V-04
G
H
V-08
L
785 Highway
K
510 Highway
D
V-09
F
V-12
E
V-10
C
V-14
V-11
V
A
Q
Oldman
River
Legend
Project Components
Windy Point Turbine (14)
Windy Point Substation
Project Area
Road Right of Way
Watercourse
Waterbody
Contour (10 m interval)
Other Components
Noise Receptor
Highway
Local Road
Predicted Sound Level
45 dBA at 1.5 m agl
agl: Above Ground Level
Modelling Parameters
Method: ISO 9613-2
Wind Turbine: V136 4.2MW at 105 m HH,
Max. PWL of 103.9 dBA
Relative Humidity: 70%
Temperature: 10°C
Ground Attenuation: G = 0.7
BRITISH COLUMBIA
ALBERTA
Cranbrook
Lethbridge
Area Shown
MILK RIVER RIDGE
UNITED STATES
0
0.5
1
2
kilometres
BORALEX
Windy Point Wind Project
PREDICTED CUMULATIVE SOUND LEVEL
Map 3 - Windy Point Only
003-10034449-170831-IE
August 31, 2017
DNV·GL
Projection: UTM Zone 12, NAD83
Sources: Canvec

APPENDIX B – WIND TURBINE TECHNICAL SPECIFICATIONS

V136-4.2 MW™ IEC IIB/IEC S

Facts & figures

POWER REGULATION — Pitch regulated with variable speed

OPERATING DATA

Rated power	4,000 kW/4,200 kW
Cut-in wind speed	3 m/s
Cut-out wind speed	25 m/s
Re cut-in wind speed	23 m/s
Wind class	IEC IIB/IEC S

Standard operating temperature range from -20°C* to +45°C with de-rating above 30°C (4,000 kW)

*subject to different temperature options

SOUND POWER

Maximum	103.9 dB(A)**

**Sound Optimised modes dependent on site and country

ROTOR

Rotor diameter	136 m
Swept area	14,527 m²
Air brake	full blade feathering with 3 pitch cylinders

ELECTRICAL

Frequency	50/60 Hz
Converter	full scale

GEARBOX

Type	two planetary stages and one helical stage

TOWER

Hub heights	Site and country specific

NACELLE DIMENSIONS

Height for transport	3.4 m
Height installed (incl. CoolerTop®)	6.9 m
Length	12.8 m
Width	4.2 m

HUB DIMENSIONS

Max. transport height	3.8 m
Max. transport width	3.8 m
Max. transport length	5.5 m

BLADE DIMENSIONS

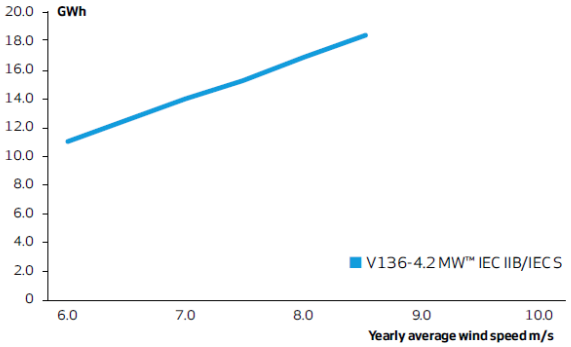
Length	66.7 m
Max. chord	4.1 m

Max. weight per unit for transportation	70 metric tonnes

TURBINE OPTIONS

- High Wind Operation
- 4.2 MW Power Optimised Mode (site specific)
- Load Optimised Modes down to 3.6 MW
- Condition Monitoring System
- Service Personnel Lift
- Vestas Ice Detection
- Low Temperature Operation to - 30°C
- Fire Suppression
- Shadow detection
- Increased Cut-In
- Aviation Lights
- Aviation Markings on the Blades
- Vestas InteliLight®

ANNUAL ENERGY PRODUCTION



Assumptions
One wind turbine, 100% availability, 0% losses, k factor = 2, Standard air density = 1.225, wind speed at hub height

APPENDIX C – COORDINATES OF WIND TURBINES AND TRANSFORMERS

Windy Point Project

WTG/Transformer ID	Easting [m]	Northing [m]	Sound Power Level (dBA)	Height (m agl)	Turbine Model	Rated Capacity (MW)
V-01	296825	5501447	103.9	105	Vestas V136	4.2
V-02	297104	5501156				
V-03	295690	5499864				
V-04	295676	5499464				
V-05	295046	5499636				
V-06	294405	5499898				
V-07	294381	5499521				
V-08	295731	5498926				
V-09	295909	5498520				
V-10	295884	5497767				
V-11	295798	5497281				
V-12	294540	5498306				
V-13 (alternate)	296069	5499597				
V-14 (alternate)	296147	5497549				
Transformer	294472	5496208	102.0	4.5	-	58 MVA

Coordinates in NAD83 UTM zone 12

V-13 and V-14 are alternate locations and might not be constructed.
V-01, V-02, V-03, V-04 and V-13 will be curtailed during the night time period for ground level wind speeds < 5 m/s.

Summerview Wind Farm – Phase 1 and 2

WTG/transformer ID	Phase	Easting [m]	Northing [m]	Sound Power Level (dBA)	Height [m agl]	Turbine Model	Rated Capacity (MW)
SV1	1	298714	5502304	104.4	67	Vestas V80	1.8
SV2		298865	5502068				
SV3		299017	5501833				
SV4		299170	5501598				
SV5		297409	5502214				
SV6		297522	5501947				
SV7		297634	5501679				
SV8		297747	5501413				
SV9		297861	5501145				
SV10		297973	5500878				
SV11		297349	5500748				
SV12		297465	5500522				
SV13		297581	5500293				
SV14		298354	5500701				
SV15		298500	5500462				
SV16		298646	5500223				
SV17		297698	5500067				
SV18		297814	5499840				
SV19		297931	5499613				
SV20		298792	5499984				
SV21		298938	5499745				
SV22		299083	5499506				
SV23		299229	5499267				
SV24		299286	5498765				
SV25		299432	5498526				
SV26		299578	5498287				
SV27		298465	5498320				
SV28		298617	5498084				
SV29		298769	5497850				
SV30		298921	5497614				
SV31		297344	5497429				
SV32		297461	5497174				
SV33		297585	5496906				
SV34		297697	5496667				
SV35		297815	5496413				
SV36		298256	5496040				
SV37		299377	5496910				
SV38		299225	5497144				
SV39		299073	5497379				
SV40	2	299824	5498040	107.0	80	Vestas V90	3.0
SV41		299971	5497808				
SV42		300118	5497575				
SV43		300590	5496969				

WTG/transformer ID	Phase	Easting [m]	Northing [m]	Sound Power Level (dBA)	Height [m agl]	Turbine Model	Rated Capacity (MW)
SV44		300760	5496752				
SV45		300930	5496535				
SV46		301092	5496317				
SV47		301461	5497347				
SV48		301618	5497114				
SV49		301775	5496882				
SV50		301932	5496649				
SV51		302088	5496417				
SV52		302252	5496178				
SV53		302412	5495946				
SV54		302270	5498833				
SV55		302330	5498567				
SV56		302390	5498302				
SV57		302449	5498036				
SV58		300825	5498154				
SV59		300982	5497921				
SV60		301139	5497689				
SV62		297226	5497683				
SV-TR1 (transformer)	N/A	298137	5496006	100.0	4.5	N/A	50 MVA each
SV-TR2 (transformer)		298117	5496007				
SV-TR3 (transformer)		298090	5496020				
SV-TR4 (transformer)		298090	5495997				

*Coordinates in NAD83 UTM zone 12

Old Man Wind Farm – Phase 1 and 2

WTG/transformer ID	Phase	Easting [m]	Northing [m]	Sound Power Level (dBA)	Height [m agl]	Turbine Model	Rated Capacity [MW]
OM1 A2	1	293513	5496875	104.4	67	Vestas V80	1.8
OM1 A1		292519	5495605				
OM2 1	2	292333	5495363	106.0	80	Siemens SWT 2.3-101	2.3
OM2 2		292391	5495099				
OM2 3		292778	5495852				
OM2 4		293133	5494605				
OM2 5		293153	5494366				
OM2 6		293210	5496290				
OM2 7		293216	5496622				
OM2 8		293283	5494147				
OM2 9		293704	5493977				
OM2 10		293885	5494583				
OM2 11		293803	5494843				
OM2 12		293813	5495133				
OM2 13		293824	5494347				
OM2 14		293948	5496324				
OM2 15		293920	5496516				
OM2 16		294556	5496280				
OM2 17		295195	5496531				
OM2 18		295115	5496223				
OM2 19		295553	5494213				
OM2 20		295580	5493827				
OM Transformer	N/A	294517	5496205	100.0	4.5	N/A	50 MVA

Coordinates in NAD83 UTM zone 12

Welsch Wind Farm

WTG/transformer ID	Easting [m]	Northing [m]	Sound Power Level (dBA)	Height [m agl]	Turbine Model	Rated Capacity (MW)
W1	293081	5503737	105.0	99	E126 EP4 m0	4.2
W2	293072	5503489				
W3	293058	5503241				
W4	293054	5502992				
W5	293585	5503729				
W6	293572	5503470				
W7	293572	5503209				
W9	293400	5502172	104.3	74	E101 E2 m0	3.5
W10	293560	5501711	105.0	99	E126 EP4 m0	4.2
W11	292911	5501742	103.5	99	E126 2500	2.5
W12	293076	5501521	104.3	74	E101 E2 m0	3.5
W16	294165	5500764	104.4	99	E126 3500	3.5
W17	294291	5500479	105.0	99	E126 EP4 m0	4.2
W18	291961	5500867	103.5	74	E101 3MW	3.0
W19	291961	5500452	103.2	99	E126 EP4 m2	4.2
W20	291853	5499936				
W21	292179	5499562	104.3	74	E101 E2 m0	3.5
W22	292476	5499252	102.8	74	E101 E2 2500	2.5
Transformer	294278	5500232	85.1	4.5	N/A	-

Coordinates in NAD83 UTM zone 12

Heritage Wind Farm (Night Time Operation)

WTG/transformer ID	Easting [m]	Northing [m]	Sound Power Level (dBA)	Height [m agl]	Turbine Model	Rated Capacity (MW)
H3	293086	5495661	105.9	80	V90 m1	3
H4	293077	5495391				
H6	293896	5495755	105.0		V90 m2	
H7	293886	5495485	105.9		V90 m1	
H10	294709	5495321	105.0		V90 m2	
H11	294698	5495054				
H18	295507	5495287				
H21	295477	5494477				
H25	296368	5494278				
H26	296478	5494037				
H31	297091	5494050				
H39	297911	5493904				
H55	302739	5495678				
H56	290093	5502615				
H57	290086	5502345				
H58	290081	5502075				
H59	290074	5501805				
H60	290745	5502596				
H61	290696	5502326				
H62	290728	5502056				
H71	290656	5499670				
H72	290763	5499421				
H73	290917	5499192				
H74	290832	5498835				
H75	291406	5501790				
H76	291461	5501579				
H77	291518	5501369				
H78	291459	5500983				
H79	291394	5500718				
H80	291365	5500448				
H82	291191	5499748				
H83	291448	5499278				
H84	291436	5498986				
H87	290718	5498132				
H88	290742	5497864	105.9		V90 m1	
H101	294504	5501031	105.0		V90 m2	
H102	294343	5501311				
H103	294142	5501680	105.9		V90 m1	
Hsub2	296374	5494040	105.0	4.5	N/A	200 MVA each
Hsub1	296334	5494040				

Coordinates in NAD83 UTM zone 12

APPENDIX D – SOUND POWER LEVEL OF THE VESTAS V136 4.2 MW WIND TURBINE

DMS no.: 0067-4732_00
Issued by: Technology
Type: T05

V136-4.0 MW
Third octave noise emission

Date 2017-07-24

Page 7 of 9

Frequency	Hub height wind speeds [m/s]																	
	3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s	13 m/s	14 m/s	15 m/s	16 m/s	17 m/s	18 m/s	19 m/s	20 m/s
6.3 Hz	18.4	16.4	17.8	20.4	23.6	26.4	27.1	27.3	28.1	29.4	30.4	31.0	31.7	32.2	32.7	33.1	33.5	33.8
8 Hz	19.4	18.7	21.7	25.7	30.0	33.7	34.7	34.8	35.3	36.1	36.7	37.1	37.4	37.7	38.0	38.2	38.4	38.6
10 Hz	25.7	24.9	27.9	31.9	36.2	39.9	40.9	41.0	41.5	42.3	42.9	43.3	43.7	44.0	44.2	44.5	44.7	44.9
12.5 Hz	34.0	33.1	35.9	39.7	43.8	47.3	48.3	48.5	49.0	49.9	50.5	50.9	51.4	51.7	52.0	52.3	52.5	52.7
16 Hz	41.0	40.3	42.8	46.3	50.1	53.5	54.4	54.6	55.0	55.7	56.3	56.6	57.0	57.3	57.5	57.7	57.9	58.1
20 Hz	45.5	44.9	47.7	51.5	55.5	59.1	60.1	60.2	60.7	61.3	61.9	62.2	62.5	62.8	63.0	63.2	63.4	63.6
25 Hz	52.6	52.0	54.4	57.9	61.7	65.1	66.0	66.2	66.6	67.2	67.7	68.1	68.4	68.6	68.9	69.0	69.2	69.4
31.5 Hz	55.5	54.1	56.6	60.2	64.1	67.6	68.5	68.7	69.4	70.5	71.3	71.9	72.4	72.9	73.3	73.7	74.0	74.3
40 Hz	58.9	59.3	61.9	65.5	69.4	72.9	73.8	73.9	74.0	74.2	74.3	74.4	74.4	74.5	74.5	74.5	74.5	74.5
50 Hz	64.3	64.2	66.6	70.0	73.7	77.0	77.9	78.0	78.2	78.6	78.9	79.0	79.2	79.3	79.4	79.5	79.5	79.6
63 Hz	73.1	72.2	72.8	74.9	77.4	79.8	80.5	80.6	81.0	81.7	82.2	82.5	82.8	83.1	83.3	83.5	83.7	83.8
80 Hz	76.2	77.0	77.5	79.4	81.8	84.1	84.7	84.7	84.6	84.4	84.3	84.1	84.0	83.9	83.7	83.6	83.5	83.3
100 Hz	73.7	73.3	75.1	78.0	81.3	84.3	85.1	85.2	85.6	86.1	86.4	86.6	86.9	87.0	87.2	87.3	87.4	87.5
125 Hz	79.3	77.5	78.0	79.9	82.5	84.8	85.4	85.6	86.3	87.3	88.1	88.7	89.2	89.7	90.1	90.4	90.7	91.0
160 Hz	77.4	79.1	80.5	83.1	86.1	88.8	89.6	89.5	89.2	88.6	88.1	87.8	87.4	87.1	86.8	86.5	86.2	86.0
200 Hz	76.5	77.3	79.4	82.6	86.1	89.3	90.1	90.1	90.1	90.0	89.9	89.9	89.8	89.7	89.6	89.5	89.4	89.3
250 Hz	79.3	78.3	80.2	83.4	86.9	90.0	90.8	91.0	91.5	92.3	93.0	93.4	93.8	94.1	94.4	94.7	94.9	95.1
315 Hz	82.4	81.4	82.3	84.6	87.4	89.9	90.6	90.7	91.2	91.9	92.4	92.8	93.1	93.4	93.7	93.9	94.1	94.2
400 Hz	74.8	76.4	79.4	83.2	87.3	90.9	91.9	91.8	91.6	91.3	90.9	90.7	90.4	90.2	89.9	89.7	89.5	89.3
500 Hz	74.4	76.1	79.5	83.7	88.1	92.0	93.0	93.0	92.8	92.4	92.1	91.9	91.6	91.4	91.2	91.0	90.8	90.6
630 Hz	77.0	77.4	80.2	83.9	87.9	91.4	92.4	92.4	92.5	92.7	92.9	92.9	93.0	93.0	93.1	93.1	93.1	93.1
800 Hz	77.1	78.6	81.2	84.7	88.5	91.9	92.9	92.8	92.6	92.3	91.9	91.7	91.5	91.2	91.0	90.8	90.6	90.4
1 kHz	83.1	82.9	84.3	86.9	89.9	92.6	93.4	93.5	93.7	94.0	94.3	94.4	94.6	94.7	94.8	94.8	94.9	94.9
1.25 kHz	78.9	80.6	83.2	86.7	90.5	94.0	94.9	94.9	94.6	94.2	93.8	93.5	93.2	92.9	92.6	92.4	92.1	91.9
1.6 kHz	77.9	79.3	82.0	85.7	89.6	93.1	94.1	94.0	93.9	93.6	93.3	93.1	92.9	92.7	92.5	92.4	92.2	92.0
2 kHz	76.6	77.7	80.4	84.1	88.1	91.6	92.6	92.6	92.6	92.5	92.3	92.2	92.1	92.0	91.9	91.8	91.7	91.6
2.5 kHz	74.7	75.8	78.7	82.6	86.6	90.3	91.2	91.2	91.2	91.0	90.9	90.8	90.6	90.5	90.4	90.3	90.1	90.0
3.15 kHz	72.6	73.3	75.9	79.6	83.5	87.0	87.9	87.9	88.0	88.1	88.1	88.1	88.1	88.0	88.0	88.0	87.9	87.9
4 kHz	70.9	70.5	72.5	75.6	79.0	82.1	83.0	83.1	83.4	83.9	84.3	84.6	84.8	85.0	85.2	85.3	85.4	85.5
5 kHz	62.3	62.2	64.9	68.5	72.5	76.0	76.9	77.0	77.3	77.8	78.1	78.3	78.5	78.6	78.8	78.9	78.9	79.0
6.3 kHz	60.2	57.9	59.1	61.6	64.7	67.4	68.1	68.3	69.2	70.6	71.6	72.4	73.1	73.7	74.2	74.7	75.1	75.5
8 kHz	60.9	59.3	57.8	58.0	59.1	60.3	60.6	60.7	61.2	62.0	62.6	62.9	63.3	63.6	63.9	64.1	64.3	64.5
10 kHz	59.3	59.6	57.2	56.5	56.8	57.4	57.5	57.5	57.4	57.1	56.9	56.7	56.5	56.3	56.2	56.0	55.8	55.7
A-wgt	90.6	90.9	92.9	96.1	99.7	103.0	103.9	103.9	103.9	103.9	103.9	103.9	103.9	103.9	103.9	103.9	103.9	103.9

Table 3: V136-4.2MW PO1, expected 1/3 octave band performance, (Blades with serrated trailing edge)

APPENDIX E – AWSL INSTRUMENTATION PICTURES

Receptor J facing southeast

Receptor J facing northeast

Receptor J facing southwest

Receptor J facing northwest

APPENDIX F – AWSL INSTRUMENTATION CALIBRATION SHEET

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

Manufacturer:	Larson Davis	Temperature:	74.2	°F
Model Number:	831		23.44	°C
Serial Number:	3142	Rel. Humidity:	45.4	%
Customer:	TMS Rental	Pressure:	995.4	mbars
Description:	Sound Level Meter		995.4	hPa

Note: As Found / As Left: In Tolerance

Upon receipt for testing, this instrument was found to be:

Within the Stated tolerance of the manufacturer's specification

Calibration Date: 13-Jan-17 Calibration Due:

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due
Stanford Research Systems	DS360	123270	4/19/2017
Larson Davis	2239	109	4/22/2017

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Andy McGuire Signature:

THE MODAL SHOP
A PCB GROUP CO.

3149 East Kemper Road Cincinnati, OH. 45241
Phone: (513) 351-9919
(800) 860-4867 www.modalshop.com

PRD-F242 revNR December 2, 2008

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~ Certificate of Calibration and Compliance ~

Microphone Model: 377B02 Serial Number: 171112 Manufacturer: PCB

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	PCB Control #	Cal Date	Due Date
National Instruments	PCIe-6351	1896F08	CA1918	10/25/16	10/25/17
Larson Davis	PRM915	150	CA2116	5/4/16	5/4/17
Larson Davis	PRM902	4186	CA1083	1/13/17	1/12/18
Larson Davis	PRM916	126	CA873	10/11/16	10/11/17
Larson Davis	CAL250	4118	LD018	8/4/16	8/4/17
Larson Davis	2201	145	CA2046	5/19/16	5/19/17
Bruel & Kjaer	4192	2764626	CA1636	7/18/16	7/20/17
Larson Davis	GPRM902	3999	CA1090	8/25/16	8/25/17
Newport	iTHX-SD/N	1080002	CA1511	2/14/17	2/14/18
Larson Davis	PRA951-4	241	CA1449	10/11/16	10/11/17
Larson Davis	PRM915	122	CA865	11/18/16	11/17/17
0	0	0	0	not required	not required
0	0	0	0	not required	not required
0	0	0	0	not required	not required
0	0	0	0	not required	not required

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found: n/a

As Left: New Unit, In Tolerance

Notes

1. Calibration of reference equipment is traceable to one or more of the following National Labs; NIST, PTB or DFM.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540.3 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Open Circuit Sensitivity is measured using the insertion voltage method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-20.

Technician: Leonard Lukasik Date: March 7, 2017

ACCREDITED

CALIBRATION CERT #1562.01

PCB PIEZOTRONICS VIBRATION DIVISION

3425 Walden Avenue, Depew, New York, 14043

TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

ID:CAL112-357173514B.317+0

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THE MODAL SHOP INC
A PCB GROUP CO.

~Calibration Certificate~

3149 East Kemper Rd.
Cincinnati, OH 45241
Ph : 513-351-9919
Fax: 513-458-2172
www.modalshop.com

Manufacturer:	Larson Davis	Asset ID:	
Model:	CAL200	Calibration Date:	Apr 04, 2017 10:45:16
Serial Number:	8048	Due Date:	
Description:	Acoustic Calibrator	Technician:	Ed Devlin
Customer:	TMS Rental	Approval:	

Calibration Results:

Measured SPL : 113.92 dB re. 20µPa

Measured Frequency : 1,000.00 Hz

Temperature:	24 °C (75 °F)
Humidity:	46.60%
Pressure:	983.9 mbar

Upon receipt for calibration, the instrument was found to be:
WITHIN the stated tolerance of the manufacturer's specification.

Note: **As Found / As Left: In Tolerance.**

Measurement uncertainty at 95% confidence level: 0.25 dB

The subject instrument was calibrated to the indicated specification using standards stated below or to accepted values of natural physical constants. This document certifies that the instrument met the following specification

This calibration is traceable through : 683/284413-14

Notes:
The calibration was performed under operating procedures intended to implement the requirements of ISO 9001, ISO 17025 and ANSI Z540. Unless otherwise noted, the reported value is both "as found" and "as left" data. Calibration results relate only to the items calibrated. This certificate may not be reproduced, except in full, without written permission.

Reference Equipment Used:

Manuf.	*Model*	*Serial*	*Cal. Date*	*Due Date*
GRAS	40AG	9542	9/20/2016	9/20/2017

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APPENDIX G – AWSL ANALYSIS DETAILS

Statistical test according to Appendix 9 of Rule 012 to determine number of valid samples, with a 90 percent confidence interval of ± 3 dB on mean result.

Number of L90 10min records

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	73	20	14	97
2	122	6	4	237
3	21	0	3	192
4	23	0	8	146
5	12	0	1	47

Standard deviation of L90 10min records

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	2.69	2.72	3.89	3.03
2	2.83	1.96	1.72	2.94
3	2.11		1.01	3.19
4	1.14		1.04	2.18
5	0.92			1.73

Blank cell: wind speed/wind direction bin with insufficient samples

Chi-Square

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	57.11	11.65	7.04	78.73
2	101.54	1.61	0.58	208.62
3	12.44		0.21	166.42
4	14.04		2.83	123.65
5	5.58			34.22

Blank cell: wind speed/wind direction bin with insufficient samples

S_{upper}

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	3.02	3.47	5.28	3.35
2	3.09	3.45	3.90	3.13
3	2.68		3.13	3.41
4	1.42		1.63	2.37
5	1.29			2.01

Blank cell: wind speed/wind direction bin with insufficient samples

Minimal number of samples

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	3	4	8	3
2	3	4	5	3
3	2		3	4
4	1		1	2
5	1			1

Blank cell: wind speed/wind direction bin with insufficient samples

Pass / Fail

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	PASS	PASS	PASS	PASS
2	PASS	PASS	FAIL	PASS
3	PASS	FAIL	PASS	PASS
4	PASS	FAIL	PASS	PASS
5	PASS	FAIL	FAIL	PASS

Valid L90 bin average (dBA)

Wind speed (m/s) / wind direction (degrees)	0	90	180	270
1	27.7	27.2	27.4	27.0
2	30.4	33.5	N/A	28.1
3	33.0	N/A	28.7	30.8
4	36.8	N/A	31.6	33.9
5	38.7	N/A	N/A	36.7

APPENDIX H – PRACTITIONER BIOGRAPHY

Shant Dokouzian, P.Eng., Manager of Acoustical Services / Principal Engineer

Shant Dokouzian is a professional engineer and project manager with 20 years of experience, including 10 years in the wind industry. He is familiar with the entire lifecycle of project development having been instrumental in his role as owner's engineer for various Canadian and International Projects, currently in operation. For the past 6 years, Mr. Dokouzian has been managing DNV GL's acoustical engineering services and social impact technical studies. He is regularly called upon as a subject matter expert in acoustic compliance, shadow flicker, ice throw, and wind turbine failures, where he has testified at Environmental Review Tribunals in Ontario and hearings throughout North America. He has overseen over 75 pre-construction noise assessments and managed the acoustic measurement campaigns at more than 20 sites.

Appendix H: Flicker Assessment

BORALEX

Alberta Wind Energy Corporation

Renewable Energy for future generations

Windy Point Wind Farm

-

Flicker Impact Assessment

December 2017

Table of Contents

List of Figures

1 Introduction

The Windy Point Wind Farm project (the Project) is being developed by Windy Point Wind Farm Ltd. (WPWPL), owned in partnership by Boralex Inc. and Alberta Wind Energy Corporation (AWEC). The Project is located in Municipal District of Pincher Creek, Alberta (the "Municipality"), approximately 13km north-East of the town of Pincher Creek.

The proposed Project consists of up to 14 wind turbines (see Figure 1). The Project is located next to four existing wind farms (see Figure 2): Oldman 1 (2 turbines), Oldman 2 (20 turbines), Summerview 1 (39 turbines) and Summerview 2 (22 turbines).

As required for the Municipal District of Pincher Creek application for a wind farm development permit, the purpose of this report is to present the predicted impact of shadow flicker on area dwellings from the proposed Project, using simulated cases considering both the real case and worst case scenarios.

There is currently no Provincial or Municipal regulation or guidelines regarding the shadow flicker from wind farms. WPWPL is relying on standards and guidelines from other jurisdictions around the world for this study.

The methodology and parameters used in the analysis are presented in the next sections.

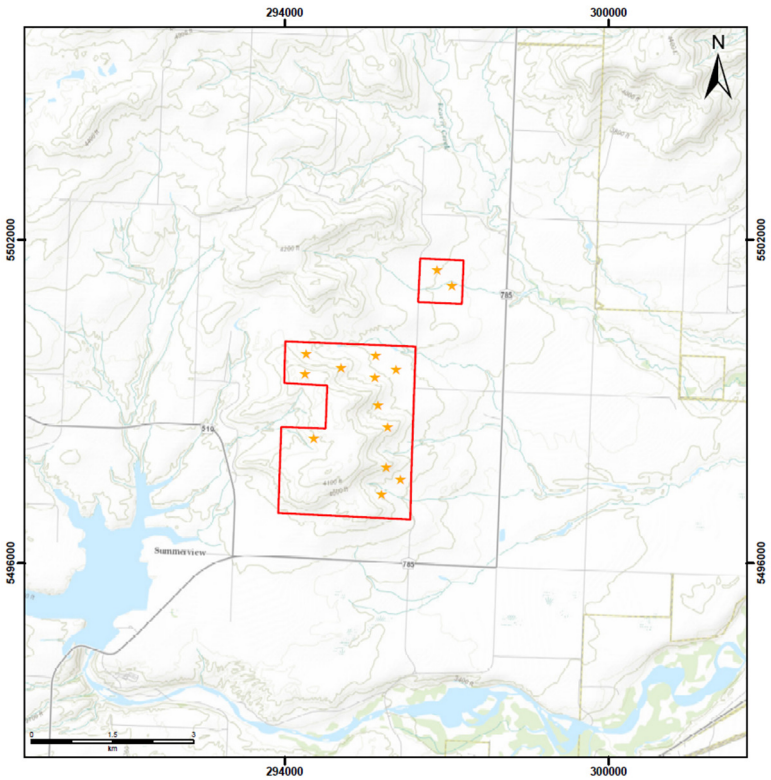


Figure 1: Wind Point Wind Farm - Project Location

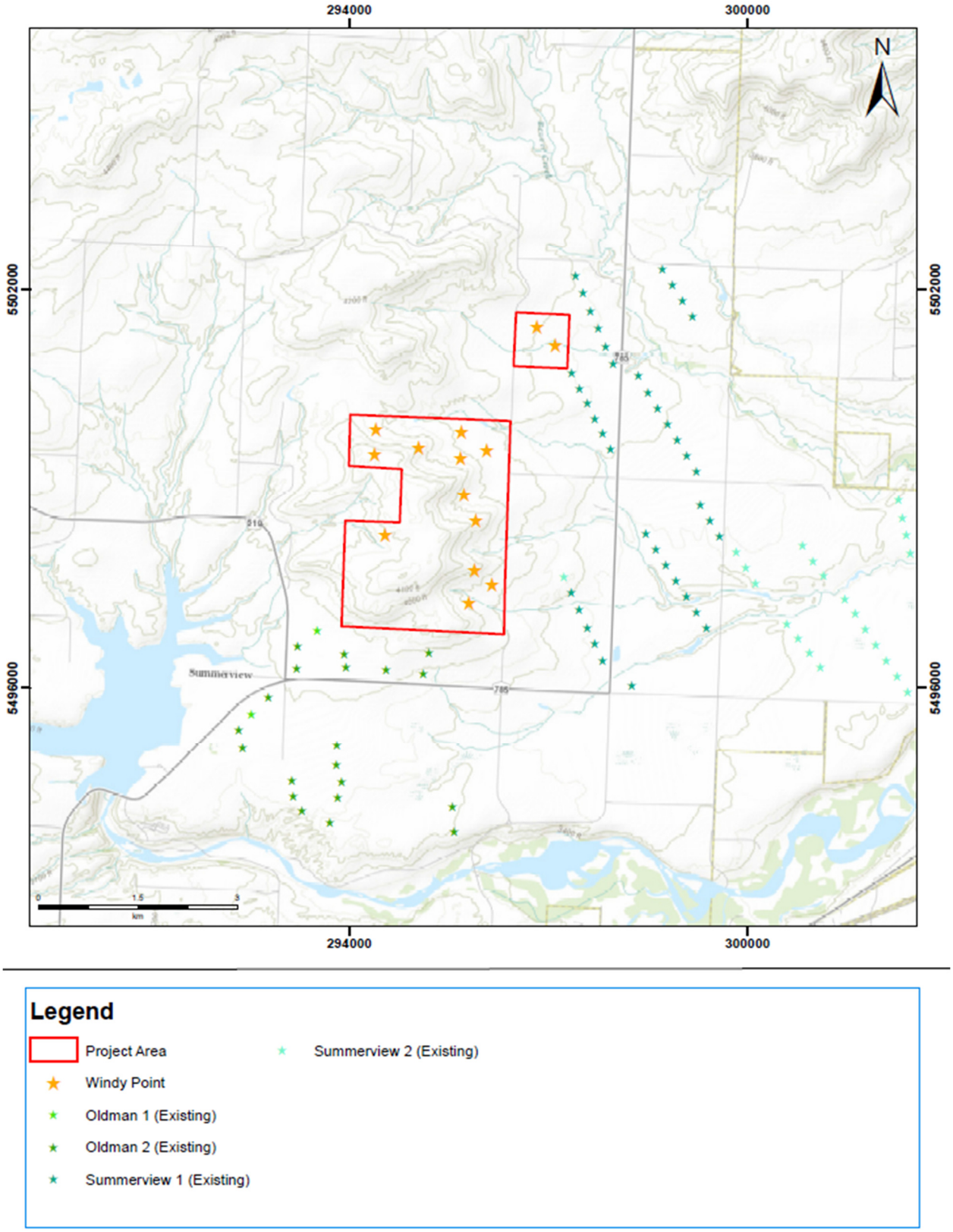


Figure 2: Windy Point Wind Farm and Existing Projects

2 Shadow Flicker

2.1 OVERVIEW

Shadow flicker occurs on a dwelling when the wind turbine rotor is directly between the line-of-sight of the sun rays and the windows of the dwelling (Figure 3). More precisely, this phenomenon appears once the blades are rotating, which creates an intermittent light reduction.

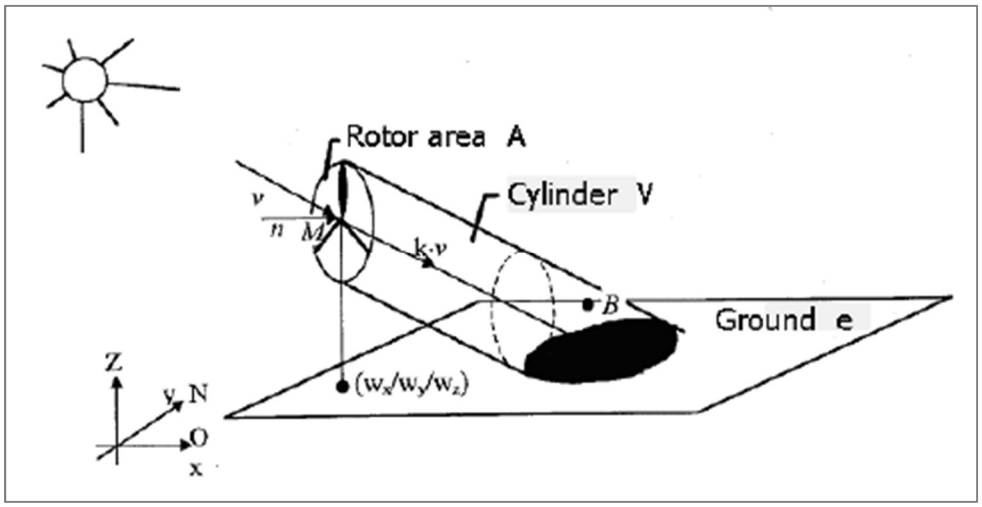


Figure 3: Illustration of Shadow Flicker[1]

The impact of shadow flicker can differ through a same day since the sun height is low during sunrise and sunset and higher the rest of the day. That's why shadow flicker is observed only during specific and short periods. For similar reasons, the impact from shadow flicker differs throughout the year.

Although an unlikely case, it's standard practice to evaluate the shadow flicker in a "worst-case" scenario. The worst case scenario considers that:

- The sun is shining all day with no disturbance from clouds or fog;
- The sun rays, the turbine rotor and the windows are in the same line-of-sight all day long;
- The wind is blowing all day, which means that wind turbines are always operating;
- The dwelling is composed only of windows (like a green house);
- There is no light obstruction from obstacles (existing turbines, trees, other buildings, etc);
- There is no light obstruction from topography;

[1] Source: windPRO Manual 2016, Section 6. Environment.

Moreover, the shadow flicker intensity is not considered. Thus, even if the shadow is too weak to be observable, the period of flicker will be recorded.

The results of the "worst-case" scenario is presented in this analysis, but needs to be considered as information only since, as discussed previously, it represents a situation which is not possible in reality.

2.2 ATTENUATION FACTORS

The main results presented in this report are based on a "real-case" scenario, and is more representative of what may occur in reality once the wind farm is in operation. The following sub-sections discuss a variety of attenuation factors that may be used to create a "real-case" simulation.

2.2.1 FLICKER OCCURENCE

The occurrence of the shadow flicker can be modelled by considering the following factors:

- The sunshine/cloudiness data of the project region;
- The wind data of the project region, allowing to consider the real direction of the turbine rotor and the period when the turbine doesn't rotate;
- The presence of obstacles like existing wind turbines, trees or buildings;
- The topography of the site which could create a natural shadow (Figure 4);
- The external configuration of the dwellings (direction of building faces, number and size of the windows);
- The internal configuration of the dwellings (size and location of the rooms);
- The physical obstacles inside the dwellings (curtains, blinds…).

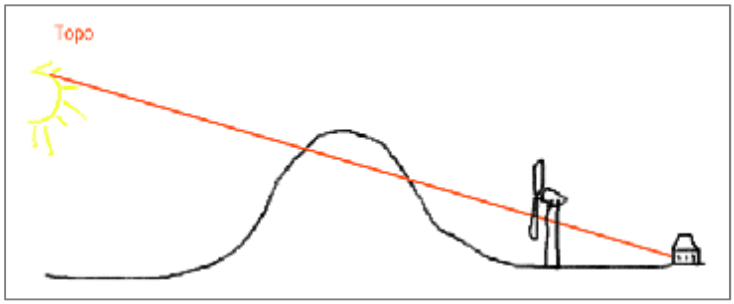


Figure 4: Illustration of Topographic Shadow[2]

[2] Source: windPRO Version 3.1, Shadow calculation module.

2.2.2 FLICKER INTENSITY

As previously explained, flicker intensity is not considered in a shadow flicker assessment. However, a reduction of the intensity is a phenomenon that could occur, reducing the impact of the observed flicker. The following factors may cause a reduction of the flicker intensity:

- Meteorological conditions decreasing the outside visibility (for example: fog);
- Luminosity inside the dwelling. (i.e. the impact of flicker depends on the interior lighting of a room);
- The distance of the flickering wind turbines. Farther will be a flickering turbine, less intense will be the shadow;
- The presence of a partially transparent obstacle. Such obstacle may not avoid flicker but could reduce the intensity.

2.2.3 FUTURE ATTENUATION FACTORS

Future attenuation factors can be voluntarily included in the assessment. It's not possible to quantify these factors in this analysis, but can be considered as possible attenuation measures during the life of the Project:

- Growth and/or planting of new vegetal obstacles like trees;
- Construction of new buildings which can be considered obstacles;
- Adding of blinds in windows.

2.2.4 MODELLED FACTORS

There are a number attenuation factors that can potentially be used in the assessment of shadow flicker, however only three of these factors have been included in this study. For this reason, the modelled “real-case” scenario in this study is considered a conservative estimate.

The attenuation factors used in this study are:

- The sunshine/cloudiness data of the project region;
- The wind data of the project region, allowing to consider the real direction of the turbine rotor and the period when the turbine doesn’t rotate;
- The topography of the site. The presence of a hill in the surrounding creates a natural obstacle.

Factors regarding possible obstacles and configuration of the dwellings haven’t been considered.

3 Methodology and Parameters

3.1 LAYOUT AND TURBINE MODEL

WPWPL has chosen the Vestas V136 4.2 MW turbine for the Project. The Project layout will consist of 12 turbines with 2 alternative locations. This analysis will demonstrate the impact from the higher number of locations under consideration (14), thereby illustrating a worst - case scenario impact.

Therefore, the layout considered in the shadow flicker assessment consists of 14 Vestas V136 wind turbines at 105m hub height, 136m blade diameter and 173m total height.

The 14 turbine Project layout has been designed considering all the natural, environmental and regulatory setbacks. The turbines will be located to best fit in the remaining buildable area outside of these constraints, where the wind resource is the best.

In a shadow flicker assessment, the most relevant turbine specifications are the dimensions, the cut-in/cut-out wind speeds and the rotor speed. The turbine dimensions allow for the calculation of the flicker impact, the wind speeds allow to simulate when the turbines will be operating (in "real case") and the rotor speed will allow for the calculation of the frequency of the flicker. The specifications for each analysed turbine model are given in the following table. This information has been provided by the turbine suppliers.

Table 1: Turbine Specifications

	Vestas V136
Rotor Diameter (m)	136
Hub Height (m)	105
Total Height (m)	173
Cut-In Wind Speed (m/s)	3
Cut-Out Wind Speed (m/s)	25
Rotor Speed (RPM)	14

The turbine coordinates (UTM Zone 12 NAD83) are summarised below:

Table 2: Turbine Coordinates

Turbine	Easting [m]	Northing [m]
V-01	296825	5501447
V-02	297104	5501156
V-03	295691	5499864
V-04	295677	5499465
V-05	295046	5499637
V-06	294405	5499899
V-07	294381	5499521
V-08	295731	5498927
V-09	295910	5498520
V-10	295885	5497768
V-11	295799	5497281
V-12	294540	5498306
V-13	296069	5499597
V-14	296147	5497549

3.2 SHADOW RECEPTORS

The shadow flicker receptors for the study consist of dwellings (permanent, semi-permanent and seasonal) surrounding the Project area.

As requested by the Municipality, the standard distance of 2.0 km from the Project boundary is used to select the impacted receptors. However, to give a larger representation, some of the receptors considered for the study are beyond this distance.

The shadow receptors are summarised and illustrated in the table and the figure below:

Table 3: Receptor Coordinates

Receptor	Easting [m]	Northing [m]
A	296493	5495845
C	293335	5497647
D	293044	5498536
E	293200	5497862
F	293000	5498290
G	293309	5499454
H	292928	5499144
I	292964	5500339
J	296385	5500500
K	297477	5498703
L	297605	5498805
M	295809	5501669
N	296796	5502715
O	298042	5502330
Q	299349	5495972
R	299254	5503667
S	298187	5504141
T	296465	5503756
U	291974	5502778
V	296475	5495926
W	296402	5503710
X	292896	5495315

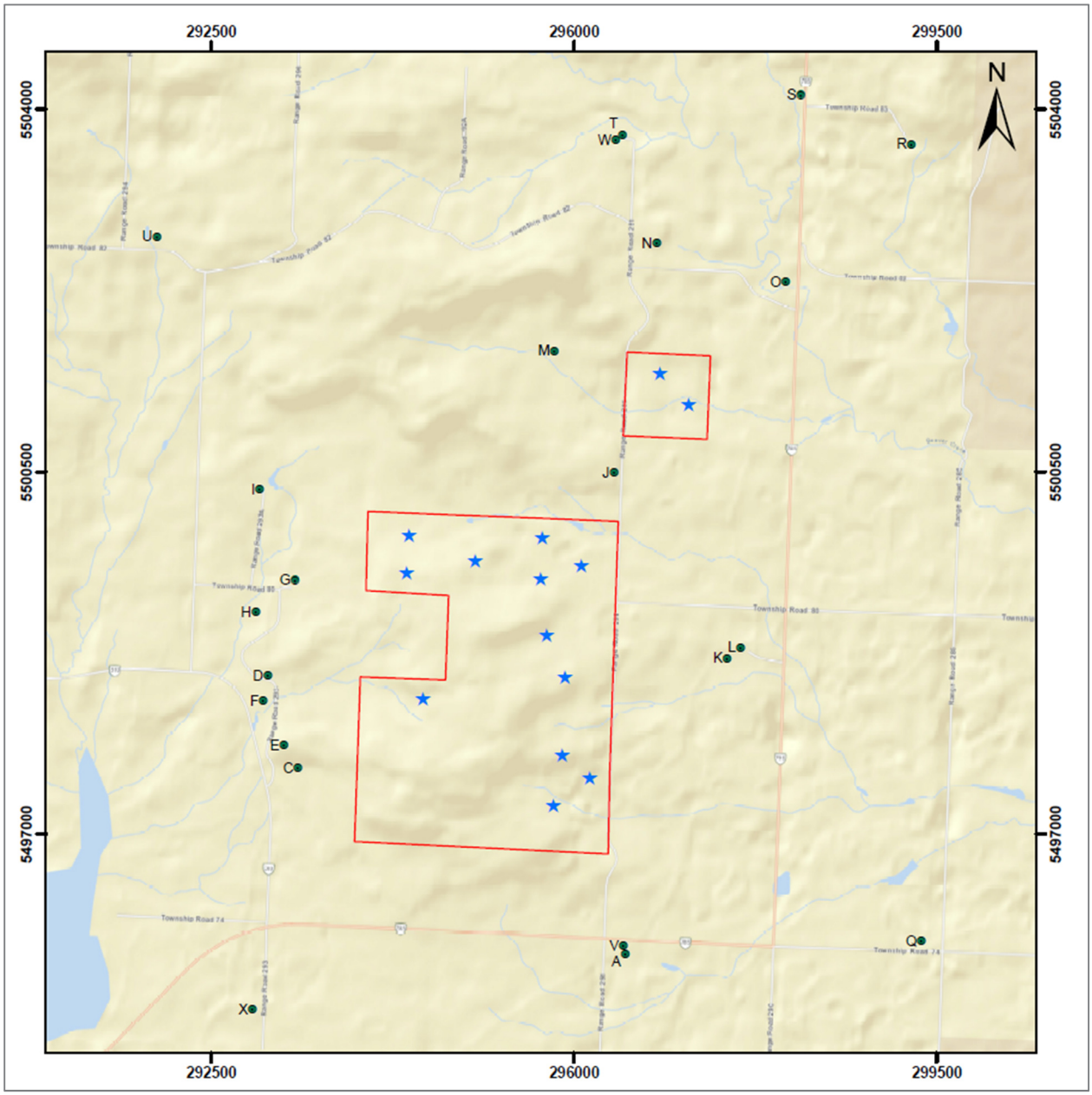


Figure 5: Shadow Receptor Locations

3.3 MODEL PARAMETERS

The initial model parameters are based on the "worst-case" scenario, using the hypothesis discussed in the Section 2.1. In this scenario, there are no obstacles to the sun rays and the receptors are considered transparent (equivalent to greenhouses).

The aim of this study is to present results for a "real-case" scenario, which is representative, yet conservative. In this case, Bright Sunshine data and Wind data have been used to simulate realistic meteorological conditions to adjust the simulation model.

3.3.1 BRIGHT SUNSHINE DATA

The inclusion of Bright Sunshine data allows the model to calculate the probability of sunny or cloudy days during the year and thus, calculates the probability of flicker.

Existing meteorological stations can be used to obtain sunshine data. In this study, data from the Canadian Climate Normals database[3] has been used. For this study, the most relevant weather station is the Lethbridge CDA station, located approximately 70km North-East from the proposed wind farm.

The database gives the average total number of sunny hours per month for the measured period from 1971 to 2000. The number of sunny hours per day has been incorporated into the modelled simulation.

Table 4: Bright Sunshine Data

	Total Hours	Hours/Day
January	92,3	2,98
February	116	4,14
March	149,6	4,83
April	204,7	6,82
May	256,9	8,29
June	296,2	9,87
July	334,3	10,78
August	292,8	9,76
September	197,8	6,59
October	166,1	5,54
November	110,3	3,68
December	83,7	2,7

3.3.2 WIND DATA

Historical wind data, which includes wind speed and direction, impact the shadow flicker calculation. Wind speed is used to simulate the occurrence of turbine rotation, based on the turbine manufacturers cut-in/cut-out specifications. Wind direction is used to simulate the

[3] http://climate.weather.gc.ca/climate_normals/

turbine rotor direction and its position in relation to the line-of-sight between the sun and the receptor.

An 80m meteorological mast was installed at the Project site in 2010. The wind data from this tower has been used for this analysis. 10-min wind speed and direction data has been used for the simulation. The following figure provides the expected wind frequency distribution:

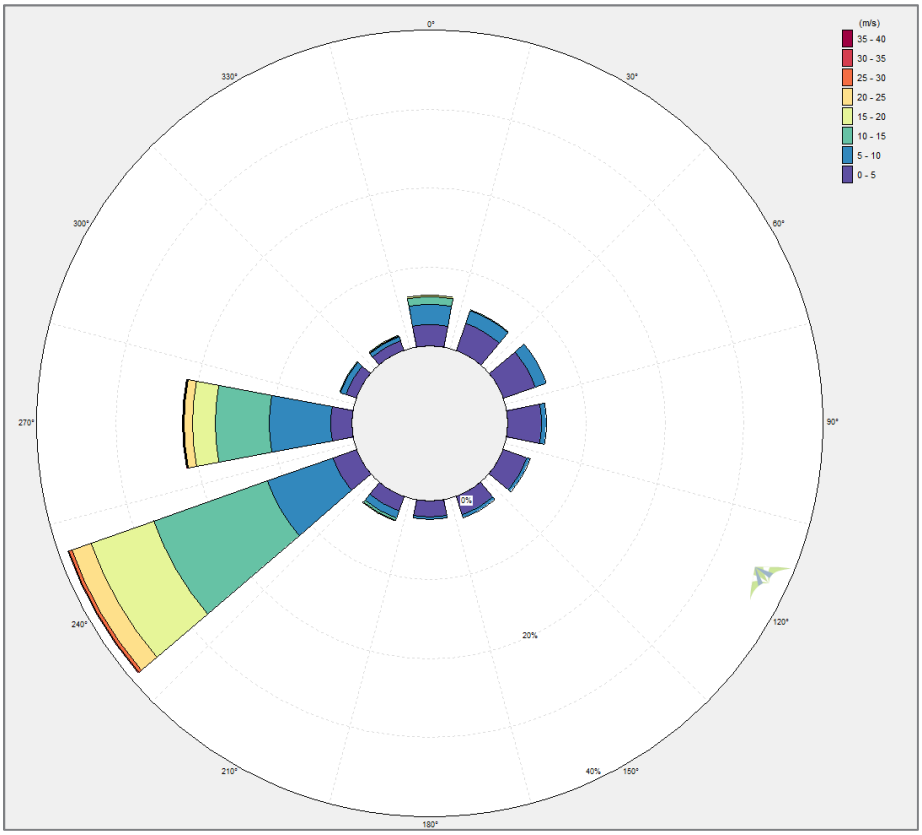


Figure 6: Windy Point Wind Frequency Distribution at 80m (From 2010 to 2017)

3.4 COMPUTER SIMULATION

The shadow flicker simulation has been developed using windPRO, version 3.1 software. This software, developed by EMD International A/S, is specialized for this application and is a standard software package used extensively in the wind power industry. The software consists of several modules including one specific for the development of shadow flicker assessments.

To simulate shadow flickers with windPRO software, the following information and data is required:

- Coordinates and specifications of the dwellings;
- Coordinates and specifications of the proposed wind turbines;
- Coordinates and specifications of surrounding wind turbines, if any;

- Flicker scenario (worst or real case);
- Specific year;
- Wind speed and direction data (if real case);
- Sunshine probability data (if real case);
- Height contour lines (if topographic shadow used);
- Obstacles coordinates and size, if any.

This data is necessary to simulate the different phenomenon described in the Section 2.

The specific year is used to know which sun course is simulated by the software. For this analysis, the year 2017 has been used. A quick sensitivity study has shown that there is no significant change on results from one year to another.

The flicker calibration and simulation is developed using two steps, which are briefly explained below.

3.4.1 SHADOW RECEPTOR INFORMATION

The first step is to enter all the information about the shadow receptor. The coordinates and configuration of the dwellings are specified. Specific details about windows can be added, or the "Green house" mode can be used. As illustrated in the following figure, the "Green house" mode was used for this study.

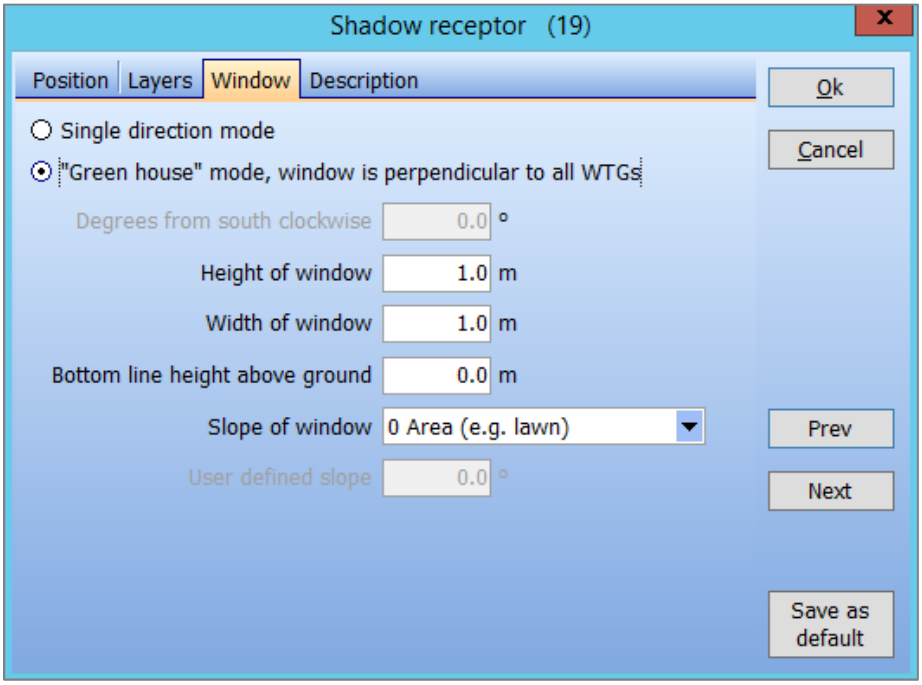


Figure 7: windPRO – Shadow Receptor Information

3.4.2 SIMULATION PARAMETERS

The second step is to choose all other parameters including the simulated scenario (Figure 8), the meteorological conditions (Figure 9) and the obstacles/topography specifications (Figure 10), if any.

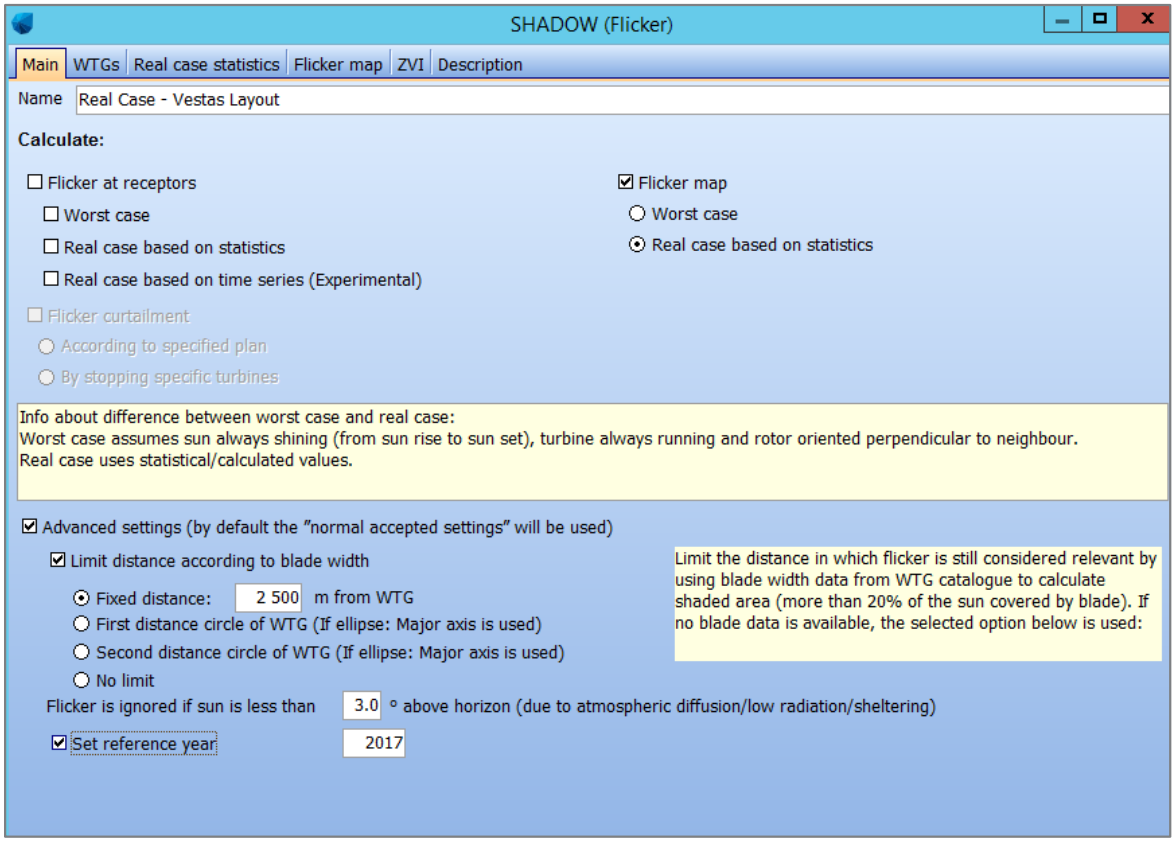


Figure 8: windPRO - Shadow Scenario Specifications

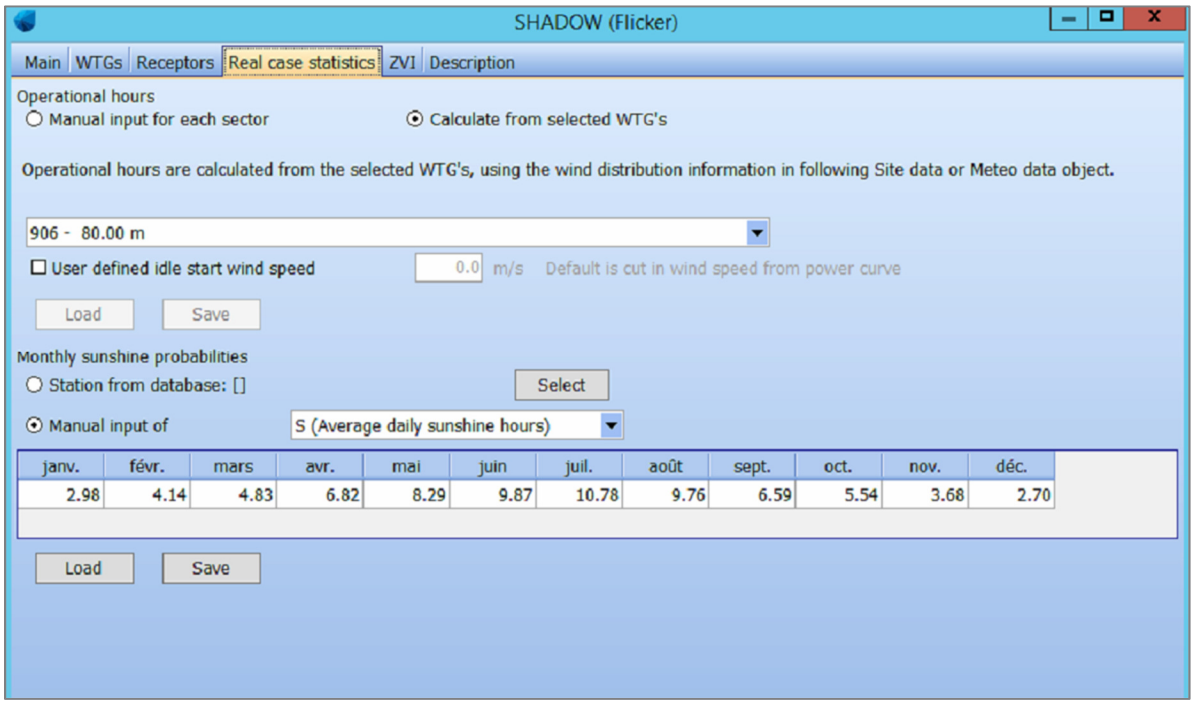


Figure 9: windPRO - Meteorological Data

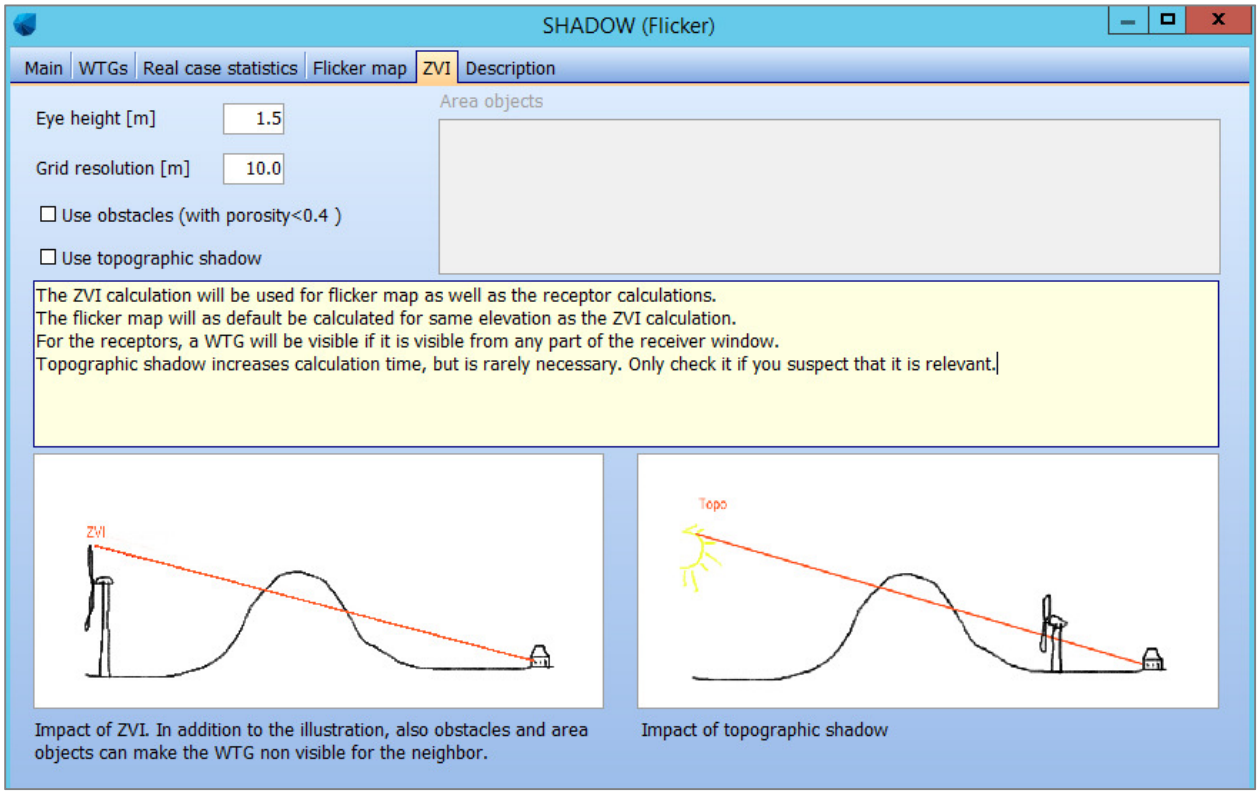


Figure 10: windPRO - Obstacle and Topography Specifications

4 Results

Results are presented in several formats:

1. Overview tables for each receptor, including the possible number of flicker days during a year, the possible maximum duration of a flicker episodes per day and the total amount of flicker hours during a year (worst-case and real-case). Results are presented for Windy Point only and Windy Point with existing wind farms;

2. A map illustrating of the total amount of flicker hours during a year (real-case) for the project area. The map is presented for Windy Point only;

3. A graphical calendar (real-case) of the possible period of shadow flicker during the year from each Turbine for Windy Point Only. (Appendix A)

Table 4: Shadow Flicker Results – Windy Point Only

Receptor Name	Shadow days per year [days]	Max Shadow hours per day [hh:mm]	Real Case	Worst Case	Nearest Windy Point Turbine [m]
			Shadow hours per year [hh:mm]		
A	0	00:00	00:00	00:00	1594
C	31	00:17	00:00	07:07	1370
D	49	00:21	02:15	08:41	1512
E	50	00:23	02:16	13:24	1413
F	52	00:26	02:58	09:12	1540
G	175	00:43	16:45	57:44	1076
H	158	00:22	13:35	37:35	1504
I	56	00:20	02:47	12:50	1511
J	136	00:38	15:28	57:01	943
K	254	00:23	15:07	64:56	1571
L	220	00:25	14:36	52:36	1724
M	58	00:27	03:18	13:14	1039
N	0	00:00	00:00	00:00	1268
O	69	00:26	03:53	14:29	1502
Q	48	00:08	00:46	02:47	3568
R	0	00:00	00:00	00:00	3293
S	0	00:00	00:00	00:00	3015
T	0	00:00	00:00	00:00	2337
U	0	00:00	00:00	00:00	3766
V	0	00:00	00:00	00:00	1511
W	0	00:00	00:00	00:00	2302
X	0	00:00	00:00	00:00	3412

Table 5: Shadow Flicker Results – Windy Point with Existing wind farms[4]

Receptor Name	Shadow days per year [days]	Max Shadow hours per day [hh:mm]	Real Case	Worst Case	Nearest Windy Point Turbine [m]
			Shadow hours per year [hh:mm]		
A	71	00:16	03:43	13:00	1594
C	31	00:17	00:00	07:07	1370
D	49	00:21	02:15	08:41	1512
E	50	00:23	02:16	13:24	1413
F	52	00:26	02:58	09:12	1540
G	175	00:43	16:45	57:44	1076
H	158	00:22	13:35	37:35	1504
I	56	00:20	02:47	12:50	1511
J	162	00:38	15:34	58:30	943
K	275	00:23	15:11	68:48	1571
L	245	00:25	14:55	59:04	1724
M	58	00:27	03:18	13:14	1039
N	73	00:23	01:54	15:46	1268
O	197	00:40	18:13	67:50	1502
Q	68	00:16	01:44	06:13	3568
R	0	00:00	00:00	00:00	3293
S	0	00:00	00:00	00:00	3015
T	0	00:00	00:00	00:00	2337
U	0	00:00	00:00	00:00	3766
V	94	00:16	04:00	12:55	1511
W	0	00:00	00:00	00:00	2302
X	198	00:57	20:37	78:30	3412

[4] Existing wind farms include Oldman 1, Oldman 2, Summerview 1 and Summertview 2.

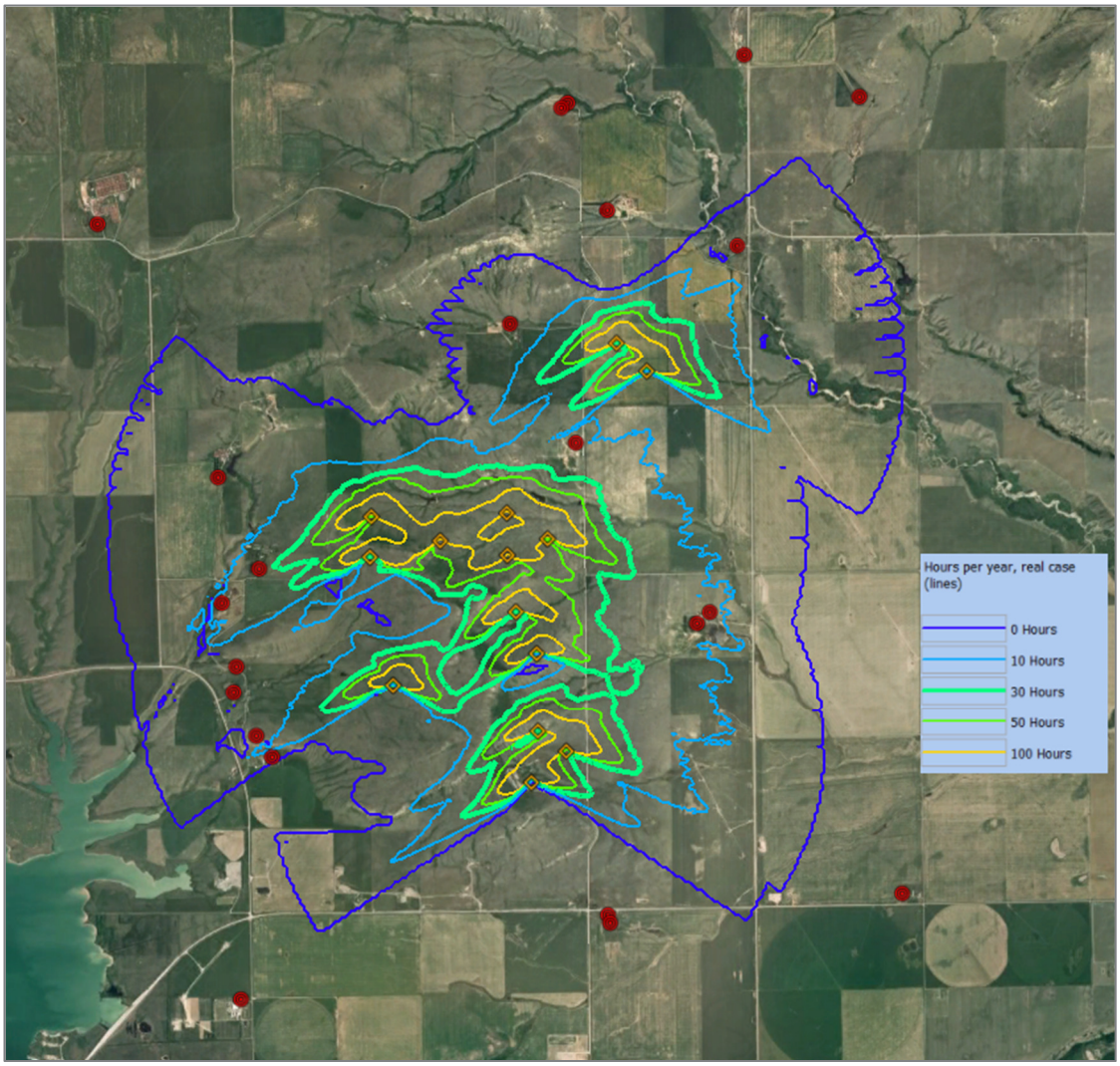


Figure 11: Shadow Flicker Map for Windy Point Only (Real-Case)

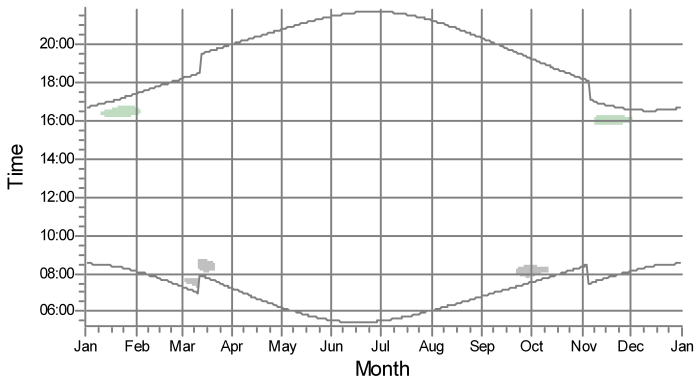
Appendix A – Shadow Flicker Calendar

Licensed user:
Boralex Inc.
36 Lajeunesse Street Box 308
CA-KINGSEY FALLS Quebec J0A 1B0
(819) 363 5873
Boralex / blx.windpro@boralex.com

SHADOW - Calendar per WTG, graphical

Calculation: Real Case with Topo - 14 x V136 4.2MW @105m

1: V-01



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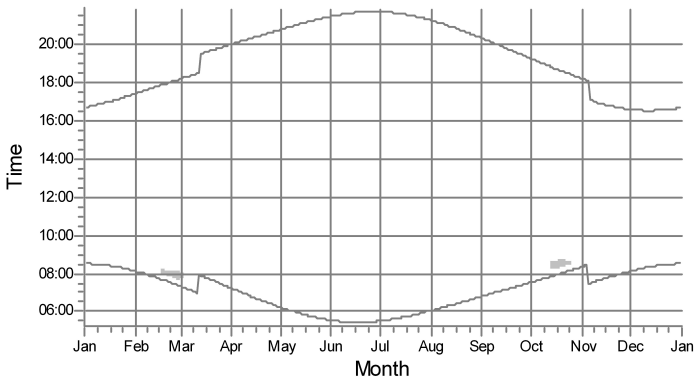
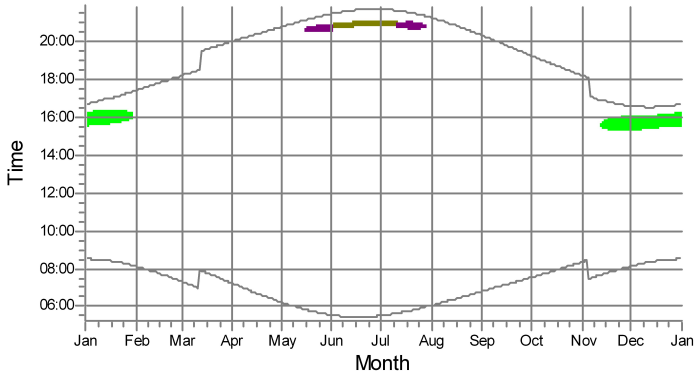
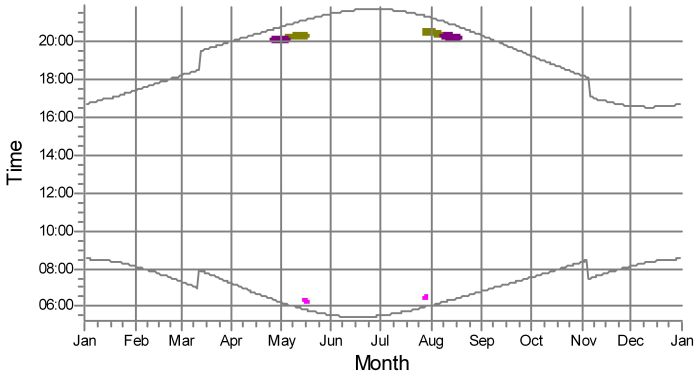


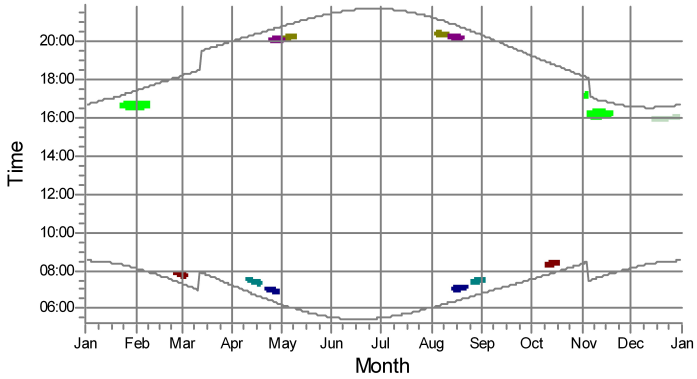
3: V-03



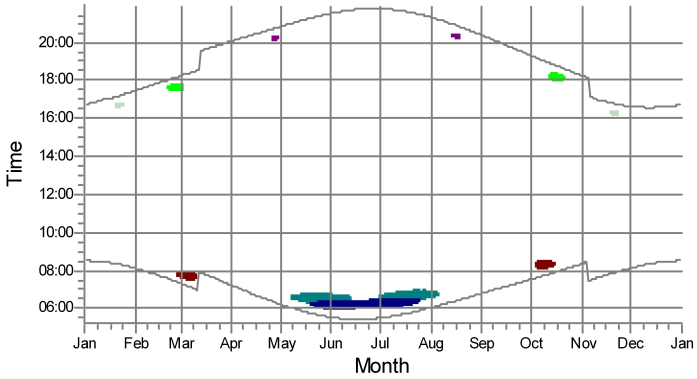
4: V-04



5: V-05



6: V-06



Shadow receptors

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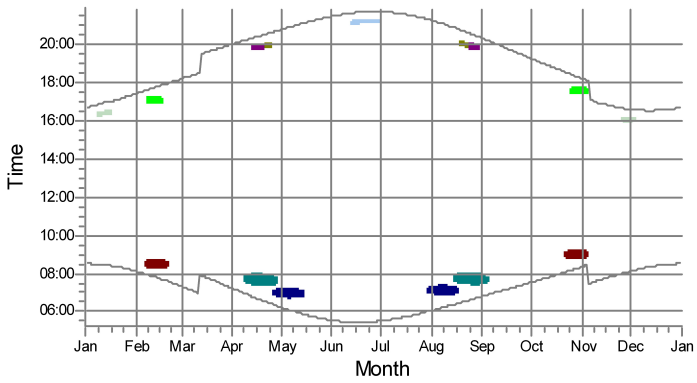
(819) 363 5873
Boralex / blx.windpro@boralex.com

Calculated:
2017-12-22 09:15/3.1.617

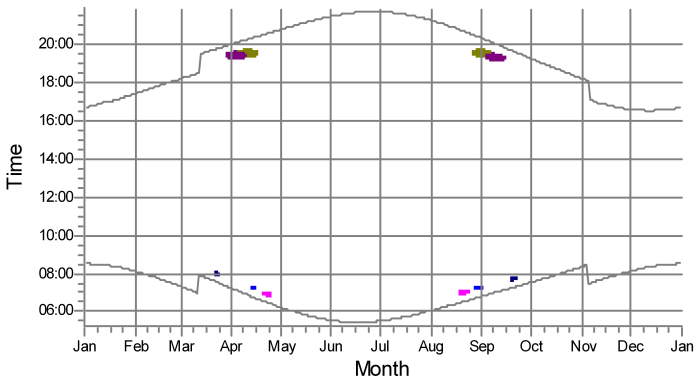
SHADOW - Calendar per WTG, graphical

Calculation: Real Case with Topo - 14 x V136 4.2MW @105m

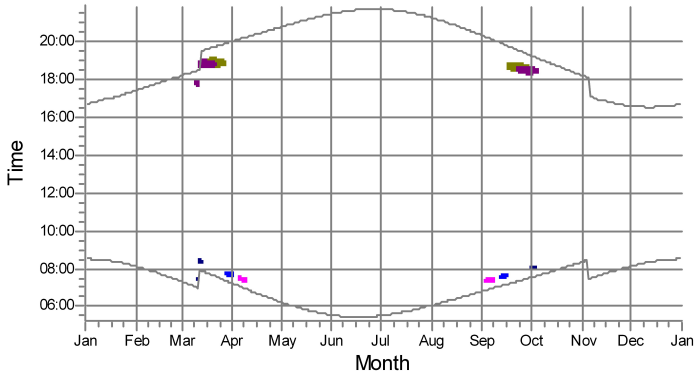
7: V-07



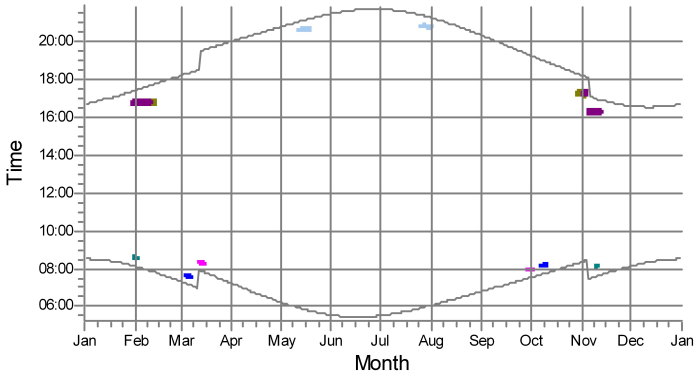
8: V-08



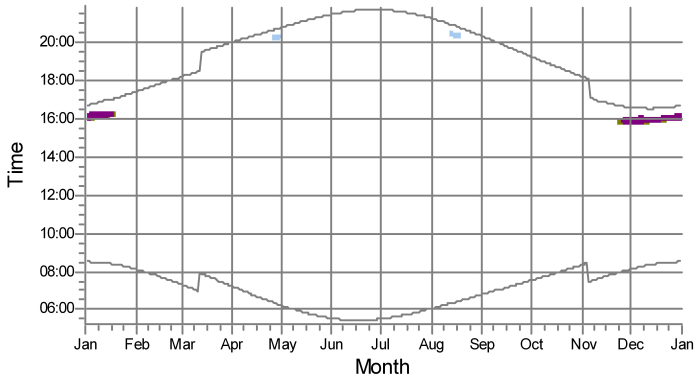
9: V-09



10: V-10



11: V-11



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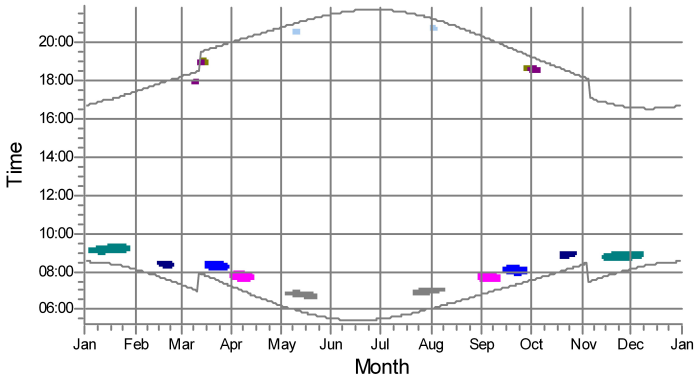

Shadow receptors

	C: D		E: F		G: H		I: J		K: L		O: Q
	D: E		F: G		H: I		J: K		N: O		

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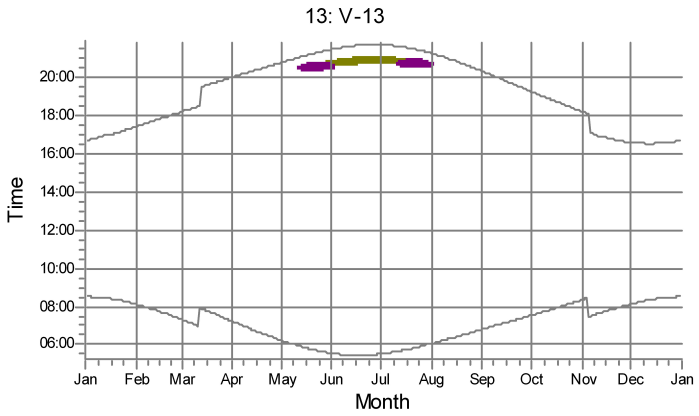
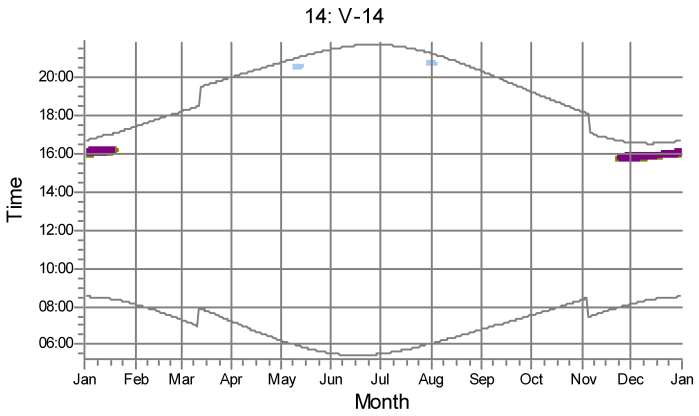
2017-12-22 09:15/3.1.617

SHADOW - Calendar per WTG, graphical

Calculation: Real Case with Topo - 14 x V136 4.2MW @105m

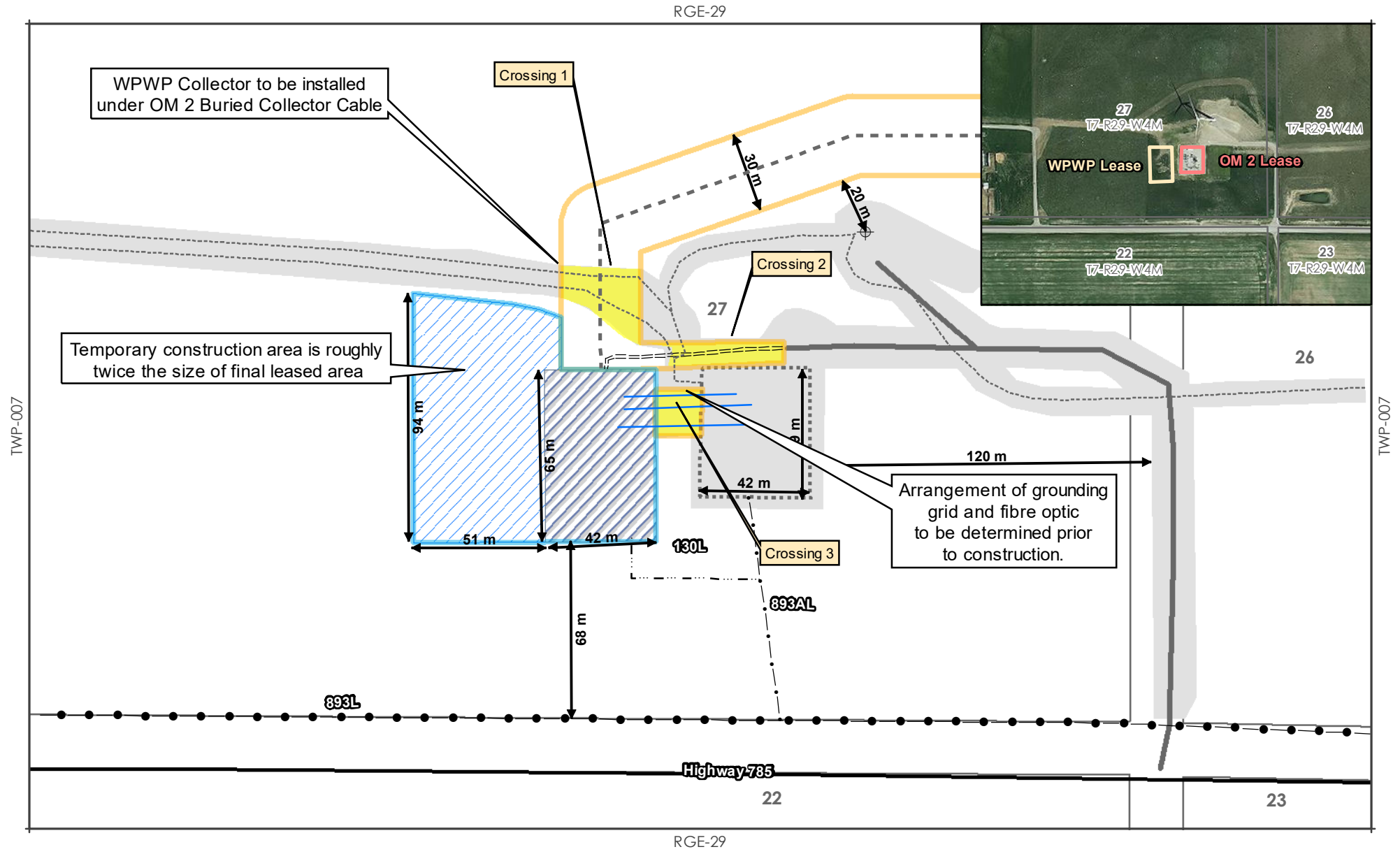




Shadow receptors

J: K K: L O: Q

Appendix I: Substation Layout



Proposed ROW
OM 2 Wind Farm Turbine
Ground Grid Connection and Fiber Optic Conduits for Communication
OM 2 Buried Collector Cable
WPWP Collector Cable Route
WPWP Interconnection 130L
Altalink Transmission Link - 893L
OM 2 Interconnection 893AL
WPWP Leased Premises
WPWP Substation
Temp Construction Area
OM 2 Substation
Crossing Areas
OM 2 Leased Premises
Transportation and Access
Major Road
Access Road
WPWP Access Road

Leased Substation Premises and Proposed Right-Of-Way
Approximate Location

0 50 m

Scale: 1:2,000
NAD 1983 UTM Zone 12N
Author: RI

CWL ENERGY MANAGEMENT

ARPLP
Alberta Renewable Power Limited Partnership

Project	AWE-00001	Revision	1
Date	20/02/2018	Figure No.	1

Document Path: I:\Client Data\Alberta Wind Energy\AWE-00001 Windy Point Wind Park\Products\Maps\Overview\Rev1-20180220\WindyPoint_SubstationAndROW_Rev1_20180220.mxd

Appendix J: Information Session Presentation

Windy Point
Public Open House Presentation

September 13, 2017

Agenda

1. Alberta Renewable Power Partnership
2. Project Highlights
3. History of the Project
4. Current Status and Proposed Changes
5. Project Schedule
6. Construction Overview
7. Community Benefits
8. Questions

1

Overview of Alberta Renewable Power Partnership

Alberta Renewable Power Partnership

Alberta Wind Energy Corporation

BORALEX

ALBERTA RENEWABLE POWER L.P.

WINDY POINT WIND FARM LTD.

Who is Alberta Wind Energy Corp ?

- Private Renewable Energy Developer based in Calgary
- Formed in 2003 – 75 Alberta residing shareholders
- Developed and Operating Oldman 1 Wind Farm
- Developed Oldman 2 Wind Farm – sold to Mainstream in 2013
- Developed Sharp Hills Wind Farm – sold to EDP in 2015
- Joint Venture with Boralex in 2016

Alberta Wind
Energy Corporation

BORALEX

At a glance

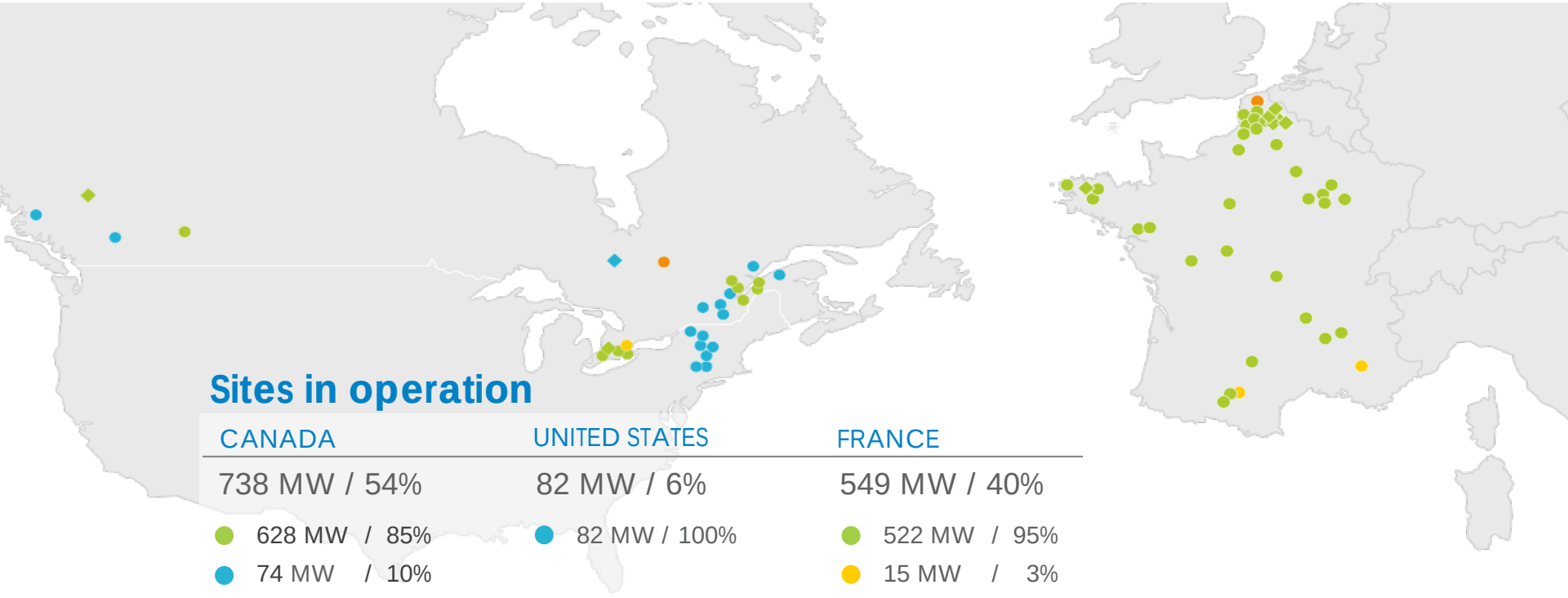
An asset base of
1,539 MW
with
1,369 MW
under its control

Boralex
aims
to achieve
2,000 MW
by 2020

Development, construction and operation
of renewable
energy power stations

Boralex in the world

A leader in the Canadian market and France's largest independent producer of onshore wind power



Sites in operation

CANADA	UNITED STATES	FRANCE
738 MW / 54%	82 MW / 6%	549 MW / 40%
628 MW / 85%	82 MW / 100%	522 MW / 95%
74 MW / 10%		15 MW / 3%
35 MW / 5%		12 MW / 2%
1 MW / 0%		

Wind · Hydroelectric · Thermal · Solar · In operation · Under construction

1,369 MW IN OPERATION + **308 MW** UNDER CONSTRUCTION / DEVELOPMENT = **1,677 MW**

2

Project Highlights

Windy Point Wind Farm
Project Highlights

Capacity:	51 MW
Average Wind Speed:	Approx. 9 m/s (32 km/h)
Capacity Factor	>40%
Interconnection Voltage:	138 kV (891L)
AESO Interconnection:	Stage 4
Land:	~1920 acres of private land
Expected COD:	TBA
Project Ownership:	ARPLP

3

History of Project

Windy Point Wind Farm
History

Item	Date
Project land leased	2005
Resource assessment commenced	2006
Interconnection process commenced	2007
Initial environmental studies	2007
Environmental studies for AUC Application	2009-2010
AESO Stage 3	2010
AUC Power Plant Application submitted	2011

Windy Point Wind Farm
History

Item	Date
AUC Power Plant permit granted	2012
AUC Substation Application submitted	2014
Updated environmental studies	2015-2016
Purchased Mainstream's interest in Project	2016
Partnered with Boralex	2016
Updated environmental studies	2017
Environmental Evaluation report	2017

Why hasn't the project been built yet?

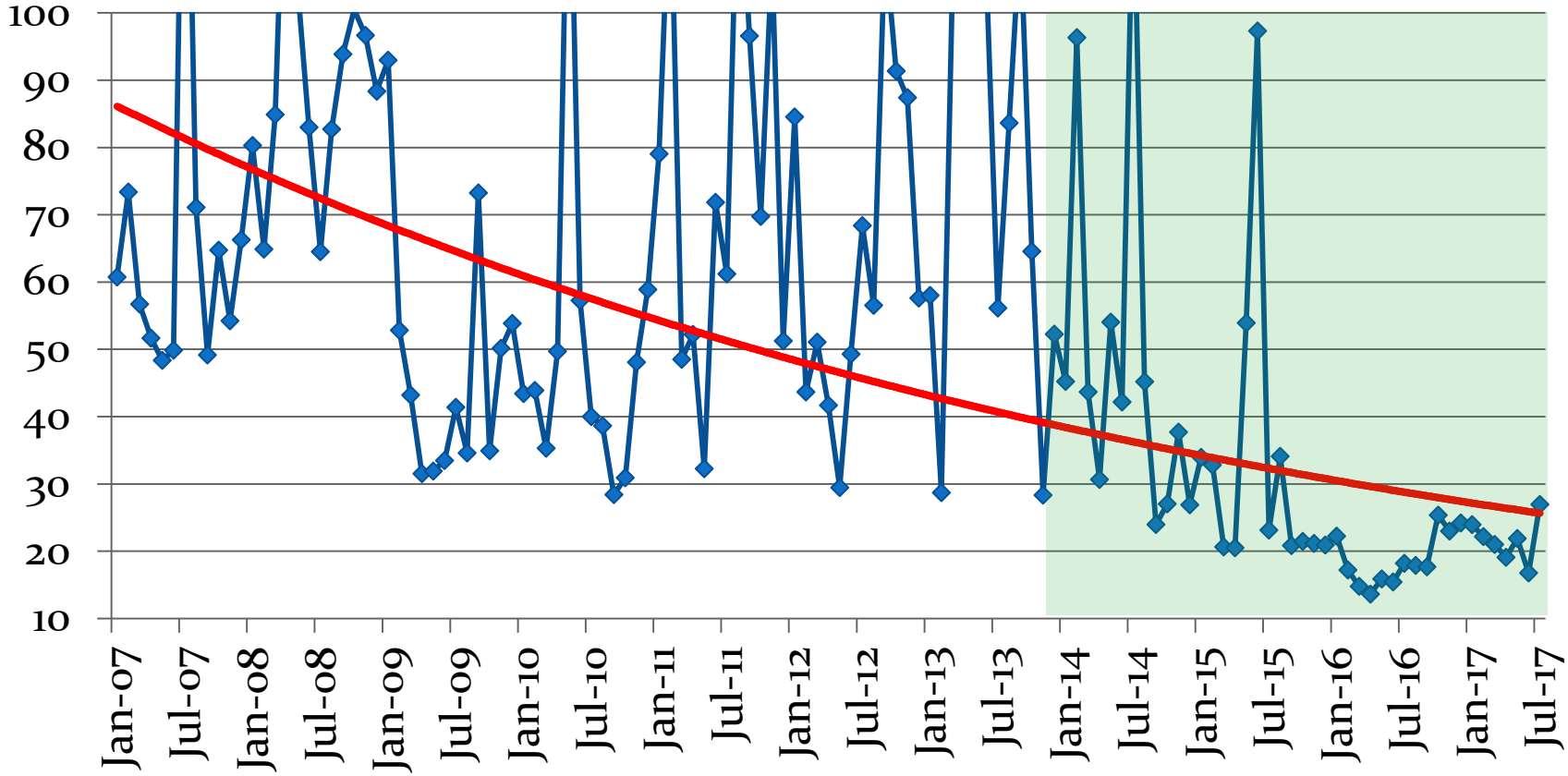
1. Fidler substation required for interconnection
    - In service as of 2013

2. Updates to environmental studies
    - Requested by AEP in 2015
    - Studies completed in 2015-2016
    - Several new constraints found, which require layout change

3. Historically Low Electricity Prices (2013-present)
    - Caused by over-supply, low NG prices and stagnant demand
    - Difficult to finance

Why hasn't the project been built yet?

Monthly Average Pool Price 2007-2017



Alberta Political Environment

- Climate Change Leadership department formed in 2015
- Accelerated phase out of coal plants by Dec 31, 2030
- Renewable Energy Act (March 31, 2017)
  - 30% of electricity generated from renewables before 2030
  - AESO shall manage a competitive procurement process
- Target 5000+ MW renewable procurement

Alberta Generation Outlook

FIGURE 3: Reference Case Scenario capacity*

Existing AIL peak: 11,458 MW			2022 AIL peak: 12,260 MW			2027 AIL peak: 12,814 MW			2032 AIL peak: 13,486 MW			2037 AIL peak: 13,947 MW		
38%	Coal-fired	6,299	22%	Coal-fired	3,849	14%	Coal-fired	2,904	0%	Coal-fired	0	0%	Coal-fired	0
30%	Cogeneration	4,934	28%	Cogeneration	5,024	24%	Cogeneration	5,114	22%	Cogeneration	5,204	22%	Cogeneration	5,339
10%	Combined-cycle	1,746	10%	Combined-cycle	1,746	13%	Combined-cycle	2,656	23%	Combined-cycle	5,386	27%	Combined-cycle	6,751
5%	Simple-cycle	916	6%	Simple-cycle	1,059	6%	Simple-cycle	1,249	6%	Simple-cycle	1,486	11%	Simple-cycle	2,769
0%	Coal-to-gas	0	9%	Coal-to-gas	1,581	11%	Coal-to-gas	2,371	10%	Coal-to-gas	2,371	3%	Coal-to-gas	790
5%	Hydro	894	5%	Hydro	894	4%	Hydro	894	5%	Hydro	1,244	5%	Hydro	1,244
9%	Wind	1,445	17%	Wind	3,045	24%	Wind	5,045	28%	Wind	6,445	26%	Wind	6,445
0%	Solar	0	1%	Solar	200	2%	Solar	400	3%	Solar	700	4%	Solar	1,000
3%	Other	479	3%	Other	479	2%	Other	479	2%	Other	479	2%	Other	479
Total capacity		16,713 MW	Total capacity		17,877 MW	Total capacity		21,112 MW	Total capacity		23,315 MW	Total capacity		24,817 MW

Future capacity as of the end of year; existing capacity includes under-construction projects.

Source: AESO 2017 Long Term Outlook

Alberta Wind Energy Corporation

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Renewable Energy Program (REP)

- REP Round #1
  - Announced November 2016
  - Contracts to be awarded in December 2017
  - Projects must be operational by December 2019
- REP Round #2
  - Expected to be announced Q3 2017
- Future REP Rounds
- Other power off-take opportunities
  - PPA/REC sale with end-user

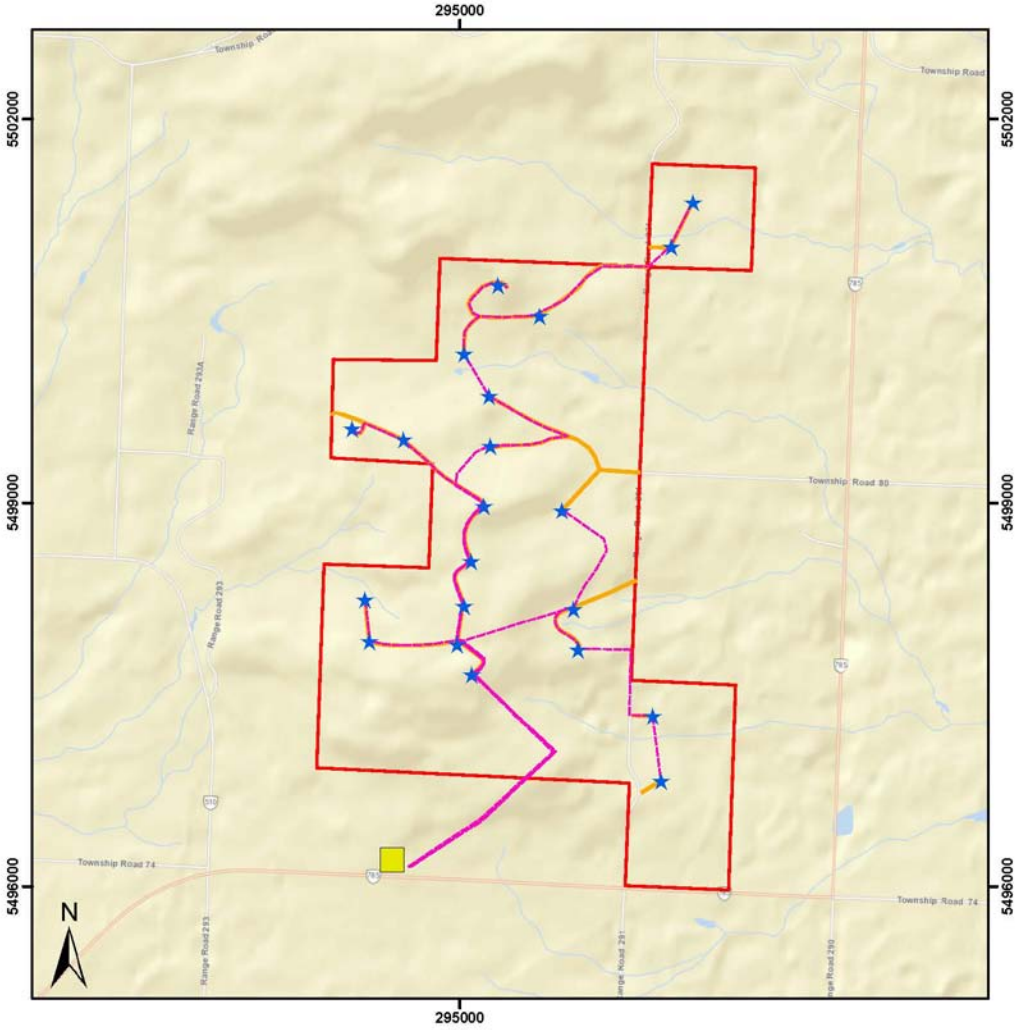
4

Windy Point Project
Current Status and Proposed Changes

Windy Point Wind Farm
Major Permits Status

- **AUC Power Plant Permit**
  - Granted in 2012, to be amended in Q3 2017
  - Major amendments:
    - Turbine model: Siemens SWT101 → Vestas V136
    - Turbine locations: 21 locations → 14 locations
    - Construction completion date: Aug 2016 → Dec 2019
- **AUC Substation Permit**
  - Applied in 2014, put on hold by AUC and will be combined with amendment filing in Q3 2017
- **MDPC Development Permit**
  - Currently extended to 2018
  - Request for above amendments in Q3 2017

Windy Point Wind Farm
Originally Permitted 2012 Layout



Alberta Wind Energy Corporation

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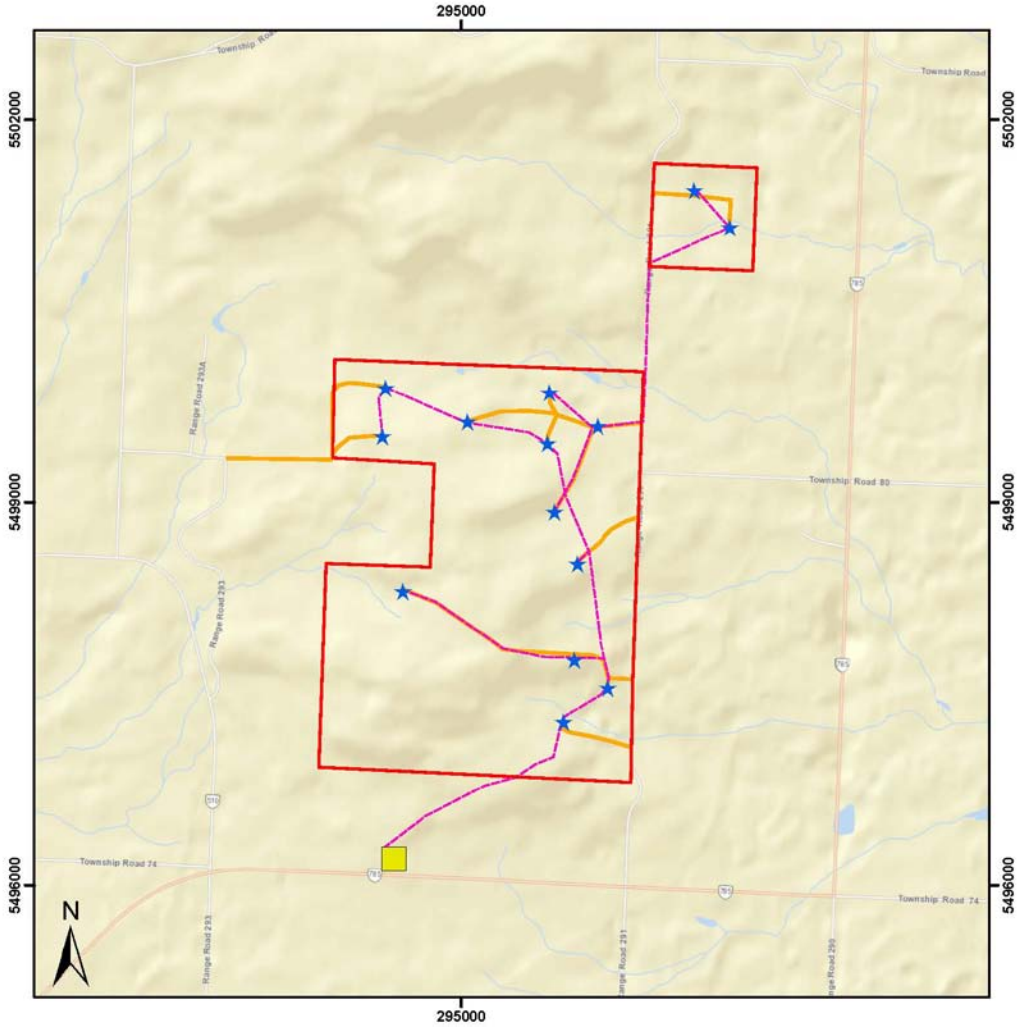
Windy Point Wind Farm
Proposed Changes – 2017 Layout



Alberta Wind Energy Corporation

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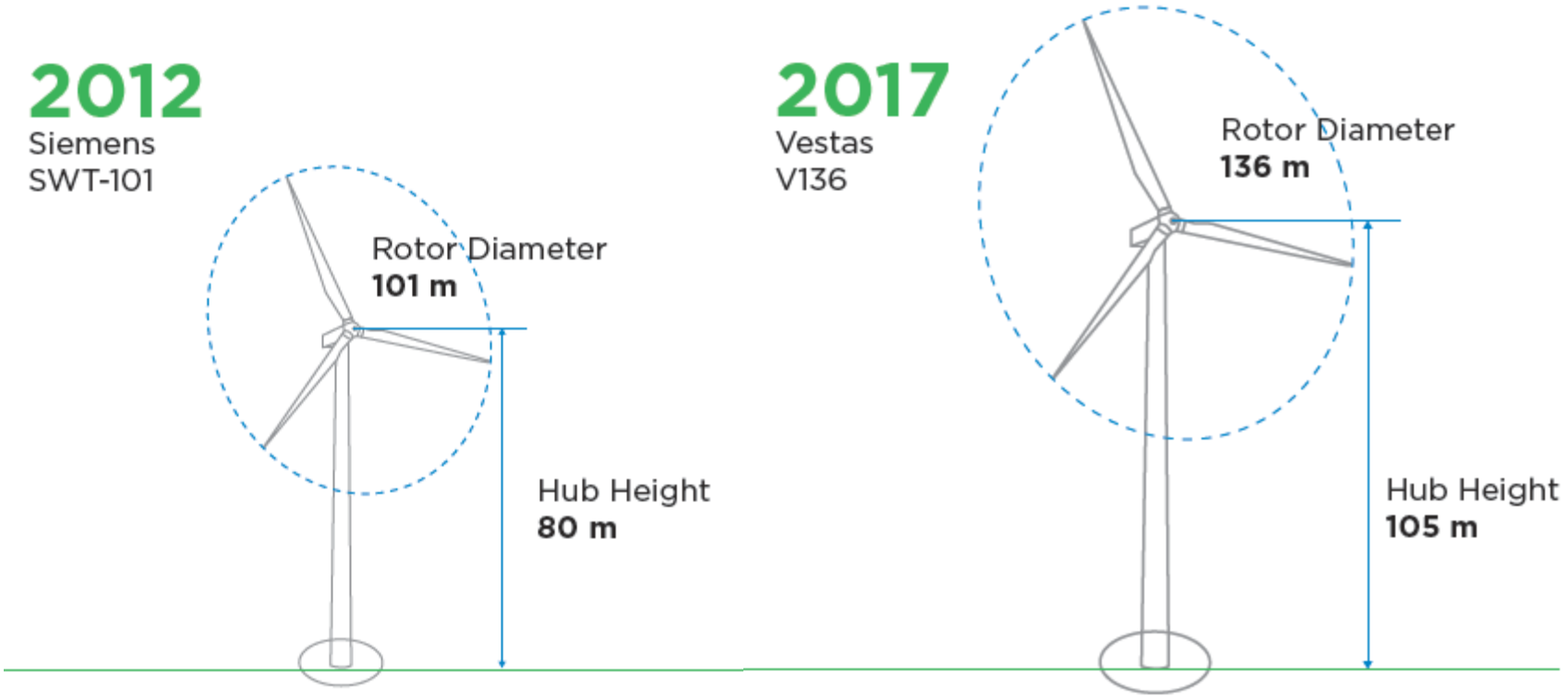
Windy Point Wind Farm
Turbine Changes

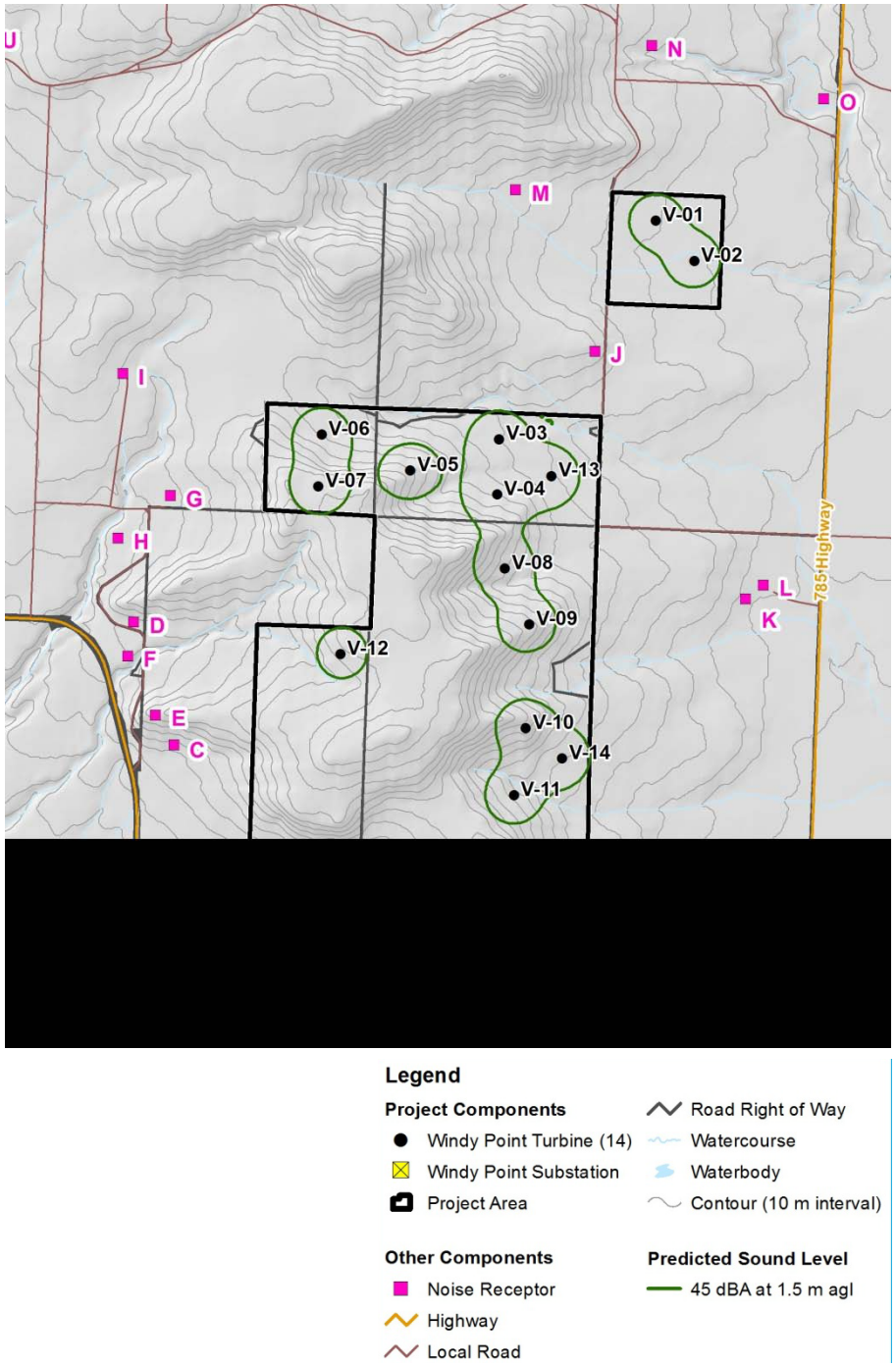


Noise

Required to follow regulations set out by AUC Rule 012:

- 40dBA Night
- 50dBA Daytime

The results of the Noise Impact Assessment show that permissible sound levels will be respected as required by the Alberta Utility Commission (AUC) Rule 012 and MDPC Land use By-Law 1140-08 Section 53.26.



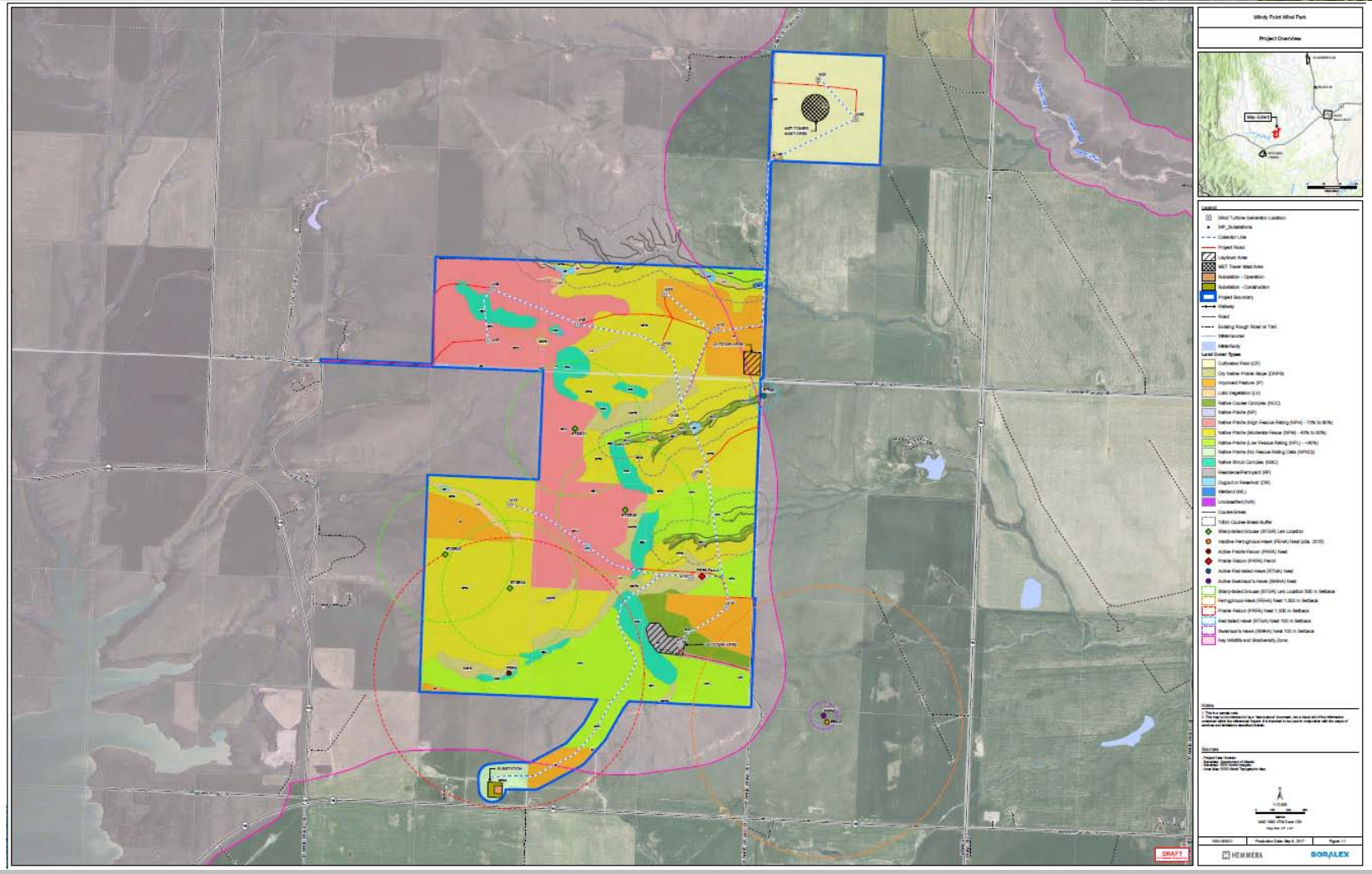
Turbine Siting Considerations

Overview	Details
Survey Area	Project area + 1KM buffer
Survey Duration	1+ years (dependent on seasonal habitats)

Environmental Setbacks	Buffer Distance
Water Body	Blade Length + 100 meters
Wetland	Blade Length + 100 meters

Wildlife Setbacks	Buffer Distance
Prairie Falcon Ferruginous Hawk	1000 meters + blade length
Swainson Hawk Red-Tailed Hawk	500 metres + blade length
Sharp Tailed Grouse	500 metres

Windy Point Wind Farm
Setback Map



Alberta Wind Energy Corporation

BORALEX
energy creator

5

Project Schedule

Windy Point Wind Farm Schedule

Item	Date
Public consultation	Q2-Q3 2017
AUC Application submitted	Q3 2017
AUC Permit Granted	2018
Construction Start	TBA*
Turbine Delivery	TBA*
Commercial Operation	TBA*

*dependent on off-take agreement

6

Construction Overview & Onsite Equipment

Construction & Onsite Equipment

General Equipment

- Turbine Pads
- Electrical collector lines
- Access roads
- Cranes (during construction
- Collector substation
- MET towers

Boralex develops,
designs, builds
and operates wind farms
assets across the country
and in various sites

Seigneurie de Beaupré Wind Farm Phase I and Phase II, Québec - 340 MW Largest Wind Farm in Canada

BORALEX

Alberta Wind Energy Corporation

BORALEX

Thames River, Ontario – 90 MW

BORALEX

Alberta Wind Energy Corporation

BORALEX

Niagara Region
Wind Farm, Ontario – 230 MW

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7

Community Benefits

Community Benefits

- Revitalizes rural communities
- Significant long term tax revenue for municipality
- Employment diversification from agriculture, oil & gas
- Keeps young families in the community
- Skilled short term and long term jobs
  - Construction – 150+ people
  - Operations – 5+ long term staff
    - Ops centre
    - Maintenance

Community Benefits

- Direct Business Opportunities
  - Construction: subcontracts for roads, concrete, trenching, trucking, heavy equipment, etc.
  - Operational: road maintenance, snow removal, weed control, turbine and line maintenance subcontracting
- In-direct Business Opportunities
  - Local restaurants, hotels, fuel, hardware, etc.

Thanks for coming out!

Questions?

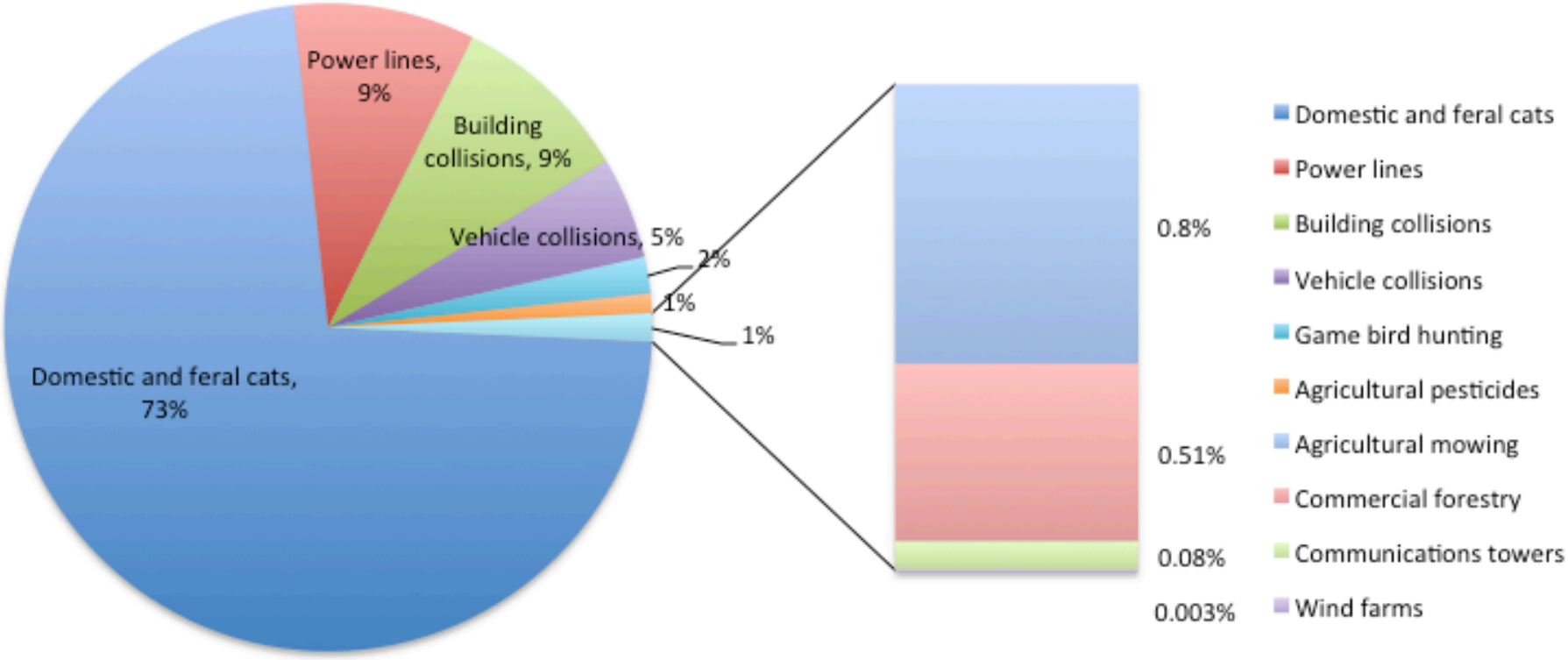
Marc Stachiw
President, Alberta Wind Energy Corp
403-266-5635

Alistair Howard
Director, Project Development, Boralex Inc.
778-724-0487

Appendix

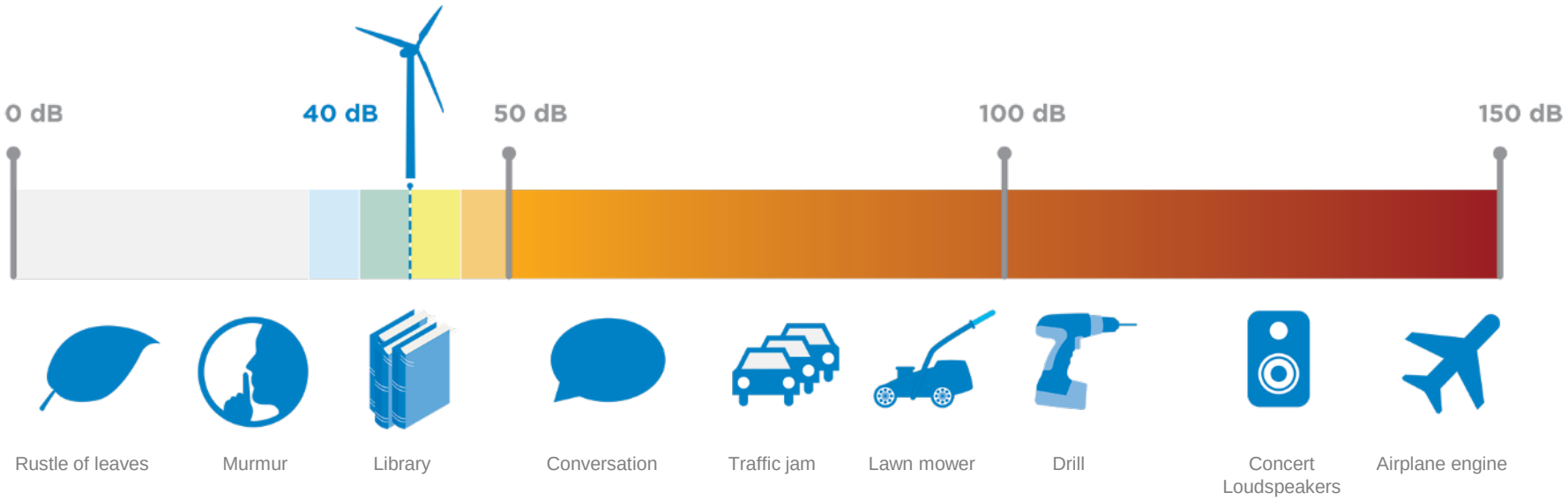
Common Questions

Human-caused annual bird deaths in Canada

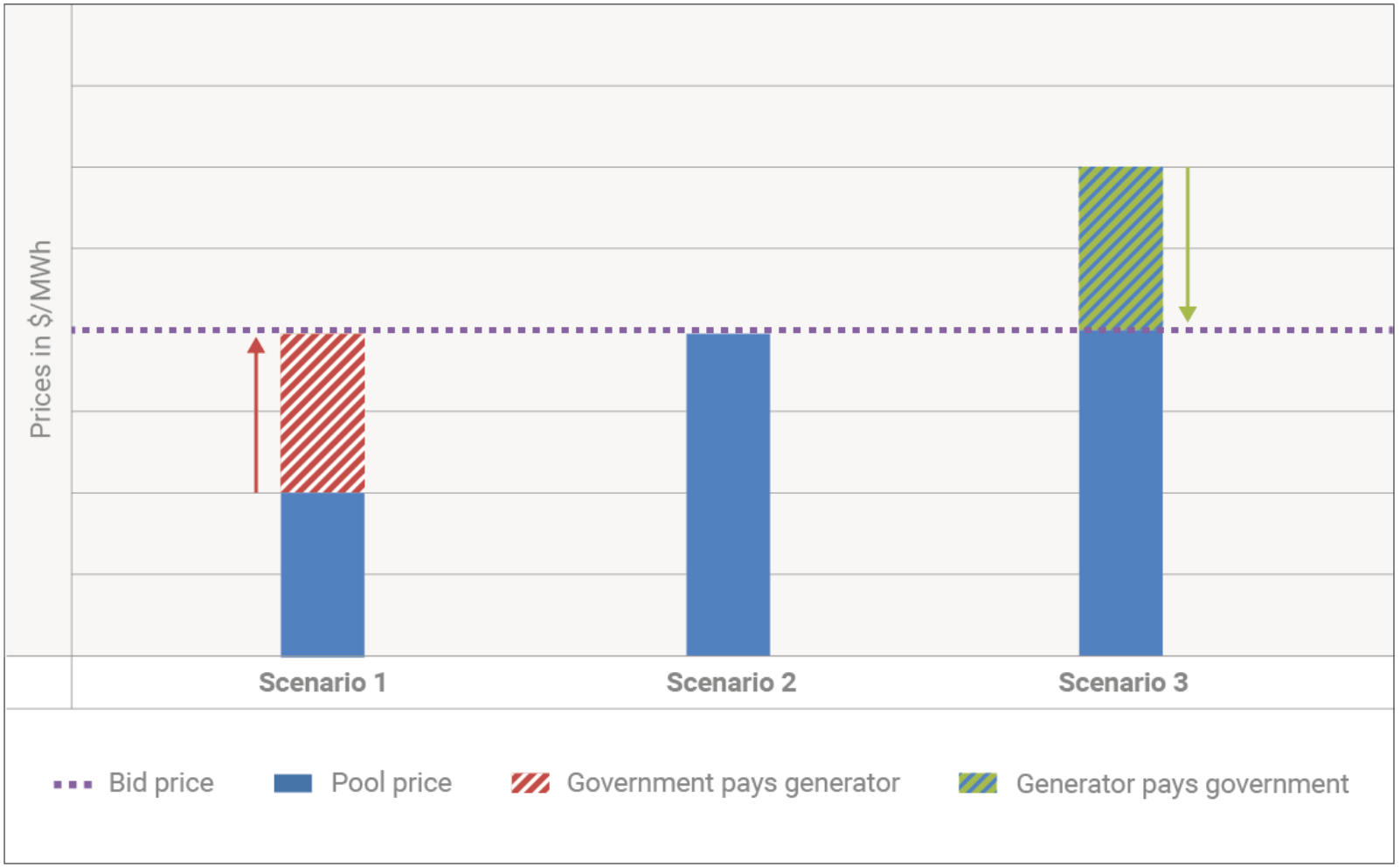


Sources: Environment Canada "A Synthesis of Human-Related Avian Mortality in Canada", 2013 and US National Wind Coordinating Committee's Avian Collisions with Wind Turbines, 2001

Common Questions

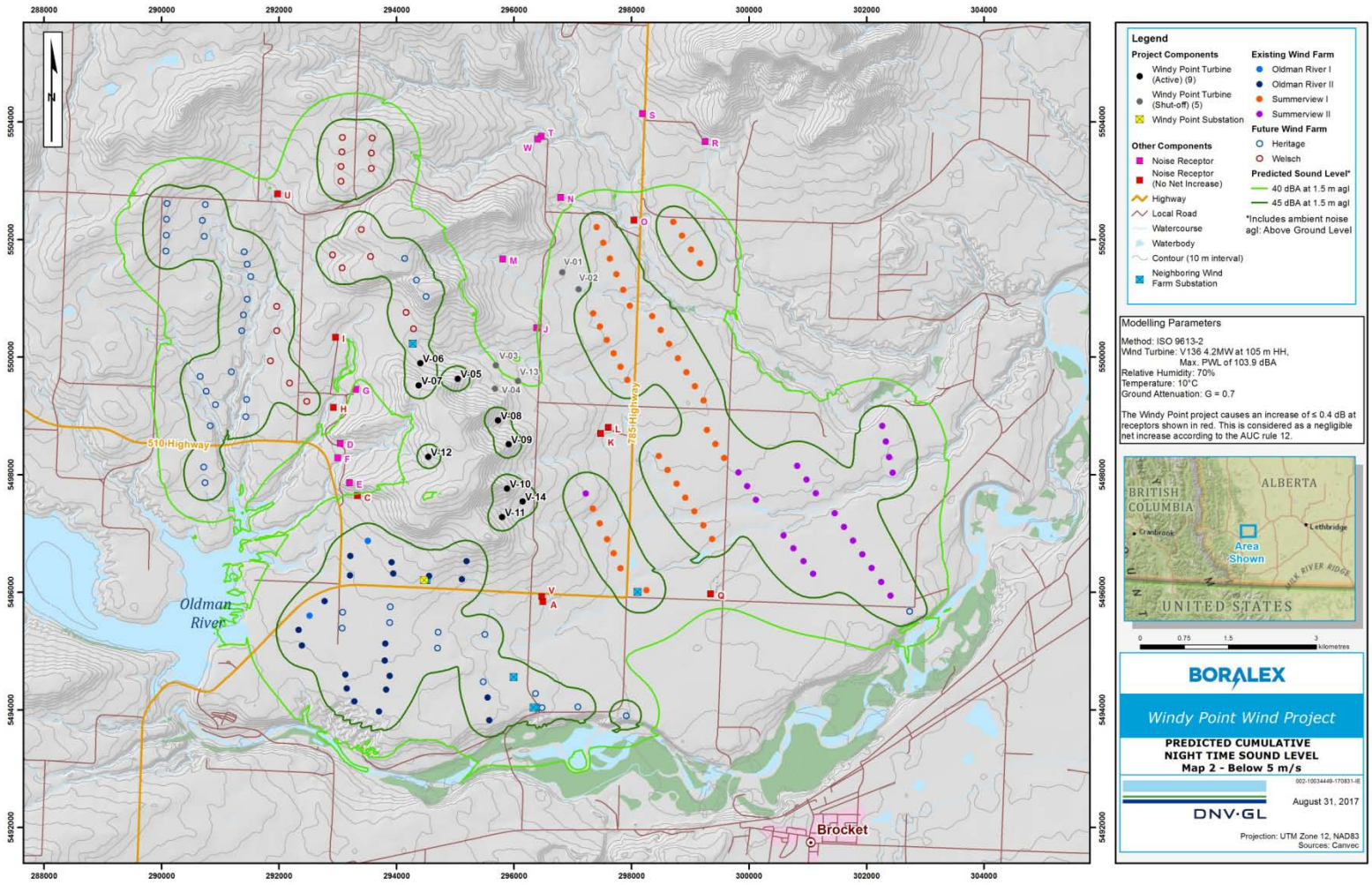


Indexed Renewable Energy Credit



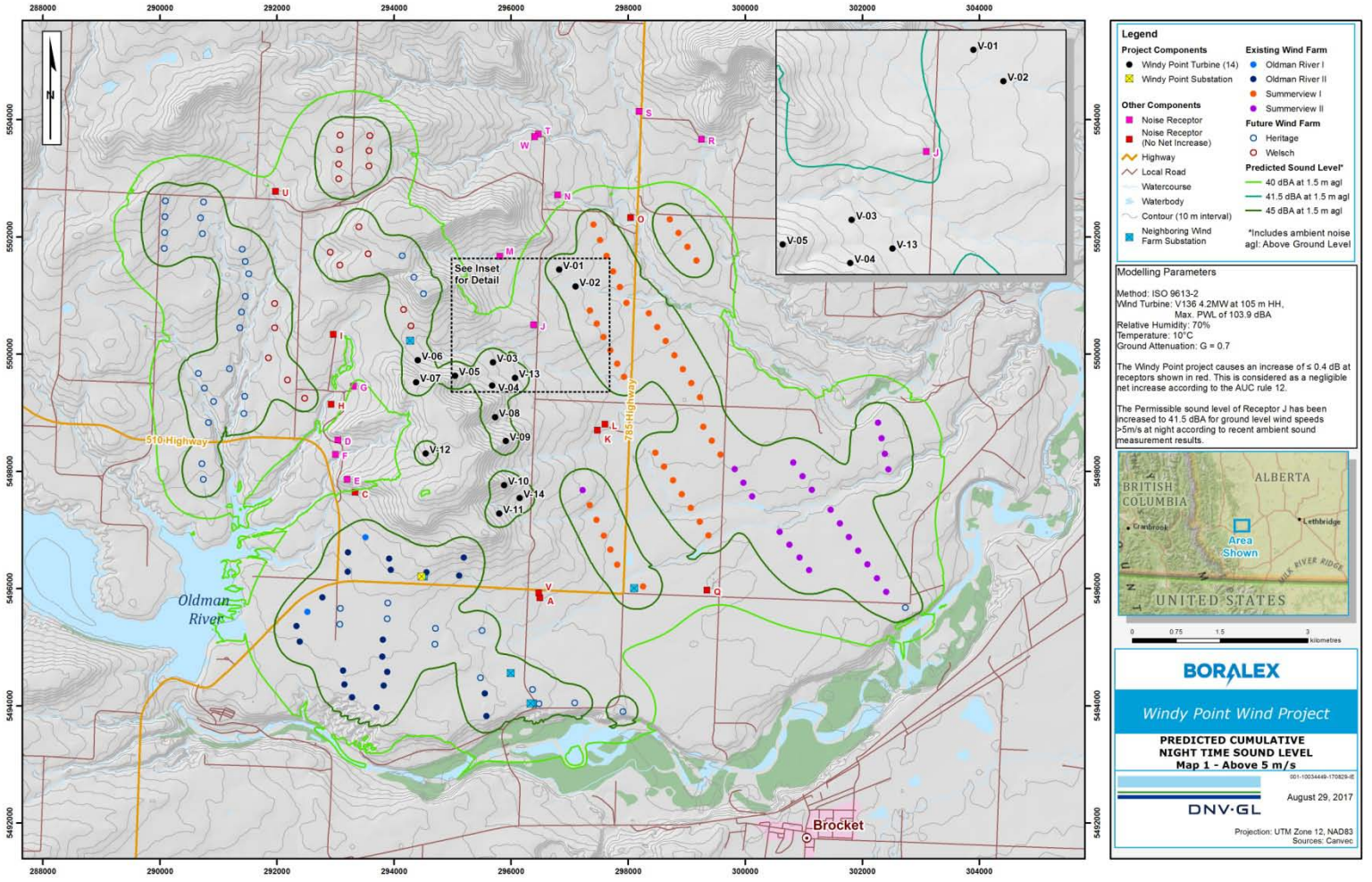
Cumulative Night-Time Sound Level

Below 5 m/s



Cumulative Night-Time Sound Level

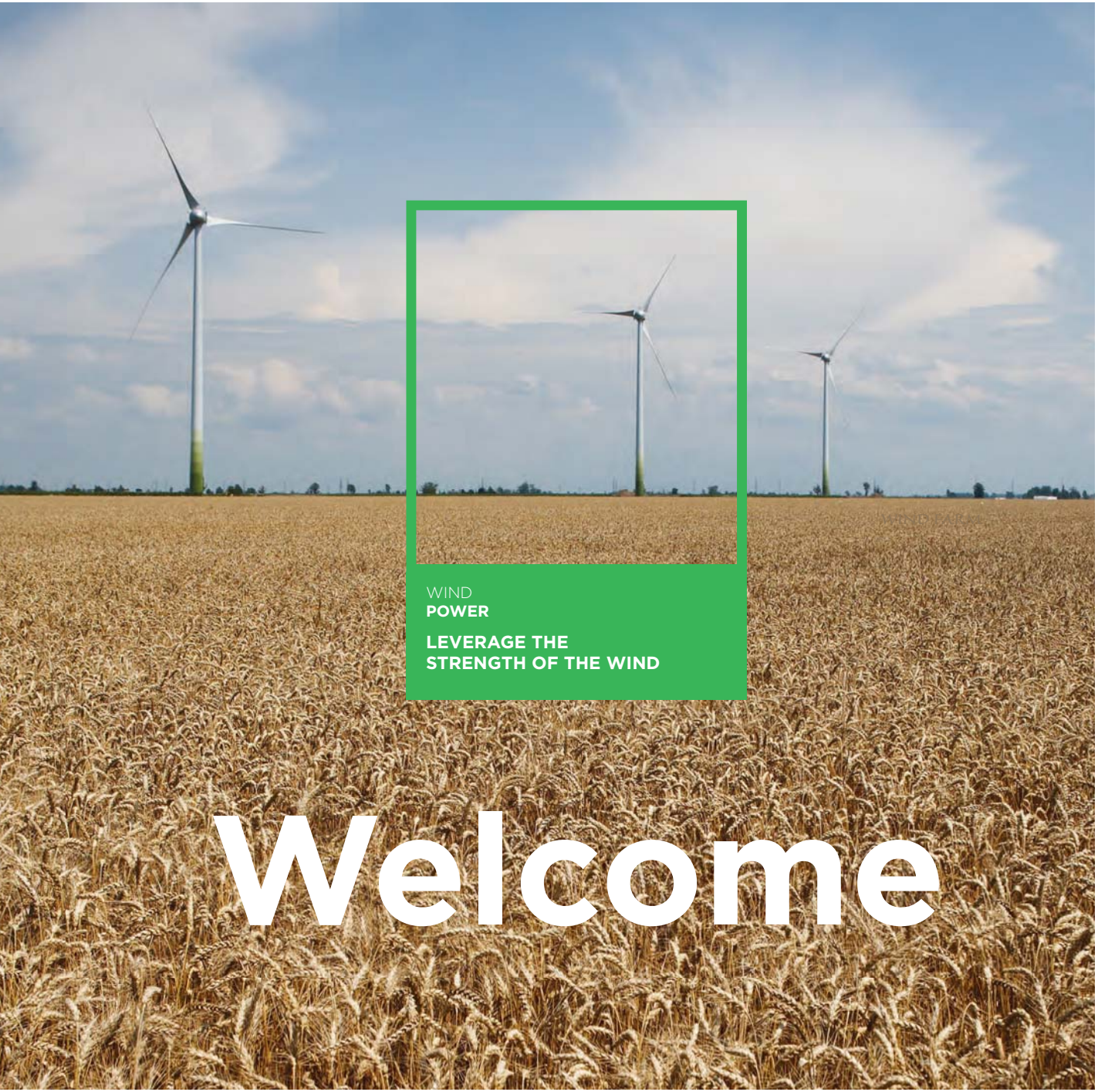
Above 5 m/s



Alberta Wind Energy Corporation

BORALEX

Appendix K: Information Session Poster Boards



WIND
POWER

LEVERAGE THE STRENGTH OF THE WIND

Welcome

The Windy Point WIND FARM

Thank you for coming

to the Windy Point Wind Farm
Open House.

AGENDA

7 P.M.
Spend time meeting team members or browsing the information provided in poster boards

7:30 P.M.
A deeper insight of the project will be presented via a PowerPoint presentation

8 P.M. until close
Q&A with team members and completing comment forms

Before you leave,
please complete the comment form, or send it by mail or email to:
info@windypointwindfarm.ca

Postal address:
Suite 1320 396-11th Ave. SW Calgary, Alberta T2R 0C5

Phone number:
403-266-5635

To learn more about the Project or to provide additional feedback, please visit our website:
www.windypointwindfarm.ca
or contact us directly.

Alberta Wind Energy Corporation
renewable energy for future generations

BORALEX
energy creator

WHY ARE WE HERE?

Good planning involves the community. As sustainable developers, it is important to understand and be transparent to the concerns and questions of the community. This open house is designed to **hear out the community to help build the best possible project**.

The purpose of this open house is to:

Provide an update on The Project

Provide an overview of the steps involved in building a wind farm

Describe the benefits and impacts of wind development

Obtain community feedback for consideration in the planning and design of the Project

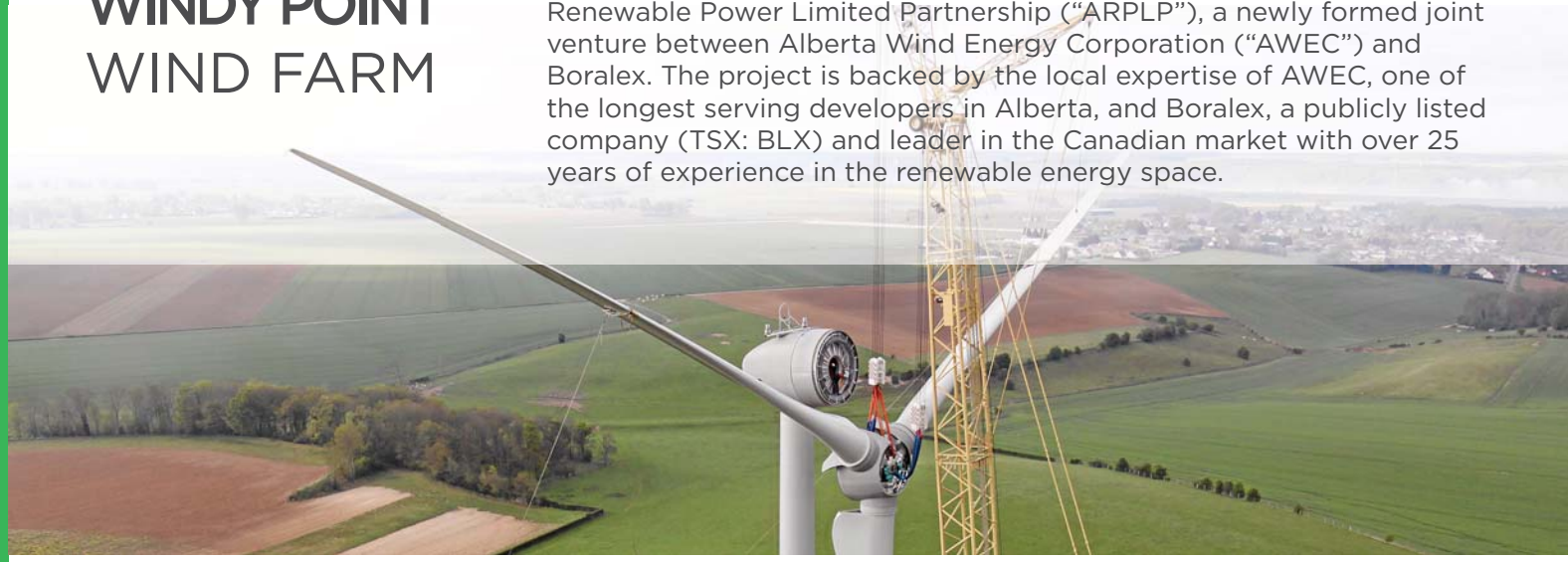
Provide an opportunity to speak with the Project team and have your questions answered

WHO
ARE WE?

WINDY POINT
WIND FARM

WINDY POINT
WIND FARM

The Windy Point Wind Farm is being developed by the Alberta Renewable Power Limited Partnership (“ARPLP”), a newly formed joint venture between Alberta Wind Energy Corporation (“AWEC”) and Boralex. The project is backed by the local expertise of AWEC, one of the longest serving developers in Alberta, and Boralex, a publicly listed company (TSX: BLX) and leader in the Canadian market with over 25 years of experience in the renewable energy space.



Alberta Wind Energy Corporation
Renewable energy for future generations

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BORALEX
energy creator

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PROJECT **MAP**

51 MW

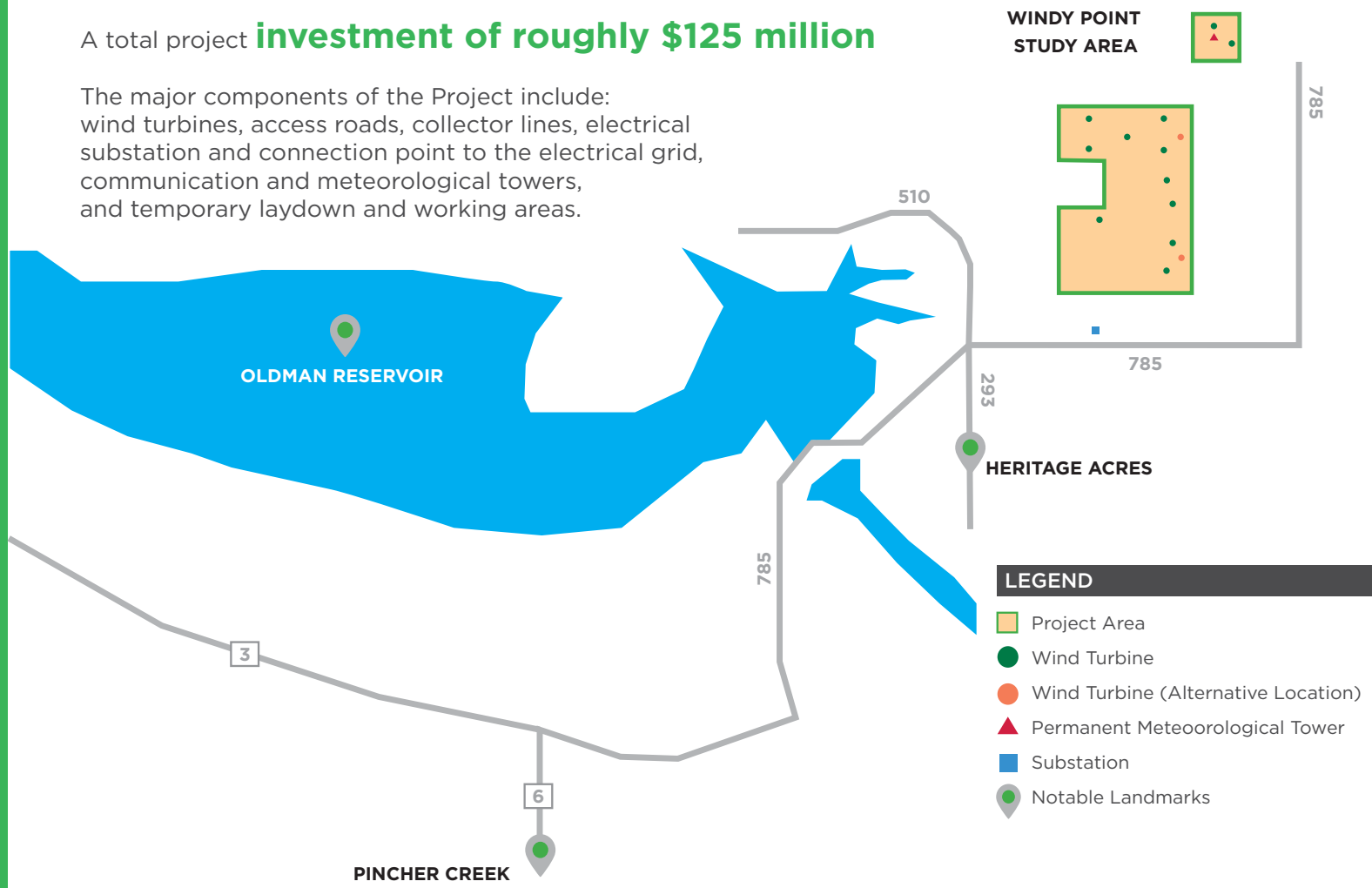
Up to **14 turbines**

Located on **1,920 acres**

Up to **150 people employed** for construction

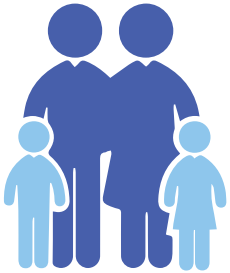
A total project **investment of roughly $125 million**

The major components of the Project include:
wind turbines, access roads, collector lines, electrical substation and connection point to the electrical grid, communication and meteorological towers, and temporary laydown and working areas.



WINDY POINT
WIND FARM

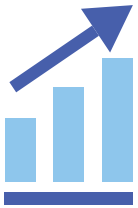
BENEFITS OF WIND ENERGY



COMMUNITY

Creates local jobs during development, construction, and operation

Provides **direct economic benefits** through property taxes



Increases revenue for local businesses both during and after construction

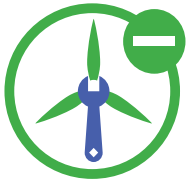
Allows for many compatible land uses, such as **farming, grazing** and **oil & gas**

ENVIRONMENTAL

Wind is an **emission-free** and inexhaustible resource producing low cost renewable energy

Wind energy helps **reduce our dependence on non-renewable energy** sources that emit greenhouse gas emissions and contribute to poor air quality

Unlike other sources of energy, wind turbines generate electricity without the need for water and don't produce effluent which pollutes water bodies

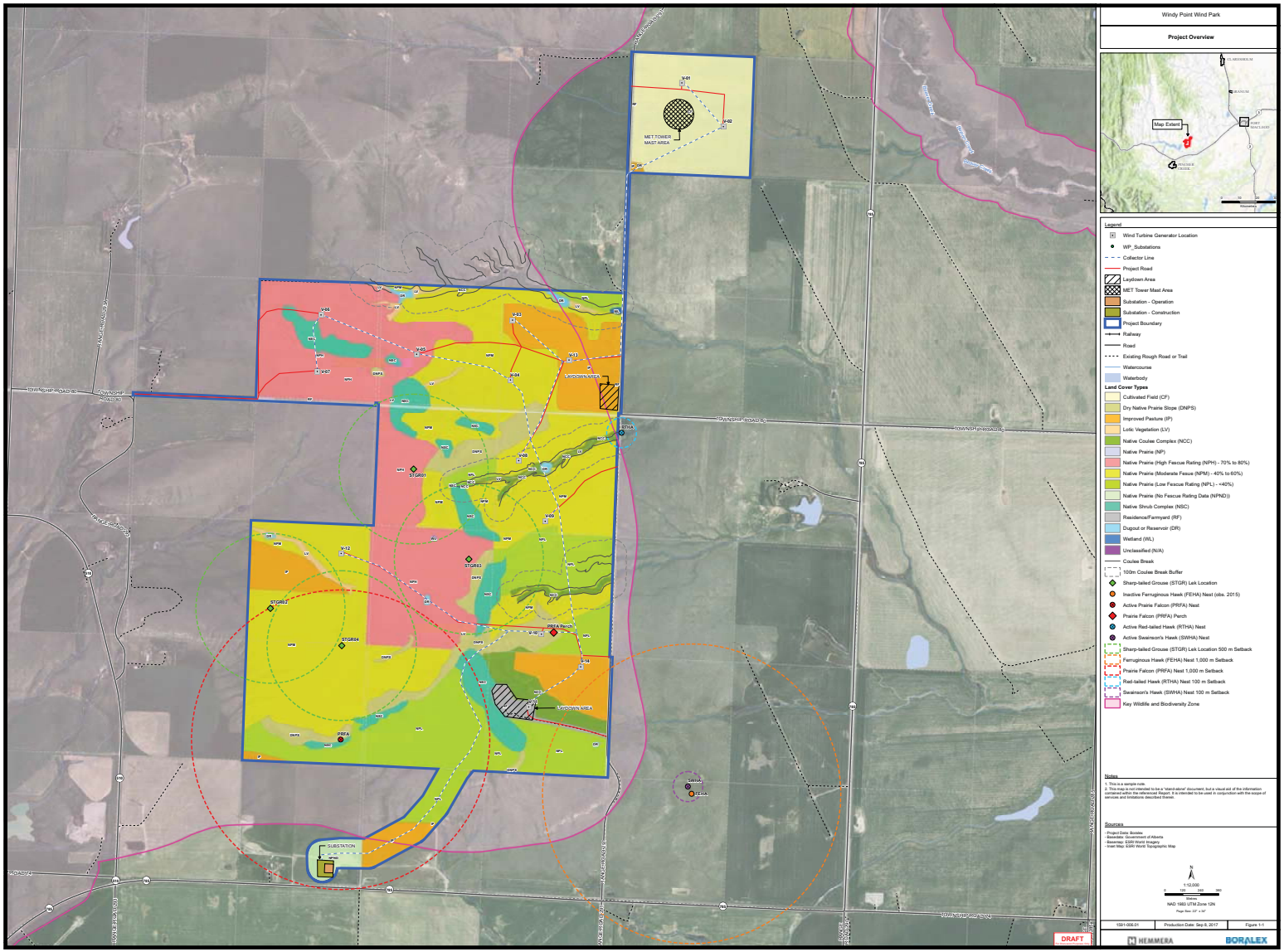


Modern wind energy generating equipment is relatively quick to install and requires minimal maintenance once operational

HOW WE **DETERMINE** THE **LOCATION** OF WIND TURBINES

1. Study the wind conditions to understand if a sufficient wind resources exists
2. Work with local landowners to develop lease agreements for land , wind turbines and supporting infrastructure
3. Identify environmental constraints
4. Identify technical constraints: topograpghy and existing land use
5. Study the noise impact on identified points of reception
6. Complete Natural Heritage Impact Assessment and Archeological Assessments

WINDY POINT
WIND FARM



IMPROVED PROJECT LAYOUT

Among a few notables, the new layout has resulted in the following improvements:

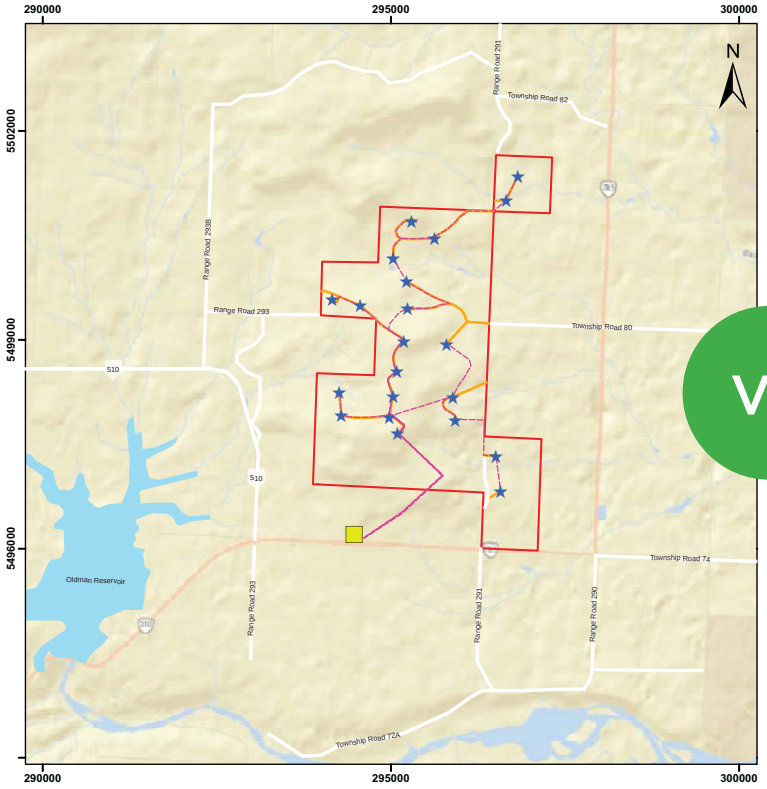
1. Fewer turbines
2. Shorter collector line system
3. Avoidance of key wildlife habitat
4. Shorter access road route equals less disturbance

LESS ENVIRONMENTAL IMPACT

SMALLER PROJECT FOOTPRINT

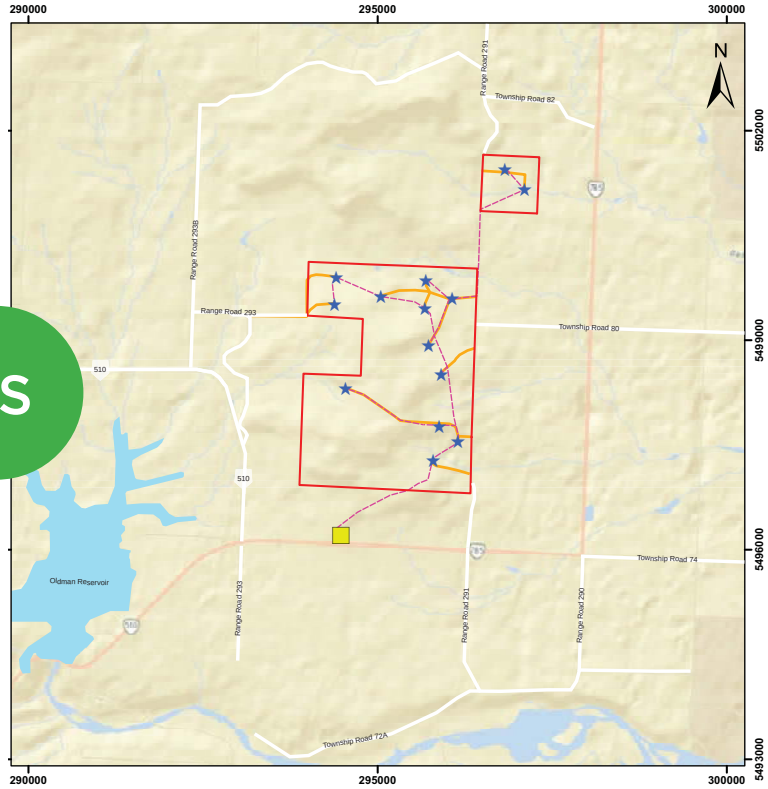
WINDY POINT
WIND FARM

2012 LAYOUT



VS

NEW LAYOUT



Legend

- Project Area
- Wind Turbine
- Project Substation
- Project Road
- Collector Network

BORALEX — Alberta Wind Energy Corporation

Windy Point Wind Park - Project Map (2012)

0 1 2 km

Coordinates: NAD83 UTM Zone 12
Date: 2017/09/08
Source: Esri World Topographic Map

Legend

- Project Area
- Wind Turbine
- Project Substation
- Project Road
- Collector Network

BORALEX — Alberta Wind Energy Corporation

Windy Point Wind Park - Project Map (2017)

0 1 2 km

Coordinates: NAD83 UTM Zone 12
Date: 2017/09/08
Source: Esri World Topographic Map

ANTICIPATED PROJECT **TIMELINES**

WINDY POINT
WIND FARM

2019 Turbine Delivery — **Commercial Operation**

2018 Construction Start

2017 Public consultation **Q3 - Q4** | AUC Amendment Submitted **Q3** | RFP Contract Awarded **December**

2016 Round 2 of Environmental Studies completed

2012 AUC Power Plant Approval

2011 Municipal Development permits attained

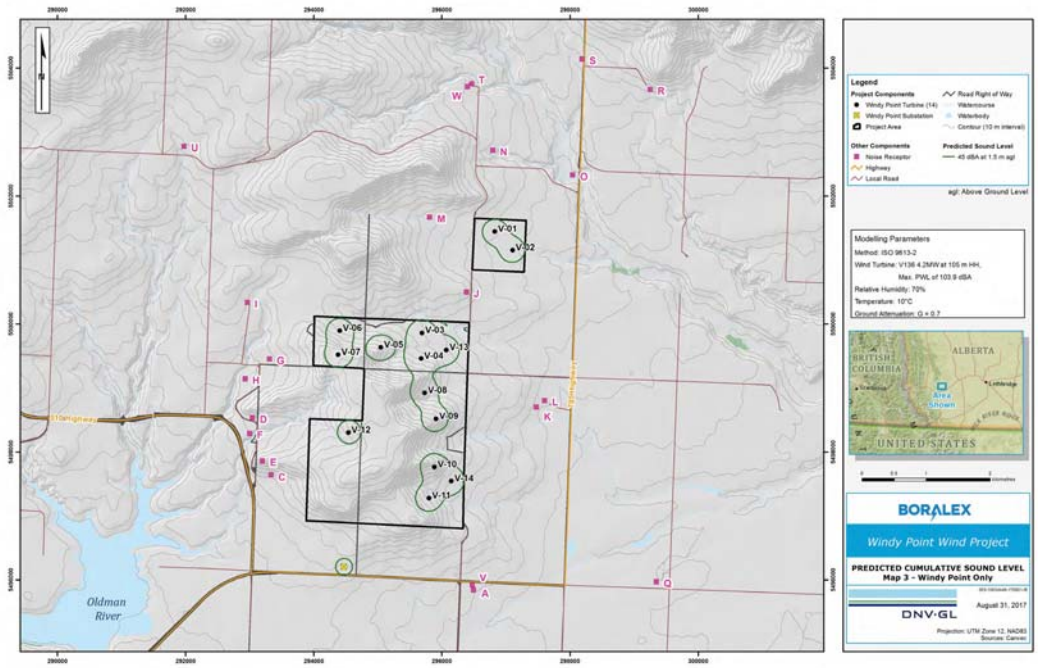
2006 Project originated / MET Tower installed

Environmental Studies (Round 1 and 2)

NOISE IMPACT ASSESSMENT

An assessment was completed to identify noise levels at receptors (dwellings) within 1,500 meters of wind turbines and substation, as per AUC Rule 012: Noise Control and requirements of the Municipal District of Pincher Creek. The assessment included the following steps:

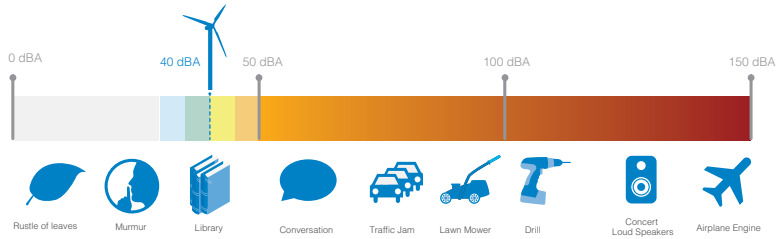
1. Identify points of reception within the prescribed area.
2. Identify the permissible sound level at each receptor.
3. Obtain wind turbine specifications and noise emission ratings from the manufacturer.
4. Incorporate the associated sound power levels into a noise model to predict overall noise levels at each receptor.
5. Adjust turbine location to minimize noise levels at identified receptors.



*Map depicts noise requirements set out by the Municipal District of Pincher Creek

The results of the Noise Impact Assessment show that turbines are placed at least 750 meters from the closest noise receptor and that permissible sound levels will be respected as required by the Alberta Utility Commission (AUC).

Noise Comparison



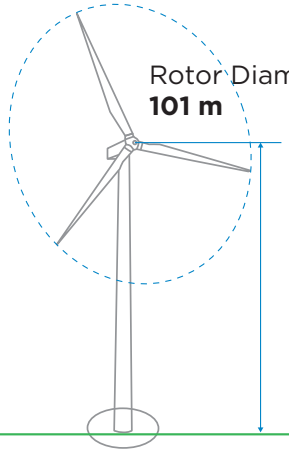
WINDY POINT
WIND FARM

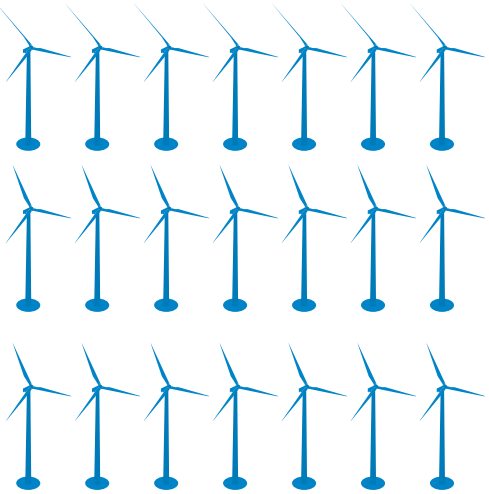
EVOLUTION OF TURBINES

WINDY POINT
WIND FARM

OLD Technology

2012
Siemens
SWT-101



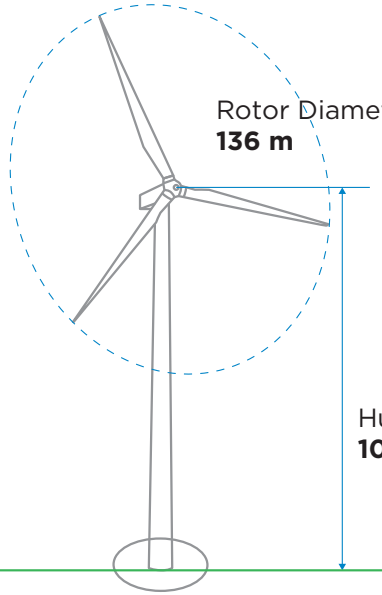


21
turbines

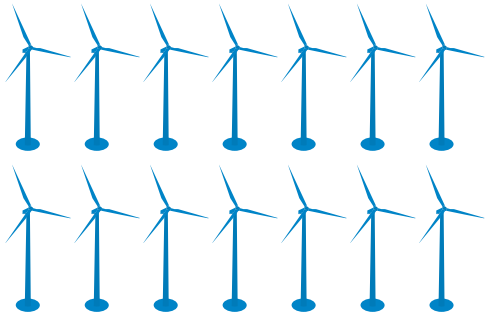
107 dBA

NEW Technology

2017
Vestas
V136



14
turbines



103.9 dBA

*dBA refers to the noise level at the turbine

ALBERTA: THE NEW TEXAS OF **WIND DEVELOPMENT**

TEXAS

ALBERTA

Both energy-rich jurisdictions
Both coming off economic booms due to falling oil prices
Both feeling the pinch
Both are wind-power early adopters

Texas first adopted its Renewable Portfolio Standard in 1999, and it increased its goal in 2005.

Texas has reached its goal of developing 5,880 MW of renewable energy by 2015, and even surpassed a nonbinding target of 10,000 MW by 2025.

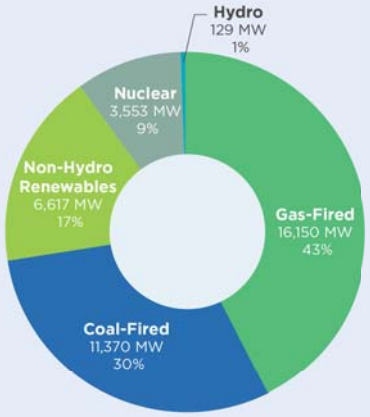
Texas is now a national wind-power leader with an installed wind energy capacity of 19,000 MW.

In 2016, 12.14% of all in-state electricity production was produced by wind – an equivalent of 4.1 million homes[1].

31,000 jobs are currently supported by Texas wind[1].

Wind turbine technician is America's fastest growing job, according to the Bureau of Labor Statistics[2].

Texas generation and load mix[3]



[1] Source: AWEA Texas Fact Sheet 2016
[2] Source: United States Department of Labor, December 17, 2015
[3] Source: Energy Information Administration, Electric Power Monthly, 2017

Alberta's new climate change policy came into effect in January 2017.

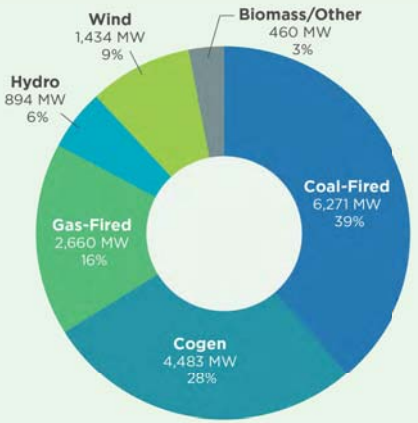
By 2030, one-third of Alberta's coal generating capacity will be replaced by renewable energy; two-thirds will be replaced by natural gas.

Alberta now ranks third in Canada with an installed wind energy capacity of 1,479 MW.

In 2016, 6% of the electricity production was produced by wind – an equivalent of 625,000 homes[4].

It's estimated $10.5 billion in new investment will flow into the provincial economy by 2030, creating at least 7,200 new jobs for Albertans as projects are built[5].

Alberta generation and load mix[6]



[4] Source: CANWEA
[5] Source: www.alberta.ca
[6] Source: AESO 2014 Market Statistics

OVERVIEW OF **CONSTRUCTION** ACTIVITIES

1

LAND PREPARATION

2

CONSTRUCTION OF ACCESS ROADS, LAYDOWN AREA(S) AND TURBINE WORKING AREA(S)

3

CONSTRUCTION OF WIND TURBINE FOUNDATIONS

4

DELIVERY OF EQUIPMENT

5

ASSEMBLY AND INSTALLATION OF WIND TURBINES

6

CONSTRUCTION OF ELECTRICAL COLLECTOR SYSTEM, SUBSTATION AND INTERCONNECTION POINT

7

CONSTRUCTION OF COMMUNICATIONS AND METEOROLOGICAL TOWERS

8

SITE CLEAN-UP AND RECLAMATION

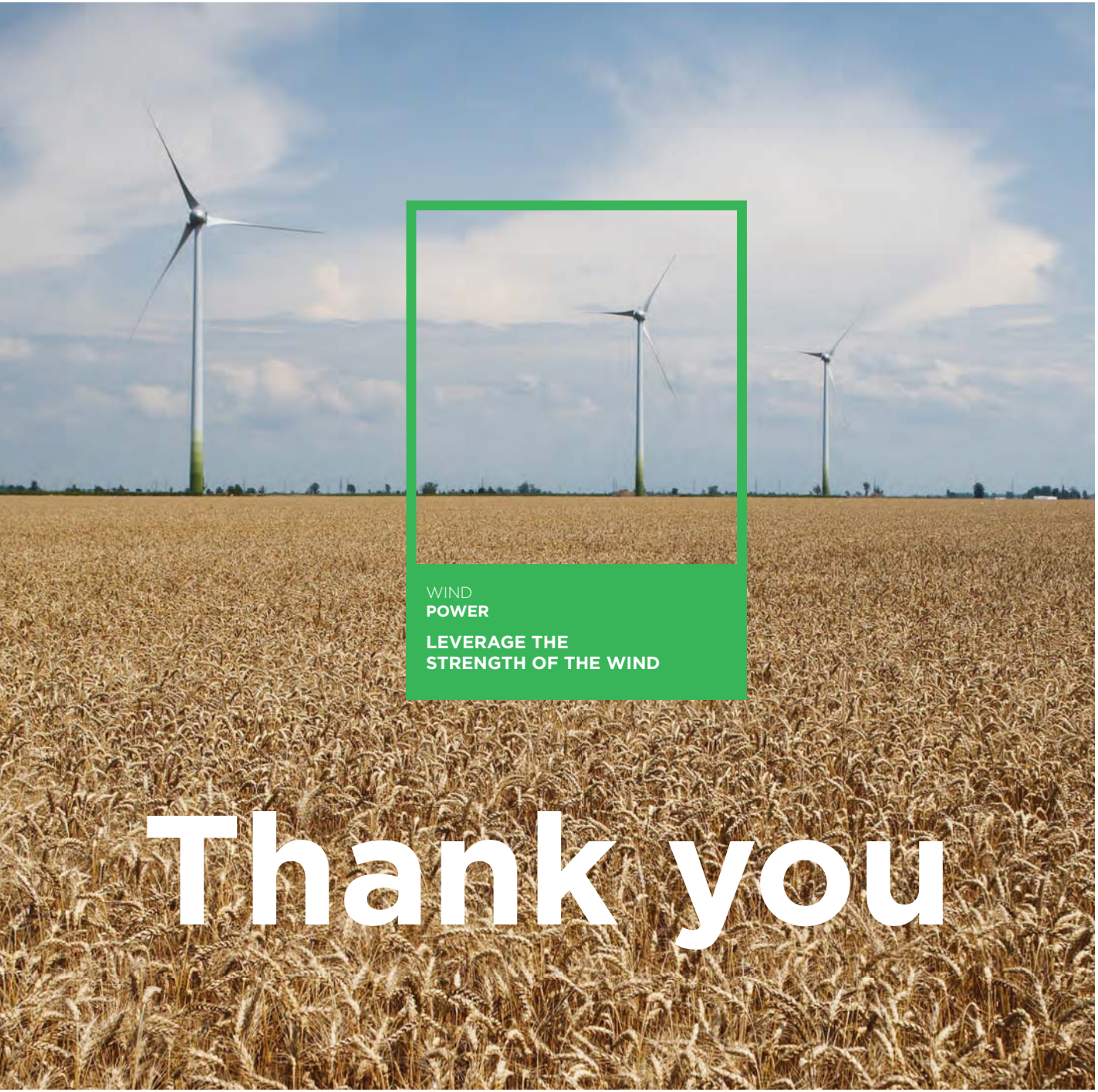
OVERVIEW OF **CONSTRUCTION** AND **DECOMMISSIONING** ACTIVITIES

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- Environmental Monitor on site during construction
- Timing considerations (breeding birds, nesting birds, native prairie grasslands, farming and grazing)
- Invasive species management

DECOMMISSIONING ACTIVITIES

Power Purchase Agreements (PPAs) are typically 20 to 30 years. At the end of the PPAs, since the wind will still be blowing, the turbines may be refurbished to enter in to a new PPA. To refurbish the turbines may require upgrading the access roads and foundations. If the towers are not refurbished they will be dismantled and removed from the site. The roads, collector lines and substation will be removed and the land reclaimed. The foundations will remain in the ground, and the soil and vegetation reclaimed on top.



Thank you for coming

to the Windy Point Wind Farm
Open House.

Before you leave
please complete the comment form, or
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info@windypointwindfarm.ca

Postal address:
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T2R 0C5

Phone number:
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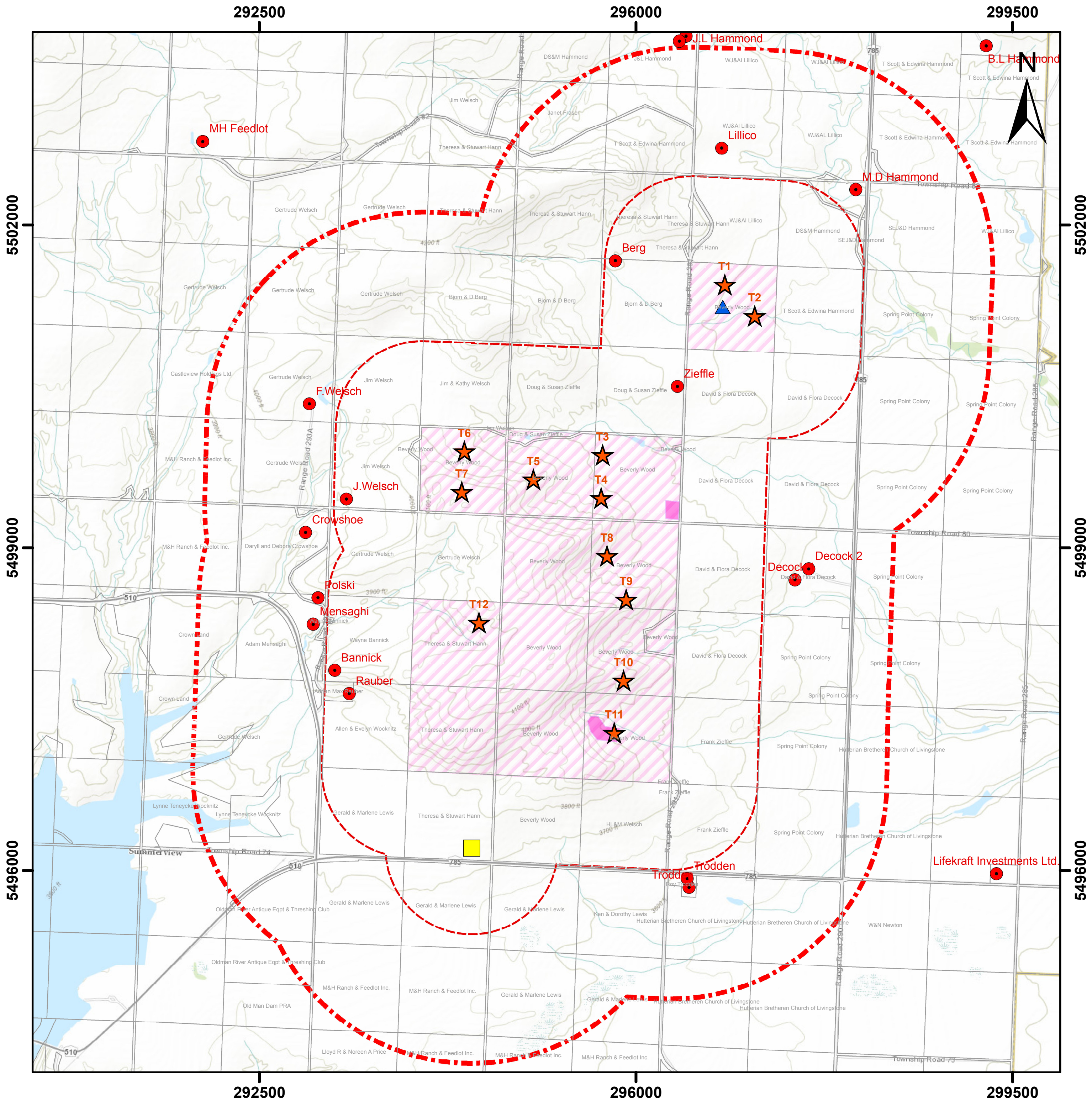
Alberta Wind Energy Corporation
renewable energy for future generations

BORALEX
energy creator

Appendix L: Public Consultation Zones Map



Legend

- Project Area
- Land Ownership
- Notification Zone
- Personal Consultation Zone
- Proposed Laydown Areas
- Wind Turbine
- Proposed Permanent Met Tower
- Project Substation
- Dwellings

BORALEX

Alberta Wind Energy Corporation
Renewable Energy for future generations

Windy Point Wind Farm

-

Public Consultation Map

0 1.5 3
km

Coordinates: NAD83 UTM Zone 12

Date: 2018/01/18

Source: Esri Topographic Map

Appendix M: List of Stakeholders

Appendix N: PIP Information Package

Windy Point Wind Farm Ltd. - Suite 1320, 396-11th Ave. SW - Calgary, AB, T2R 0C5

August 28, 2017

Dear Stakeholder:

RE: Windy Point Wind Farm development

Please find enclosed information regarding the proposed 51 mega-watt ("MW") Windy Point Farm Project (the "Project") to be developed approximately 13 km north-east of the Town of Pincher Creek. The Project is being developed by Windy Point Wind Park Ltd. (the "Applicant"), a wholly owned subsidiary of Alberta Renewable Power Limited Partnership (a limited partnership between Boralex Inc. and Alberta Wind Energy Corporation).

In advance of construction, Windy Point Wind Park Ltd. is preparing an amendment application to the current Alberta Utilities Commission ("AUC") Power Plant Approval (Decision 2012-205) to build and operate the proposed Project. As part of the amendment process, the Applicant is conducting a Participant Involvement Program, which includes various public consultation activities such as face-to-face meetings, information mail-outs, public notifications and an open house meeting.

The Project includes up to 14 wind turbines, a collector line network, roads and the Boulder Run (501S) Substation. The Substation AUC application process is currently on hold (AUC Proceeding #3485), and its review by the AUC will be combined with the review of the amendment application for the Project. Please see the enclosed map for specific locations of the proposed facilities. The Project has been designed in accordance with all municipal, provincial and federal regulations, including AUC Rule 012 regarding sound levels and Alberta Environment and Parks ("AEP") Guidelines for Alberta Wind Energy Projects.

You are receiving this information package because it has been determined that you are a landowner, resident or occupant located within 2,000 metres of the proposed Project, or you are a local stakeholder with an interest in the Project.

A public open house will be held on Wednesday, September 13 at 7:00 p.m. at the Heritage Acres - Summerview Hall (located northeast of Hwy #3 on secondary Hwy #785 and Range Road #293). Representatives of the Applicant will be available to answer questions about the proposed Project. We look forward to your attendance.

In the meantime, should you have any questions or concerns, please feel free to contact us at info@windypointwindfarm.ca or by contacting the undersigned. More information on the Project may be found at www.windypointwindfarm.ca.

Sincerely,

Marc Stachiw
President
Alberta Wind Energy Corporation
1-403-266-5635

Alistair Howard
Director of Development
Boralex Inc.
1-778-724-0487

A CONSULTATION PACKAGE FOR

The Windy Point WIND FARM

Contact:
Windy Point Wind Farm
403-266-5635
Suite 1320 396-11th Ave. SW
Calgary, AB T2R 0C5
info@windypointwindfarm.ca
www.windypointwindfarm.ca

51 Mega-watts

M.D. of Pincher Creek, AB

Up to 14 Turbines

New Collector Substation

Alberta Wind Energy Corporation
Renewable Energy for future generations

BORALEX

COMMUNITY INVOLVEMENT

Good planning involves the community. As sustainable developers, it is important to understand and be transparent to the concerns and questions of the community. This package, along with an upcoming open house, is designed to hear from the community to help build the best possible project for all stakeholders.

ABOUT

The 51 mega-watt (MW) Windy Point Wind Farm is being developed by the Alberta Renewable Power Limited Partnership ("ARPLP"), a newly formed joint venture between Alberta Wind Energy Corporation ("AWEC") and Boralex. The project is backed by the local expertise of AWEC, one of the longest serving developers in Alberta, and Boralex, a publicly listed company (BLX) and leader in the Canadian market with over 25 years of experience in the renewable energy space.

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ALBERTA WIND ENERGY CORPORATION

Alberta Wind Energy Corporation was formed in 2003 to develop independent wind farm projects. AWEC has proven to provide the local experience required for bringing projects from inception to completion and has partnered with large international renewable energy developers on numerous projects at various stages of development. Alberta Wind Energy Corporation is active in supporting the wind and solar industries across Canada.

OVERVIEW AND NEED FOR ELECTRICTY

The Windy Point Project is located 13 km Northeast of the town of Pincher Creek, AB, and is located on approximately 1,920 acres of privately owned land. Meteorological testing of the site began in early 2006 with very encouraging wind resource measurements to date. As coal fired power generation begins to be phased out, the Alberta Government is intending to procure up to 5,000 MW of renewable energy by 2030, with the first 400 MW being contracted out by the end of 2017. We believe that the Windy Point Wind Farm is in a position to be part of the planned 5,000 MW procurement.

TURBINE EXAMPLE

CONSTRUCTION

SUBSTATION EXAMPLE

PROJECT SPECIFICS

INTERCONNECTION

The substation (Boulder Run 501S) will be located on an already developed area, adjacent to the existing Windy Point 112S substaion. Electricity will be supplied to Alberta's electrical system via 90 meters of new transmission line tapping into 893L transmission line. Currently the Project is in gate 4 of the AESO approval process and is expected to be bid into Alberta's Renewable Electricty Program (REP).

ON-SITE EQUIPMENT AND COMPONENTS

General components involved in the Project include turbine pads, meteorological towers, electrical collector lines, access roads, cranes (during construction), electrical transformers and a collector substation. The wind farm will consist of up to 14 turbines with tower heights up to 105 meters and rotor diameters of up to 136 meters, and will produce enough energy to power approximately 27,000 Alberta homes.

PROPOSED PROJECT SCHEDULE

PUBLIC CONSULTATION	Q3-Q4 2017
SUBMIT M.D AMENDMENT	Q3 2017
SUBMIT AUC AMENDMENT	Q3 2017
PROPOSED CONSTRUCTION START	2018
PROPOSED TURBINE DELIVERY	Q1-Q3 2019
PROPOSED COMMERCIAL OPERATION	Q4 2019

REGULATORY BODIES GOVERNING THE PROCESS

Municipal	Provincial	Federal
Municipal District of Pincher Creek #9 (Municipal Planning Committee)	Alberta Utilities Commission (AUC) Alberta Transportation Alberta Environment and Parks (AEP) Alberta Electrical System Operator (AESO) Alberta Culture & Tourism	Transport Canada Environment Canada RCMP Department of National Defense Navigation Canada

BENEFITS

COMMUNITY

- Allows for many compatible land uses, such as farming and grazing
- Provides direct economic benefits for the M.D. through property taxes
- Opportunities for local businesses both during and after construction
- Creates local jobs during development, construction, and operation

ENVIRONMENTAL

- Wind is an emission-free and inexhaustible resource
- Wind energy helps reduce our dependence on conventional energy sources that emit greenhouse gas emissions and contribute to poor air quality
- Unlike other sources of energy, wind turbines generate electricity without the need for water and don't produce effluent which pollutes water bodies
- Modern wind energy generating equipment is relatively quick to install, requires minimal maintenance and is becoming more and more economical as efficiency increases and price of construction decreases

IMPACTS

MITIGATION

- Thorough environmental and wildlife studies were conducted, which included several rounds of studies
- Noise studies were conducted to conform to AUC regulations (Rule 012)
- Bird and bat studies were performed and mitigation procedures may be implemented
- Setbacks from wildlife and wildlife habitat as required by Alberta Environment and Parks
- Follow specific requirements set forth by the Municipal, Provincial and Federal Governments
- Post construction monitoring and mitigation program

COMMON CONCERNS

Wildlife habitat impact

Noise from turbines

Shadow flicker

Bird and bat mortality

Construction impacts

Post development impact

Decommissioning

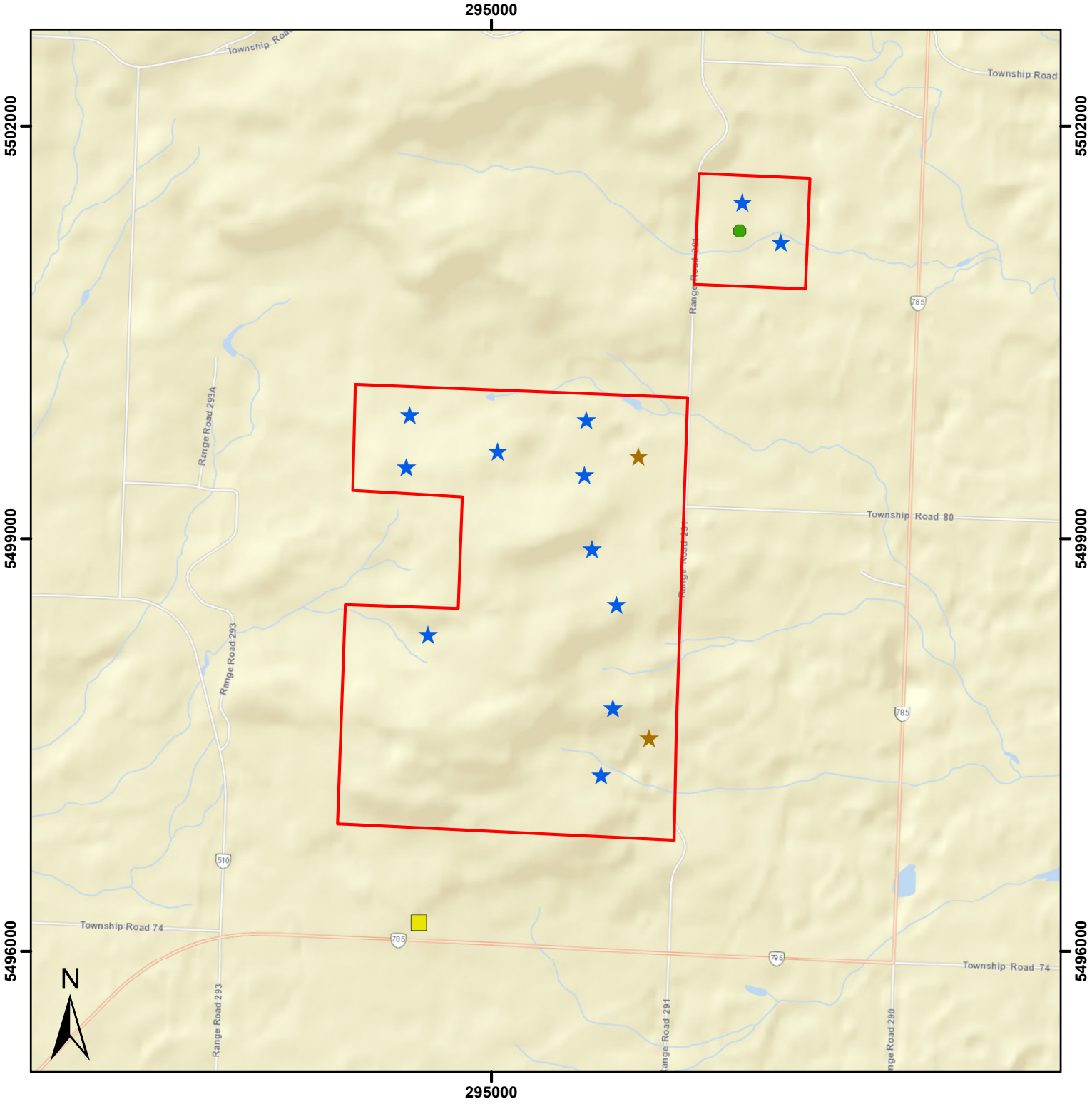
OPEN HOUSE / INFORMATION SESSION

ARPLP is conducting a participant involvement program for the Project in compliance with the AUC's Rule 007 to notify, inform and involve landowners, interested stakeholders, and the public in the approval process for the Project. The information session will be held Wednesday, Septebmer 13th at Heritage Acres - Summerview Hall starting at 7 p.m. with a presentation at 7:30. All interested parties are invited to attend. Refreshments and snacks provided. **Location: Located Northeast of Highway 3 on Secondary Highway 785 and Range Road 293.**

Marc Stachiw, President
Alberta Wind Energy Corporation
Suite 1320, 396 - 11th Ave. SW
Calgary, AB T2R 0C5
Tel: 403-266-5635
Email: marc@albertawindenergy.com

Project Contacts
Windy Point Wind Farm
info@windypointwindfarm.ca
www.windypointwindfarm.ca
Suite 1320, 396 - 11th Ave. SW
Calgary, AB T2R 0C5

Alistair Howard, Director,
Project Development
Boralex
606 - 1155 Robson St.
Vancouver, BC V6E 1B5
Tel: 778-724-0487
Email: alistair.howard@boralex.com



Legend

- Project Area
- Wind Turbine
- Wind Turbine (Alternative Location)
- Permanent Met Tower
- Project Substation

BORALEX

Alberta Wind Energy Corporation
Renewable Energy for future generations

Windy Point Wind Park

-

Project Map

0 0.5 1
km

Coordinates: NAD83 UTM Zone 12

Date: 2017/08/24

Source: Esri World Topographic Map

Step 6: The public hearing process*

The public hearing process provides an opportunity for those who have been unable to resolve their concerns with the applicant and have made a filing, to express their views directly to a panel of Commission members. The panel reviews the initial filings and grants what is referred to as standing to those who may be directly and adversely affected by the proposed project. Standing is necessary to continue involvement as an intervener in the proceeding which may include the filing of evidence and participation in an oral or written hearing.

The AUC will issue a notice of hearing setting out the hearing date, location and additional process steps and deadlines. An AUC public hearing operates similarly to a court proceeding and is a quasi-judicial process. The general public is welcome to attend as an observer and the hearings are often broadcast online so that those interested can listen-in.

Participants in a hearing can either represent themselves or be represented by legal counsel. In addition, participants may hire experts to assist in preparing and presenting evidence to support their position.

Persons who hire legal counsel or technical experts must be aware that while reimbursement for the costs of legal and technical assistance may be available under Rule 009, recovery of costs is subject to the Commission assessing the value of the contribution provided by counsel and technical experts. People with similar interests and positions are expected to work together to ensure that any expenditures for legal or technical assistance are minimized and costs are not duplicated.

Step 7: The decision

For electric transmission facilities, the need for transmission development filed by the Alberta Electric System Operator to the AUC must be considered to be correct unless someone satisfies the Commission that the needs application is technically deficient, or that to approve it would be contrary to the public interest. For electric needs applications, the Commission can either approve, deny, or send the application back with suggestions for change.

Commission decisions made about applications filed for a specific utility development, including electric transmission lines, gas utility pipelines and power plants, may be approved, approved with conditions or denied. Decisions are typically released within 90 days from the close of the record as a written report. The decision, available on the AUC website, will summarize the Commission's findings and state its reasons for the decision with any conditions or approval time limits if applicable.

Sometimes needs and facility applications are considered together in a single proceeding.

Step 8: Right to appeal

A participant in a hearing who is dissatisfied with the decision of the Commission may request that the Commission review and vary its decision. Such a request must follow the procedure set out in Rule 016: *Review of Commission Decisions*.

A dissatisfied participant may also file a leave to appeal motion in the Court of Appeal of Alberta within 30 days from the date the decision is issued.

Step 9: Construction and operation

Any applicant that receives a permit to construct and licence to operate a facility from the Commission must adhere to any conditions that were set out in the decision. If you notice something during the construction or operational phases of a project that concerns you, bring this to the applicant's attention. If you are not satisfied with the response you receive, please bring your concerns to the attention of the AUC.

***Denotes opportunity for public involvement**

The Alberta Utilities Commission is committed to ensuring that Albertans whose rights may be directly and adversely affected by utility development in Alberta have the opportunity to have their concerns heard, understood and considered. If you believe you may be directly and adversely affected, you can become involved in the AUC application and review process.

Contact information

Phone: 780-427-4903
Email: consumer-relations@auc.ab.ca

Dial 310-0000 prior to the 10-digit number and then press 1 for toll-free access anywhere in Alberta.

Information session

It is our goal to ensure that you understand the process, and your opportunities for involvement in proceedings to consider utility development applications. For those interested in having an AUC staff member further explain the application and review process or answer questions you may have about your involvement in utility development proceedings, please contact us as we may schedule a formal information session for you. The virtual information session on our website, found under Involving Albertans, will also provide you with further details which could assist you in understanding the process and having your say in a utility development proceeding.

This brochure provides general information only. Specific participation opportunities may differ depending on the type of application.

AUC
Alberta Utilities Commission

Public involvement in a proposed utility development

Understanding your rights and options for participating in a proceeding to consider applications for a proposed project in your area

Updated October 2014

Application process

Step 1*
Public consultation by the applicant.

Step 2
Application filed with the AUC.

Step 3
The AUC issues a notice of application or notice of hearing.

Step 4*
Interested parties submit filings to the AUC with any outstanding issues or objections.

If the AUC does not receive any submissions, the application will be reviewed and a decision may be made without a hearing.

Step 5*
The AUC issues a notice of hearing, if it was not already issued in Step 3.

- Continued opportunity for consultation and negotiation with the applicant.

Step 6*
Public hearing.

Step 7
The AUC issues its decision. Below are the options the AUC may consider for:

Needs applications from the Alberta Electric System Operator:

- Approval of application.
- Return to the Alberta Electric System Operator with suggestions.
- Denial of application.

Facilities applications:

- Approval of application.
- Approval of application with conditions.
- Denial of application.

Step 8
Option to appeal decision or ask the AUC to review its decision.

Step 9
Approvals, construction and operation of facility, if approved.

Having your say

Early discussions with the applicant about proposed utility developments will often result in greater influence on what is filed in the application for approval. Utility developments include natural gas pipelines, electric transmission lines and substations (including Alberta Electric System Operator needs identification documents), and power plants. Should you have concerns related to a proposed utility development, it is best to have early and ongoing discussions with the applicant.

If your objections cannot be resolved, or you have outstanding concerns upon the filing of an application with the AUC, you have an opportunity to submit an initial filing with your objections in writing to the AUC containing the following information:

- **How you may be affected by the proposed project and the location of your land or residence in relation to it or any alternative proposed in the application.**
- **The potential effect the proposed project may have on your property or interest in the property .**
- **A description of the extent to which you may be affected, and how you may be affected in a different way or to a greater degree than other members of the general public.**

Following this initial filing, you may be able to fully participate in the proceeding. This could include having legal representation and participation in a public hearing. It is important to note that any applied for routes and segments (preferred and alternate) could be chosen as the approved route in the AUC decision.

Step 1: Public consultation prior to application*

Prior to filing an application with the AUC for the approval of a proposed utility development, the applicant is required to conduct public consultation in the area of the proposed project, so that concerns may be raised, addressed and if possible, resolved.

The requirements for consultation and notification, namely the participant involvement requirements, are set out in Rule 007 for electric facilities and Rule 020 for gas utility pipelines.

Potentially affected parties are strongly encouraged to participate in the initial public consultation, as early involvement in discussions with an applicant may lead to greater influence on project planning and what is submitted to the AUC for approval.

Step 2: Application to the AUC

When the participant involvement requirements have been completed, the proponent of the utility development files an application with the AUC. The application must indicate the issues which came up during the public consultation and any amendments considered or made to the project. Any unresolved objections or concerns which arose from the public consultation must be identified in the application.

***Denotes opportunity for public involvement**

Step 3: Public notification

The Commission will issue a notice when it receives an application that, in the Commission's opinion, may directly and adversely affect the rights of one or more people. The notice is typically sent by mail to residents in the project area and may also be published in local newspapers. The notice will provide key dates, contacts and participation information for those interested in becoming involved in the application process.

Step 4: Public filings to the AUC*

If you have unresolved objections or concerns about the proposed project filed with the AUC for approval and wish to participate in an AUC proceeding, you must make an initial written filing. Your filing must include your contact information, concern or interest in the application, an explanation of your position and what you feel the AUC should decide. Please be aware that any information or materials filed with the AUC, except information granted confidentiality, is available to the public.

Filing your concerns

The eFiling System is a web-based tool created to manage applications and filings made to the AUC through a proceeding-based review. This system gives access to all public documents associated with applications filed with the AUC and is the most efficient way to provide your input to the AUC and monitor the related proceeding filings.

Those who do not have access to the Internet can send filings, evidence and other material by mail or fax and the AUC will upload the submission on your behalf.

Participant cost reimbursement

A person determined by the Commission to be a local intervener can apply for reimbursement of reasonable costs incurred while participating in an AUC proceeding. Details regarding recovery of participants' costs are described in Rule 009: *Rules on Local Intervener Costs*.

Step 5: Consultation and negotiation*

The Commission supports ongoing efforts to reach a positive outcome for the applicant and all affected parties. The Commission encourages the applicant and those who have made filings to continue to attempt to resolve any outstanding issues. If all concerns can be satisfactorily resolved this may eliminate the need for a formal hearing. However, if there continues to be unresolved issues, typically those matters will be addressed at an AUC public hearing.

Appendix O: Reclamation Strategy

Windy Point Wind Farm

Reclamation Strategy

Submitted to:

Carlie Smith
Boralex
1155 Robson Street, Suite 606
Vancouver, British Columbia V6E 1B5

Submitted by:

Tannas Conservation Services
Cremona, Alberta

August 2017

Lead Authors

Steven Tannas PhD. P.Ag

Contributions (Field and Report) By:

Ashley Easton P.Ag

Darin Sherritt MSc. AIT.

Krista Bird PhD. P.Biol.

Marilyn Neville (2011 Draft Report)

EXECUTIVE SUMMARY

The process of reclaiming disturbances within the foothills fescue grasslands requires careful planning and management. To mitigate challenges inherent to restoration efforts, this framework outlines: the information, construction strategies, reclamation and revegetation strategies, monitoring techniques, and milestones required to increase the likelihood of success. Information is provided for different types of plant communities based on the existing rough fescue percentage. Additional detailed information required within this framework will be gathered and reviewed prior to construction in order to develop detailed reclamation plans for each possible disturbance location. The detailed reclamation plans will be formed based on this framework with the goals of minimizing environmental impact and limiting the impact of invasive species wherever possible. The detailed reclamation plans will be created with the goal of meeting all the milestones for success outlined within this framework in a timely manner through a strong monitoring program and adaptive management strategies.

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DEFINITIONS

Invasive Species – Any species (i.e. native or non-native) that has the potential to cause ecological or economic damage due to its growth habit.

Native Species – Any species (i.e. plant, animal, insect, etc.) that was present in North America prior to human settlement.

Non-Native Species – Any species (i.e. plant, animal, insect, etc.) that was brought to North America through human settlement.

Rare Plant – Any plant species that has been declared to be provincially endangered or threatened by the Alberta Conservation Information Management System (ACIMS 2017), or Federally by the Committee on the Status of Endangered Wildlife in Canada (Government of Canada 2017).

Regulated Weeds – Non-native species whose invasive nature has been recognized to be so detrimental that their management is regulated by the Alberta Weed Control Act (Government of Alberta 2008).

1 INTRODUCTION

In order to mitigate for environmental effects associated with the construction of the Windy Point Wind Farm, hereinafter referred to as "Windy Point," a construction and reclamation strategy is needed to avoid, minimize and repair the effects on valued and sensitive native grassland and pastures. To achieve this objective Tannas Conservation Services (TCS) has completed this reclamation strategy to outline the process by which native grasslands and pastures disturbed during the construction of Windy Point Wind Farm may be reclaimed. The strategy contains a series of pre-construction and construction period actions to gather information, provide mitigation to avoid or minimize effects, and to reclaim grasslands. During detailed design for the project, and based on (i) the outcome of regulatory approvals, (ii) the results of soil and vegetation surveys, (iii) project extent, design and staging, the most relevant and effective of the actions will be used to develop a Detailed Reclamation Plan. The actions in the Detailed Reclamation Plan will include those that are relevant to the ecological situation and the project, and practical and cost-effective for implementation. The end goal of this strategy is the long-term restoration of the plant communities to a level comparable to the surrounding grasslands and the pre-construction values.

1.1 Unique Habitat of Proposed Project Footprint

The fescue grasslands of the southern foothills of Alberta are diverse ecologically sensitive areas important for agriculture, ground water resources, recreation, wildlife, and industry. Disturbances on these grasslands have been met with strong public opposition. Proper planning and mitigation are essential to alleviate public concerns over damage to the environment both in the short-term during construction and the long-term through intensification of land use.

These grasslands have historically been largely undisturbed and represent large tracts of intact native ecosystems. The importance of these grasslands is found in their role as a forage resource and specifically the nutritional value of the dominant species *Festuca campestris* (foothills rough fescue) during the dormant (winter) season (Dormaar et al. 1990; Willms et al. 1985). This grazing susceptible species is adapted to dormant season grazing and therefore represents critical economic savings to the ranching industry by not requiring stored hay for winter feeding. In addition, native herbivores also take advantage of these grasslands for their forage sources. Rough fescue is the climax species of the foothills grasslands (Dormaar et al. 1990) and is a long lived productive species that co-exists with a diverse complex of species.

1.2 Construction Strategies to Minimize Environmental Impact

Construction during any industrial activity has an inherent impact on the environment. This impact cannot be completely eliminated, but there are many techniques available to reduce these impacts. These impacts on the native ecosystem can be divided into long-term (shifts in plant community, extirpation of native species, reductions in biodiversity, reduced productivity, altered hydrologic function, etc.) and short-term effects (reduced productivity, temporary loss of habitat, reduced

nesting locations, etc.) to the ecological integrity. Many short-term effects, if not properly managed, can become long-term problems. Depending on project location, construction season, and area required to be disturbed, there are a number of effective construction strategies that can be utilized to mitigate long and short-term effects on ecological integrity both of plant and animal communities. The following framework recommends the best practices, as well as mitigation strategies suitable when the ideal strategies are not possible.

2 PRE-CONSTUCTION DATA COLLECTION REQUIREMENTS

To successfully reclaim a native ecosystem, information on the type and function of the ecosystem in question is required. In order for the detailed reclamation plans for each site to be completed the following information is required:

- Mapping of potential plant communities using Grassland Vegetation Inventory (GVI) with accompanying attribute table and aerial imagery
- A detailed field truthed vegetation inventory of all polygons outlined by the GVI
- Range health assessments of polygons outlined by the GVI
- A rare plant survey
- A detailed field level soil survey with accompanying maps
- Mapping of ground water resources
- Produce environmental protection plan
- Creation of construction alignment sheets

2.1 Plant Community Mapping

In order to determine the goals of reclamation it is critical that the pre-disturbance plant community as well as the plant community surrounding the disturbed area is determined. Plant community information required to reach the end goals of reclamation include determining: the plant community type as found in the Range Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta (Adams et al. 2003), any potential of current land management to impact reclamation, and what factors will pose challenges to reclamation. This information will allow for the creation of a detailed reclamation plan that will mitigate for weed infestations, rare species, and allow for reclamation to place the new plant community on the proper ecological trajectory. This will restore ecosystem function of the site with an end goal of seeing the site to sustain the ecological integrity of the surrounding grasslands.

2.1.1 Soils

Soil mapping is necessary to determine what types of soils will be encountered in the construction and reclamation process and what mitigation will be necessary in order to successfully replace, stabilize and revegetate the soils. Existing mapping products (Agriculture Region of Alberta Soil Inventory Database (AGRASID (Government of Alberta, 2017(1)), GVI (Government of Alberta, 2017 (2)), and the Pincher Creek Soil Survey) can be used to establish anticipated polygons and soil types present within the project area. A field survey must be completed to verify the desktop information and confirm polygon characterization and boundaries. The field assessment will obtain site-specific data relevant to current conditions

within the proposed project area and to construction and reclamation. Data should be collected from existing sources and compiled prior to conducting field work. The desktop information will be used by the soil assessor(s) in the field. Field work can be completed independently or concurrently with vegetation and/or range health assessment..

2.1.2 Plant Community Classification Method

The mapping completed in the soil survey will also include potential plant communities based on the information contained within the available soil survey and GVI data. These polygons will then be confirmed on the ground and a detailed plant community will be assigned to each polygon.

In Alberta, plant communities have been classified by Alberta Environment and Parks (AEP) within the Range Plant Community Guides. The philosophy of determining the health of rangelands (proper functioning condition) has evolved over time. Initially it was based on the habitat type approach of Daubenmire and evolved into a community type approach developed by combining the work of Mueggler (1988) and Beckingham et al. (1996). This organizational structure of ecosystems allows for ecological classification hierarchies to be determined (ecological site, ecological site phase, and plant community). Additionally, this technique allows the ecosystem in question to be linked to historical rangelands and a province-wide standard for classification found within the Rangeland Plant Community Guides (Adams et al. 2003).

Utilization of this structured approach to mapping the plant communities present prior to a disturbance will allow for the ecological trajectory to be tracked along already established plant community succession pathways. Such insight will better allow for adaptive land management to modify the plant community through weed control, additional seeding, and soil amendments to better direct the recovering site towards the desired plant community outcome.

Assessment of the plant communities can be achieved through use of Rangeland Health Assessments and detailed vegetation inventories of each polygon delineated by the (GVI) and subsequent ground truthing. For each identifiably different plant community found within the proposed disturbance, a complete assessment will be performed. This will include one Range Health Assessment form and a 10 frame detailed vegetation transect. Additional information gathered will include GPS locations of all weeds, photos of weeds, photos of the site, confirmation of soils, as well as a basic drawing of any unique features on the site.

This information can then be compared to the Rangeland Plant Community guides to determine the current ecological state of the plant community and subsequently the best methods to restore this community. A detailed plan for reclamation of different groups of plant communities can be found within Section 5.0 and the site by site plan will be determined by the results of the Rangeland Health Assessments.

2.1.3 Weeds

All noxious weeds and invasive species with a potential to impact reclamation success will be located using GPS and detailed population statistics (area and density cover) will be recorded. Currently a list of nuisance, noxious, and restricted weeds has been completed on the study area, but no monitoring of abundance on the specific construction sites has occurred. This information is easily captured within the Range Health Assessment and detailed vegetation inventories. For this reason this information will be specifically targeted within the proposed surveys. In addition to controlled weeds, invasive species including agricultural species may also have a severe negative impact on reclamation success (Tannas 2011). Table 2.1 shows that the invasion of Kentucky bluegrass, timothy, and awnless brome has become a significant problem in the foothills. All three of these species are invading without disturbance, but have been bred to be aggressive on disturbed lands by the agricultural industry. This makes all three of these species a significant threat during the reclamation process. For this reason abundance of these species will be collected on the vegetation inventory.

Table 2-1 Percent of plots with Kentucky bluegrass, timothy or awnless brome in the Foothills Fescue and Foothills Parkland natural subregions (Adams et al. 2003).

Natural Subregion n - sample plots	Kentucky bluegrass	Timothy	Awnless Brome
Foothills Fescue n = 487	68	36	7
Foothills Parkland n = 410	75	73	21

Results from the weed inventory will then be used to determine the need for spraying treatments prior to establishment of the new plant community, as well as highlight the types of weed control necessary for budgeting purposes within the reclamation process.

2.1.4 Groundwater Resources

The hydrology of the sites in question is important and a complete analysis of the location of springs and wells should be added to the data already collected on dugouts and reservoirs within the study area. A basic analysis of the geology below each tower will also mitigate against any unforeseen impacts to the regions hydrology. The mapping of wells and springs can be completed during the Range Health Assessment while the geology should be separately analyzed.

2.1.5 Rare Plant Survey

Targeted rare plant surveys will be completed for all towers, roads, and power lines. Spring and summer surveys will be completed as appropriate by the types of rare plants that that may possibly be present within the project footprint. The summer survey may overlap and as such be combined

with summer vegetation inventory (July), but the methodology used will be the same as the previous survey completed for the entire project footprint.

2.2 Required Personnel

To properly mitigate for problems during the reclamation process the detailed reclamation plan created for each site as well as monitoring of the reclamation process will be completed by highly trained personnel (minimum of five years of experience) with extensive experience working in reclamation within the foothills fescue grassland and parkland plant communities. This is required to ensure that costly mistakes are not made during the reclamation process, as well as to ensure the highest possible quality of reclamation personnel is completed in a timely and economic manner. As reclamation within native grassland in this area is complex, professionals with various skills may be required and a team of several personnel with expertise in reclamation, soils, revegetation, native plant communities, and weeds is highly recommended.

The final reclamation assessment must be completed by an experienced professional who specializes in native grasslands (i.e. Rangeland Agrologist).

3 LOW IMPACT CONSTRUCTION STRATEGIES

The greatest way to protect the environment is to minimize the area that is disturbed (i.e. soil is moved or exposed, or plants are affected). This is the most effective method of protecting the environment and is the most cost efficient over the life of the project. While in some cases costs up front may be higher, additional care up front generally significantly reduces costs required for adaptive management, reclamation, revegetation, and monitoring throughout the life of the project. Low impact strategies can include: using existing trails, using combined right-of-ways (RoWs), planning soil surface disturbance carefully, sequential construction planning to minimize disturbance, and the use of matting/geotextiles to reduce the impact to the environment. In addition, the time of year of construction and the presence of weeds can have dramatic effects on the success of reclamation. For this reason careful planning around these issues will reduce the impact of construction.

3.1 Minimizing Area to be Disturbed

The impact of construction can be significantly reduced by following existing trails whenever possible, and minimizing the width of any required RoWs. Driving on frozen grasslands has less impact than stripping the soil and vegetation to create a high-grade road. However, this can still result in soil compaction and vegetation disturbance.

The use of rig-matting on frozen ground is an effective method to reduce the impact to the soils and plant community during the dormant season. This technique however, is limited by topography and season and as such may not be able to be utilized for all instances during this specific project. Whenever possible, rig-matting placement over frozen soil instead of stripping and grading the soil is the preferred method for minimal disturbance. When using matting during the dormant season, it is critical that the matting be removed prior to spring break up.

If rig-matting is not possible, construction of temporary roads is a secondary alternative to reduce environmental impacts, although it is a less effective mitigative strategy. Placing heavy duty landscaping fabric (geotextile) on the ground and placing gravel on top can eliminate the need to disturb the soil while creating a solid road.

In lieu of development of a traditional high grade road, a permanent road may be a simple trail with gravelled tracks. This significantly reduces the surface disturbance and potential issues, which may arise associated with soil and vegetation removal, such as erosion and weed infestations. Whenever possible, ditches should be minimized and the plant community surrounding the road, towers, and lines should be kept intact to the greatest degree possible.

Whenever possible, construct powerlines and other infrastructure related to the project within the road RoW and ideally during the same time frame, to further reduce the area which is required to be

disturbed and reclaimed. Creating an additional linear disturbance will require more area to be managed during operation and reclaimed following construction.

All construction techniques should be considered in order to reduce the short and long-term impact on the soils and plant communities. This requires that the engineers work with the reclamation specialist throughout the construction process in order to design the lowest impact situation possible for roads, powerlines, substations, etc. A site visit and discussion between the engineers and reclamation specialist is highly recommended to enact this portion of the plan during construction design and reclamation planning of each specific site.

3.2 Time of Construction

Construction procedures that involve surface disturbance to the grassland, such as stripping, grading, or travelling on unstripped native prairie sod, will be conducted during the dormant season under suitably dry and/or frozen ground conditions (August 31 - March 1). The completion of all stripping, grading, and specific soil mitigation at the same time and immediately following up with the remaining associated civil construction will reduce the chances of a forced shutdown occurring during construction. A shutdown criteria will be created with the site-specific detailed reclamation plan to deal with adverse environmental conditions (i.e. rain, snow, high winds, etc.).

On a case-by-case basis, activities that cannot be completed during the dormant season may be considered for summer construction to allow for some flexibility. Work occurring outside of the dormant season must be completed under the direction of the Reclamation Specialist to avoid causing severe impacts to the site. Soil disturbance during the spring as well as work on native grassland areas must be avoided to avoid rutting and compaction. All soil disturbance on native grasslands will be completed during the dormant season to reduce reclamation costs and protect sensitive ecosystems.

3.2.1 Dormant Season Construction (August-March)

Dormant season construction is ideal for a number of reasons. The ground will be dry and/or frozen. This allows for easy movement on the landscape without damaging actively growing plants. After the ground freezes the impacts of compaction may be significantly reduced, simplifying the reclamation of the site later. During the dormant season options, such as matting, can be utilized without the worry of killing vegetation, which in turn can significantly reduce the cost of reclamation. The final benefit of dormant season construction is that it avoids the majority of the critical time periods for wildlife use, such as nesting periods (April 15 – August 15). Construction will target this dormant time period of the year if at all possible.

3.2.2 Summer Construction (July - August)

Summer construction will be the second choice behind dormant season construction. This is because the ground will have firmed up, and in many cases will be very dry. Options such as using matting instead of stripping may no longer be possible because the plants are actively growing. The negative

impacts of compaction may be increased as compared to during the dormant season and as such, testing and appropriate treatments may be required to alleviate this barrier to plant growth. Also, a bird nest sweep by a qualified wildlife biologist will be required prior to work starting during this time period.

3.2.3 Spring Construction (April - June)

Spring construction will be avoided or limited to only finishing work. This period poses a number of significant challenges on native rangelands including: nesting, soil moisture, precipitation, and actively growing vegetation. There is a significant chance that compaction and rutting will greatly compound costs of reclamation. A bird nest sweep by a qualified wildlife biologist will be required prior to work starting during this time period.

3.3 Cleaning Equipment

All equipment moving soil will be thoroughly cleaned before entering the sites. This will prevent weeds from being introduced to the site during the construction and reclamation process. Additionally, it is recommended that equipment is cleaned if the equipment moves from a tame pasture to a native pasture to ensure that seeds are not transferred between sites. As such, construction on high conservation areas first is recommended when possible. This information will be outlined on the construction alignment sheets. Finally Equipment will be cleaned when it crosses from cultivated land owned by one land owner to another. This will prevent issues such as weed movement as well as eliminating the potential for clubroot spreading on site within areas that are not considered native grassland.

3.4 Soil Movement and Storage

Soil conservation is critical in the reclamation process and the more soils are moved or handled, the more potential there is for soils to be lost or damaged. For this reason, specific soil handling procedures for all disturbances, including turbines, powerlines, and roads, associated with this project will be developed. These procedures will focus first in minimizing disturbance and secondly on minimizing the impact of necessary soil disturbances.

Soils should be replaced as soon as possible and all exposed soil will be protected from wind erosion using an appropriate methodology such as matting, tackifiers, straw crimping, or cover crops. Each of these techniques have benefits and shortfalls, and the selection of the appropriate technique for a given site will be specifically outlined in the detailed reclamation plan. Several techniques will likely be required to be used in conjunction with one another based on site-specific conditions.

3.5 Invasive Species and Weed Control

Invasion of non-native plants is a worldwide problem in bunchgrass communities (Mack 1986; Tyser 1992). Such invasions have often led to the displacement of endemic vegetation (Mack 1989) that in many cases has resulted in the complete destruction of the endemic plant communities. One of the

leading causes for invasion is physical disturbance which can create empty niches for invaders to colonize (Didham et al. 2005), and as such invasion is a symptom of the disturbance process (MacDougall and Turkington 2005). Presence of weeds and invasive species can be collected from the original site survey as well as through the Range Health Assessments suggested to occur once the final tower and road construction has been completed. This information will then be placed on a final vegetation map for the weed control program.

Methodologies capable of preventing and controlling the establishment of invasive species include: pre-construction weed control, cleaning all equipment before it enters the site, pre-seeding weed control, ensuring the use of clean seed and plant materials, and post-seeding weed control and monitoring.

3.5.1 Pre-Disturbance Weed Control

The contamination of even a small percentage of invasive species can be challenging to restore. For this reason any site with Kentucky bluegrass, timothy, or smooth brome will be sprayed prior to soil disturbance. Any listed noxious weeds must also be controlled prior to any construction activities taking place. This may be spot spraying of individual weeds on sites where there are very few weeds. On other sites where the presence of invasive species and weeds is higher, the use of glyphosate is extremely effective. This method of weed control has become a standard in the agricultural industry when a perennial crop is removed and is highly effective in transitioning from one plant community to another. This is because these treatments prevent invasive species from spreading through root propagules during soil handling.

All invasive species specifically agronomic grasses (i.e. *Phleum pratense, Poa pratensis*, *and Bromus inermis*) and forbs (i.e. *Melilotus officinalis* and *Medicago sativa*), as well as noxious and restricted weeds located within the project footprint must be controlled before any disturbance using a glyphosate treatment. This treatment is best completed between June and September.

3.5.2 Post-Disturbance Weed Control

Post-disturbance weed control is a critical component of the reclamation process. Weed control will be required in two stages: pre-seeding and post seeding. The pre-seeding treatment will occur after the soil has been replaced on the site and any weed seedlings have been allowed to germinate. This technique prevents fast growing invasive species from dominating the site before the native plant community is established. It also allows for complete control of the species allowed to revegetate on the site. This is because after desirable species have been seeded, it is not possible to differentiate between invasive and native grasses with a herbicide. Failure to control invasive species prior to seeding, can result in failure and the site would require restarting from the beginning of the revegetation process.

After seeding, continued monitoring for weeds and spraying for the first five years as necessary will be completed on all reclaimed areas. This requires a monitoring program to be enacted whereby the

sites are checked for weeds during this time period. Such a program can easily be put into place to parallel monitoring of establishment of the native species and other reclamation-specific issues.

3.6 Range Management Plan

A meeting between the land owner, representatives of Windy Point, and the Reclamation specialist will occur during the creation of the detailed reclamation plans. This meeting will be focused on matching the needs of the landowner and the needs of the reclamation process. Issues to be discussed will include: grazing rotation, fencing, and associated impacts to the revegetation process.

4 SOIL AND LANDSCAPE RECLAMATION STRATEGY

The goal of the reclamation strategy proposed here is to re-establish the landscape, soils, and vegetation in such a way that the ecological integrity of the site is maintained. This means that the landscape features should match the surrounding landscape. Soils should be placed consistent with offsite (in the proper order, similar depths, and lacking compaction). As this region is known for extreme wind events that can cause large-scale erosion, prevention and mitigation of erosion will be critical to reclamation success.

4.1 Landscape and Contouring

The replacement of the parent material during the reclamation process is critical to recreating the hydrologic and ecological functions of the site. The site should be contoured to match the surrounding topography. Drainage should be recreated to allow onsite and offsite water movement to be consistent with pre-disturbance conditions. Pooling of water on the disturbed area should not occur unless it was present prior to construction.

Operability of the site post-reclamation must be consistent with that prior to disturbance. That includes consistent surface stoniness, micro-topography, and organic debris.

4.2 Compaction

Soil compaction associated with heavy equipment use significantly reduces vegetation establishment success. This occurs because the compaction modifies water infiltration, reduced pore space, and creates root barriers within the soil profile. Mitigating compaction can be completed through para-tilling, ripping, discing, or rototilling, the compacted soil. Ideally a compacted layer is mitigated prior to spreading additional layers overtop as decompaction of buried compaction typically results in admixing. The parent material which typically becomes compacted, as it is often used as the “work surface” can be alleviated by cross ripping the area following recontouring before the subsoil and topsoil are replaced.

Working with rig matting, or during frozen soil conditions can reduce the potential for compaction to occur. Working within wet or thawed soil must be avoided.

4.3 Soil Salvage, Storage and Replacement

All soils must be salvaged during construction activities. This includes sod as applicable. Areas where soil salvage, especially of topsoil, may be challenging, such as highly stony areas, uneven ground and varying topsoil depths, specific plans and contingency plans must be in place. Topsoil and subsoil must be stripped and stored separately (do not over strip).

Soils must be stored on like material. Topsoil may be pile on top of topsoil. However, subsoil or parent material should never be piled or stored on top of topsoil. If unavoidable, or a reduced area

for stripping is desired, the area may be lined with poly-liner prior to stockpiling. Admixing on the soil surface is impossible to repair.

Replacement of the subsoil and topsoil uniformly across the site is required to ensure that a high quality seed bed is available for the revegetation process. The soil should be replaced replicating the surrounding plant communities. There are varied qualities of topsoil and as such the different types of topsoil encountered throughout the site (in different areas) should be replaced appropriately to replicate the previous soils. Micro-sites will be created through micro-topography that will enhance plant community establishment. This micro-topography, while important, will be maintained at levels similar to that found in the surrounding plant communities. Smooth surfaces are not recommended within native grassland areas. Smooth surfaces however are desirable within cultivated areas.

The more soils are handled, the greater damage occurs to its structure and consistence. Ideally, the number of times soil must be moved should be reduced as much as possible. The distance soil must be moved also impacts the handling and thus should be minimized. Moving/spread soils when they are wet has severe consequences on the structure and quality of the soil and must be avoided as much as possible. Working with soils while they are wet also increases compaction.

4.4 Wet and Frozen Soils

Working within wet or thawed soil must be avoided. Should any of the following occur, contingency measures and work stoppage must be initiated: excessive rutting (in native grasslands the threshold for excessive is very low), wheel slip, build-up of mud on tires or cleats, formation of puddles, and/or tracking of mud within the work area or along the road when leaving a site.

While working on soils while they are frozen can reduce compaction, topsoil should not be stripped or spread if frozen. This results in admixing and clodded structure and is not easy for an equipment operator to complete. Special equipment and excessive care must be used.

4.5 Erosion Control

Wind and water erosion are serious concerns within the foothills ecosystems, especially within the Pincher Creek area, which is known for the strong winds experienced throughout the year. Wind erosion can lead to the significant loss of exposed topsoil (and subsoil). In addition, the variable topography common within the foothills can lead to significant risks of water erosion. Very steep slopes are present within the proposed project area and will be high risk for erosion due to both wind and water. To reduce the risk of both soil and water erosion, straw crimping, tackifiers, cover crops, and matting can be utilized. The choice of erosion control method(s) will depend on the specific risks for each specific site. In many cases, more than one method may be required.

4.6 Soil Importation

Any soil brought onto the site must come from a local source free of noxious or restricted weeds, should be analyzed for potential organic and inorganic contaminants, and should be approved by the landowner. This includes topsoil and any fill material should it be required.

4.7 Weed Control

Soil stockpiles and exposed soil must be monitored for potential weed establishment and controlled (herbicide) throughout the construction process, not just at the end or during revegetation. Soil disturbance of any size will result in a flush of vegetation growth with the occurrence of space, availability of nutrients and the lack of competition. Once the soils have been replaced, weed control is necessary to ensure that establishing native species are not suppressed by aggressive weedy species. These weedy species, as described in section 3.6, can be provincially regulated or invasive agronomic species. The appropriate control method will vary by the specific species in question, but a minimum of one treatment of glyphosate will be required after the topsoil has been replaced. Additional spraying treatments may be required as dictated by the subsequent establishment of weedy species on the reclaimed soil surface. Once the presence of invasive species and weeds has been eliminated from the site, revegetation may proceed.

5 REVEGETATION PLAN

Restoration of plant communities once extirpated from a site is a complex process. By using a plant community level approach to reclamation it will be possible to achieve the highest chances of successfully restoring the grasslands after disturbance. This approach requires that we understand the plant community that was removed, as well as the climate and soils that built this community. This method also requires us to recognize the current grazing management plan and how that could positively or negatively affect reclamation success. The proposed methodology in restoring the plant communities within this project is based on a pre-site vegetation inventory that combines a range health assessment with more detailed vegetation sampling. This information will be used to determine current land use, present health of the plant community surrounding the disturbed areas, and any factors such as weeds that must be mitigated during the restoration process. Once this is complete each plant community found on a site can then be classified within its plant community type (Adams et al. 2003) and site-specific seed mixes and planting methods can be created. Outlined below are broad categories that these plant communities fall within and basic directions in restoring each one of these groups. The detailed plan should be created by an experienced professional that has a comprehensive ecology and restoration of plant communities in this region.

5.1 General Revegetation Plan

The proper site-specific seed mix will be developed from the site-specific vegetation inventory. Seed selected must be free of restricted, noxious or invasive species of concern. Seed will be mixed on a pure live seed basis (PLS) and seeded via broadcasting or using a Brillion seed drill. This will occur between May 1 and June 5 or between September 25 and October 30 for optimal germination. Seeding may be delayed due to adverse weather conditions (drought) that would cause a high risk of an establishment failure. The seed mix will be formulated to account for ease of germination, seed size, PLS, and time of planting. Additional seed may be added to the site in the second year to increase any species that are found to be deficient after the first year's assessments.

Restoration of fescue grasslands is extremely difficult due to the poor germination rates and establishment of the climax species (foothills rough fescue) (Desserud 2006, Sheley et al. 2006, Tannas 2011). To deal with these challenges the use of live rough fescue plugs is the most effective method of restoring this species after it has been extirpated from a site. The target for the successful reclamation of climax foothills rough fescue grassland will be achieving a cover of 50% of the pre-disturbance cover after five years. This target is logical considering the slow growth rate of this species and the fact that the goal of restoration is to set the community on the right trajectory not complete restoration in the first five years. This target will account for mortality and climatic variation in plant size so that the minimum criteria for success of 30% of the original cover will be achieved. The density of these plants is set to replicate the surrounding plant community and as such can vary. In Table 5.1, a formula is provided to determine what density of foothills rough fescue plants is needed to achieve a final density of 50% of the original plant community. In order to determine the

proper density the percent cover and average plant diameter will be measured during the pre-disturbance assessment. This information will then be plugged into Table 5.1 to determine what density of plants is suitable to achieve the desired results. Moist sites typically have fewer larger plants while dry sites have many more small plants. The pre-disturbance plant size will be representative of what can be expected in the final assessment after five years.

In addition to the climax species, subdominant species such as Parry's oat grass and a few shrubs found on the site may need to be established in a similar manner as dictated by the site specific vegetation inventory. The densities of these species are likely to be a lot lower, but their establishment may be critical to successfully achieving the five year milestones.

Planting should occur after seeding from September 1 to October 15 or from April 20 until June 10. Plant community diversity may be boosted by supplemental hand broadcasting of species that do not establish successfully after the first year.

On site there are known areas of climax grassland (hilltops and some side hills) and these will require the restoration of foothills rough fescue. Other areas (side hills and lower terraces) do not have the significant cover of rough fescue and will be restored to late successional or mid successional grasslands. In a few cases early successional grasslands exist and will be reclaimed as such where encountered during the final field assessment of the new alignment.

Table 5-1 Example table showing the criteria used to decide the density of plants that should be re-established during the reclamation process. An exact calculation will occur using data collected from each site.

Original Cover (%)	Target Cover (%)	Original Foliar Diameter (cm)	Density (plant/m^2)
6%	3%	20	1
13%	6%	20	2
14%	7%	30	1
19%	9%	20	3
25%	13%	20	4
25%	13%	40	1
28%	14%	30	2
39%	20%	50	1
42%	21%	30	3
50%	25%	40	2
57%	28%	30	4
57%	28%	60	1
75%	38%	40	3
79%	39%	50	2

5.2 Climax Native Communities

The climax grassland plant communities within this region vary by soil type, precipitation, and topography. Because of the rough topography inherent at Windy Point Windfarm, it is likely that there will be a wide variety of plant communities present. The following codes are for climax plant communities as found in the Foothills Fescue Plant Community Guide (FFC2, FFA5, FFA17, FFA23, FFA2, FFA1, FFA24, FFA27, FFA29, FFA9, FFC6; Adams et al. 2003). Each plant community will dictate a specific planting and seeding method, weed control program, and soil storage method to deal with the variety of challenges inherent in that individual plant community.

Table 5-2 Seed mix for climax rough fescue grasslands

Species	Target Cover (%)	kg/ha Required
Festuca campestris	40	24.6
Koeleria macrantha	25	1.1
Danthonia parryii	10	3
Agropyron dasystachyum	5	0.5
Festuca idahoensis	20	3.3

5.2.1 Site Preparation

If even a small percentage of invasive species are present, the site can be very challenging to restore. For this reason any site with Kentucky bluegrass, timothy, or smooth brome (among other invasive species) will be sprayed prior to soil disturbance. This may be spot spraying of individual weeds or a complete burn off of the area to be disturbed.

Following soil placement, additional applications to control invasive or weedy species will be completed. Assurance of the exhaustion of the seed bank of these undesirable species significantly improves the likelihood of successful reestablishment of desirable species. Prior to revegetation, the soil surface will also be prepared as an appropriate seed bed for seeding and planting. This is typically achieved by rototilling, rotospiking, and/or harrowing, depending on the site.

5.2.2 Revegetation

Critical to the successful reclamation of these sites will be the establishment of foothills rough fescue within climax plant communities. For this reason the use of live plugs in combination to seeding will be essential to the successful restoration of these sites. Table 5.2 outlines the seed mix to be used on climax sites. On the climax sites, both *Festuca campestris* and *Danthonia parryi* will be planted. *Festuca campestris* is recommended to be planted at 2 plants/m^2 and *Danthonia parryi* at 1 plant/4 m^2. If planting and seeding are not able to occur during the critical times in either the fall or spring, a cover crop must be used. A cover crop of annual rye is recommended to be seeded at a rate of 5 kg/ha broadcasted on the site as soon as construction activities have ceased and topsoil has been replaced.

5.2.3 Site Maintenance

To maintain the integrity of these areas, ongoing monitoring and maintenance is needed for the life of the project for those areas being reclaimed following construction. This is especially critical for identifying and controlling weeds and invasive species that may have an impact on rough fescue establishment. For the areas being reclaimed following project decommissioning, ongoing monitoring will be needed for weeds and invasive species that may impact the success of revegetation.

Method of control of weeds and invasive species will vary, but herbicide application, hand rouging and mowing are all potential control methods.

Temporary fences will be necessary to exclude grazing because of the need to establish live plants on these sites. Without fencing, grazers will preferentially utilize the newly planted site and result in poor establishment.

5.3 Late Successional Native Communities

Late successional grassland plant communities are those that have had minor successional modifications due to grazing, drought, or other management impacts. These grasslands are still dominated by the same climax species although they have likely experienced moderate reductions in cover. In contrast subdominant species may now be significant players in the plant community composition. Diversity of these grasslands is likely higher than the climax grasslands and thus can pose challenges in restoring the original diversity, but at the same time many of the subdominant species are easier to restore than the climax species and as such reduce some of the challenges inherent in reclamation of climax grasslands. Plant communities similar to this type of community as found in the Foothills Fescue Plant Community Guide are (FFA6, FFA3, FFA25, FFA10, FFA13, FFA18; Adams et al. 2003).

Table 5-3 Seed mix for late successional rough fescue communities

Species	Target Cover (%)	kg/ha Required
Festuca campestris	30	18.4
Koeleria macrantha	25	1.1
Danthonia parryii	20	6.0
Agropyron dasystachyum	5	0.5
Festuca idahoensis	20	3.3

5.3.1 Site Preparation

If even a small percentage of invasive species are present, the site can be very challenging to restore. For this reason any site with Kentucky bluegrass, timothy, or smooth brome (among other invasive species) will be sprayed prior to soil disturbance. This may be spot spraying of individual weeds or a complete burn off of the area to be disturbed.

Following soil placement, additional applications to control invasive or weedy species will be completed. Assurance of the exhaustion of the seed bank of these undesirable species significantly improves the likelihood of successful reestablishment of desirable species. Prior to revegetation, the soil surface will also be prepared as an appropriate seed bed for seeding and planting. This is typically achieved by rototilling, rotospiking, and/or harrowing, depending on the site.

5.3.2 Revegetation

Critical to the successful reclamation of these sites will be the establishment of foothills rough fescue within late succession plant communities. For this reason the use of live plugs in combination to seeding will be essential to the successful restoration of these sites. Table 5.3 outlines the seed mix to be used on late succession sites. On the late successional sites, *Festuca campestris* will be planted. *Festuca campestris* is recommended to be planted at 1 plant/m^2. If planting and seeding are not able to occur during the critical times in either the fall or spring, a cover crop must be used. A cover crop of annual rye is recommended to be seeded at a rate of 5 kg/ha broadcasted on the site as soon as construction activities have ceased and topsoil has been replaced.

5.3.3 Site Maintenance

To maintain the integrity of these areas, ongoing monitoring and maintenance is needed for the life of the project for those areas being reclaimed following construction. This is especially critical for identifying and controlling weeds and invasive species that may have an impact on rough fescue establishment. For the areas being reclaimed following project decommissioning, ongoing monitoring will be needed for weeds and invasive species that may impact the success of revegetation.

Method of control of weeds and invasive species will vary, but herbicide application, hand rouging, and mowing are all potential control methods.

Temporary fences will be necessary to exclude grazing because of the need to establish live plants on these sites. Without fencing, grazers will preferentially utilize the newly planted site and result in poor establishment.

5.4 Mid Successional Native Communities

Mid successional grassland plant communities are those that have undergone a moderate transformation away from the climax condition due to grazing, drought, or other management impacts. These grasslands have undergone significant shifts in the plant community composition and may have only a small percentage cover of climax species while early and mid successional species dominate the site. Grazing resistant species and unpalatable species are likely to dominate the site with moderate invasion by invasive grasses. In dry conditions the subdominant species may dominate the site, but with increased moisture the movement to earlier successional species will be evident. These sites, although damaged, will likely be less expensive and easier to restore in many cases than climax and late successional grasslands. A proposed seed mix is listed in Table 5.4. In addition to the seed mix, it is recommended that live plugs of *Festuca campestris* be planted at a density of 1

plant/m^2. Plant communities that are similar to this type of community as found in the Foothills Fescue Plant Community Guide are (FFA15, FFC3, FFA19, FFA14, and FFA28; Adams et al. 2003). Fencing will also be important because of the use of plugs.

Table 5-4 Seed mix for mid successional plant communities

Species	Target Cover (%)	kg/ha Required
Festuca campestris	30	18.4
Koeleria macrantha	25	1.1
Danthonia parryii	20	6.0
Agropyron dasystachyum	5	0.5
Festuca idahoensis	20	3.3

5.5 Early Successional Communities

Early Successional Communities are those that have undergone a significant modification due to grazing. These communities have generally lost rough fescue, parry's oat grass and Idaho fescue and are dominated by wheat grasses, june grass and other colonizing native species. In the foothills fescue natural subregion as well as the montane natural subregion it is rare to find these communities that have not shifted to a modified native plant community. If encountered they will be properly reclaimed, but the final alignment survey will determine if these communities actually exist on the property.

5.6 Modified Plant Communities

Modified plant communities have undergone significant shifts resulting in dominance by introduced species. These sites are likely dominated by grazing resistant and invasive grasses. Plant communities that are similar to this type of community as found in the Foothills Fescue Plant Community Guide are (FFB1, FFB2, FFB3, FFB4, and FFC5; Adams et al. 2003). Control of weeds and invasive species within these communities will be dependent on the ecological status of the community. These plant communities will be seeded with aggressive early successional native species and grazing resistant native species that have the best chance of survival within the conditions that have lead to such a significant shift in the plant community. For each plant community a specific seed mix will be created that will best reflect the hydrology, soils types, and climate of the site, as well as fit into the surrounding plant community. Additionally, weed control will be critical as many grazing resistant species are invasive grasses.

5.7 Tame Pastures

Tame pastures, which include hay fields and seeded pastures, will be reclaimed to the surrounding plant communities. These fields will be controlled for weeds and re-vegetated to a comparable

productivity found in the surrounding grasslands. This will be fairly straight forward and as such no special considerations are necessary.

6 MONITORING STRATEGIES

As in all reclamation projects, monitoring is a critical component of the reclamation and restoration process. When dealing with the inherent variability of the environment within native ecosystems, it must be understood that the best laid plans can easily fail without a strong monitoring program paired with adaptive management strategies.

6.1 Site Assessments

During the first three years of establishment, two site visits will be scheduled during the growing season (May – August). These two site visits will assess seedling establishment (both native and weedy species). The first assessment, which will be a randomized walk of the each disturbed area, will record any visible concerns on the sites including: drought, bare ground, weeds, and establishment densities and these issues will be located using a GPS unit and photos. The second assessment will be comprised of a minimum of two transects at each turbine, one on the disturbed area and one on the undisturbed control plant community bordering the turbine. The number of transects will ultimately be determined by the initial vegetation inventory. Approximately 2 - 3 days of monitoring will be required depending on the number of transects determined to be necessary. This inventory will be comprised of a detailed vegetation inventory (using an MF5 from) and range health assessment (Adams et al. 2004) will be completed with each transect (July - August). All transects will have a minimum of 10 sampling plots with 15 plots being recommended when there is high variability within the plant community. Transects will be fixed into permanent locations using a GPS unit or if possible marked with stakes that will allow for the plant community trajectory to be tracked over time. The preferred vegetation inventory will used the MF5 Form used by AEP as this form collects all needed information. Specific data to be collected will include a complete species list, cover (to 1%), bare ground, moss/lichen cover, litter cover, community structure (tall, medium, and low species), erosion, any bare patches, and location and cover of all noxious and restricted weeds, as well as invasive species that threaten reclamation success. Additionally, a photo record of the reclamation process will be collected.

This detailed information collected will be used to determine if the plant community is on the right trajectory or needs modifications. This will be completed using statistical analysis appropriate to determine specific questions using PCord and SAS (SAS Institute Inc. 2008) or equivalent programs. Noted problems will be corrected at the appropriate time through weed control, seed, and live plant augmentation or other suitable methods to alter the trajectory of the plant community to the desired end result.

6.2 Environmental Data

Climatic data will be monitored using local weather stations in the area, but if there are concerns on specific sites about soil moisture a dedicated weather station will be erected to monitor any problem

spots. Additionally, soil conditions and precipitation can be monitored with these stations to ensure that the proper environment is available to allow for reclamation success.

6.3 Weed Control

Information for weed control will be collected during monitoring and especially within the detailed vegetation inventory and range health assessments on the tower locations. Monitoring of all access roads will also be conducted with weeds being located with a GPS unit and their population sizes being recorded so that the proper weed control can occur.

7 MILESTONES OF SUCCESS

The following milestones of success are based off the 2010 reclamation criteria for well sites and associated facilities for native grasslands (Alberta Environment 2010) and are being adapted to what is appropriate and achievable for the wind energy industry. The following is a summary dictating the most important portions of the reclamation criteria, as it applies to the Windy Point and the restoration of fescue grasslands after the installation of the infrastructure necessary for the wind farm to operate. The assessment will be divided into two parts, an initial assessment and a final assessment. The goal of this two phase approach is for any problems to be caught by the initial assessments and corrected for the final assessment. This technique will allow adaptive management and reduce long term costs as problems can be caught while they are minor and corrected before major long term problems occur.

The initial assessments will occur immediately after the soil has been replaced and ensure that the landscape and soils have been appropriately replaced. Having the assessment done during the process of putting back any large disturbances or those that affect unique landforms will allow for corrections to be made during the process of putting the soil back and minimize the chance that alterations will need to be made later. The initial vegetation assessments will happen at the end of the first, second, third growing seasons so that any modifications to the plant community will be effective before the final assessment takes place.

The final assessment will be completed by an independent specialist who will ensure an unbiased assessment of the site. This assessment will occur at the end of the fifth growing season, but may be delayed if the initial assessments dictate that the site is not going to be ready by the fifth year.

7.1 Landscape Criteria

This portion of the criteria assesses the overall functioning of the landscape and includes drainage, erosion, soil stability, bare ground, operability, and debris. This can be completed with an onsite visit that compares the surrounding land to the land on the disturbance itself. The goal of this portion of the criteria is to ensure that the land use is not compromised by how the site was reconstructed after it was disturbed. The presence of the turbines will permanently change the landscape, but the surrounding land that is disturbed should be reclaimed with comparable site capabilities and water and air movement across the site should be similar to the surrounding ecosystem and pre-disturbance conditions of the disturbed footprint.

Water flow must not be impeded by construction activity. This means ponds, streams, onsite drainage, and offsite drainage must not be hindered by the re-established landscape contours. Proper contouring of the site during soil replacement is essential and a preliminary assessment of these functions can be completed following recontouring prior to subsoil and topsoil placement and immediately after the soil has been replaced. A final confirmation of this contouring criteria will occur in year five for the final assessment. If the site does not meet the landscape criteria (i.e. is

inconsistent with offsite or pre-disturbance conditions) the site must be fixed. At the landscape scale, this may require re-stripping and a result, it is preferred that all contours are check and confirmed prior to revegetation beginning. Landscape issues can be expensive to mitigate.

Erosion is an important function of the landscape and will be dictated by the location on the topography. The monitoring assessments will determine if wind erosion has caused pedestaling, leaf abrasion, and/or soil deflation has occurred at a rate higher than the surrounding landscape. Additionally, evidence of water erosion such as gullying and off site soil-fans will be monitored. Evidence of erosion must be comparable to the surrounding landscape for the site to pass this portion of the criteria.

Soil stability will be assessed during the yearly assessments and any slumping or subsidence will be corrected using appropriate steps. The final assessment will require soil stability to be comparable to the surrounding landscape.

Finally, any garbage or debris not natural to the site will cause an automatic failure of the site to have passed the landscape level portion of the criteria. Organic debris consistent with the surrounding community such as branches and woody stems are beneficial but only at a comparable level to the surrounding community.

7.2 Soil Criteria

A two-stage approach will be used to evaluate soils: an initial inspection and a final detailed assessment. The initial inspection of the soil spread back on the site will be conducted to assess that topsoil has been adequately replaced across the entire site before revegetation occurs. The inspections will preferably occur as work is progressing so any mitigation can be completed while equipment is still onsite. Any failures of the site due to topsoil quality or quantity will be corrected before seeding the site and reduce the chance of a costly error found at the final assessment that will fail the site and require major efforts in both time and costs to repair.

In year five, a final detailed soil assessment will be completed to collect specific data and confirm the site is consistent with offsite. Vegetation assessment will be conducted at the same time, which will allow the assessor to evaluate whether the productivity and vegetation are consistent and reflecting the soil parameters assessed.

Topsoil will be assessed using the criteria described in the 2010 reclamation criteria (Alberta Environment 2010) for both linear and non-linear disturbances. If the soil has been suitably replaced then the project may proceed to revegetation. Failure of any plot within the site will result in mitigation activities. The assessments will include:

- Paired sites (control and disturbance measures) for linear disturbances and,
- Minimum assessment point locations on and offsite within non-linear disturbances.

The number of assessment points will be consistent on and offsite and will be conducted at a minimum of once along each linear disturbance and a minimum of one additional point every 100 m along a linear disturbance. If there is more than one specific soil type present then controls for each soil type must be paired against measures within the disturbed area of that specific soil type.

The initial inspection will be a quicker assessment, which includes measuring and recording topsoil texture and depth both on and offsite. The assessor will also take note of consistence, stoniness, etc. to identify potential issues should they arise.

The final detailed assessment will record:

- Meso and micro-topography,
- Topsoil: colour, depth, coarse fragments, texture, consistence, structure, and rooting restrictions,
- Subsoil: texture, structure, consistence, rooting restrictions.

Success will require that topsoil depth meet the requirements of the 2010 reclamation criteria. The rating system and record of observation utilized within the 2010 Reclamation Criteria will be used to evaluate reclamation success and determine whether the site “passes” the final assessment.

7.3 Vegetation Criteria

The information needed to determine if the plant community is on the correct trajectory will be contained within the detailed vegetation inventory and the range health assessments completed on each site. All assessments will require that plant community cover is assessed to 1% cover for all species falling within a 10 frame transect for each control polygon and disturbed polygon. Additionally, range health assessments will be completed as described in the rangeland health assessment workbook (Adams et al. 2004).

The initial surveys that will be scheduled during the first three years of establishment will be used to modify the trajectory to the desired end result. For this reason the assessment during the first year is scheduled even though cover is expected to be very low. The final assessment will be completed after the fifth growing season to determine if the plant community trajectory is on the right trajectory to restore a community of comparable composition to the original plant community. If there are problems in the plant community establishment during the first three assessments, a recommended delay of the final assessment may be recommended. Additionally, depending on the timeframe of the delay, a secondary intermediate assessment may be recommended.

7.3.1 Cover

Vegetative cover must be over 90% for all bunchgrass communities and over 95% for all communities dominated by creeping species or cover equal to the surrounding community if lower. Establishing plant communities must have a minimum of 75% of the vegetative cover made up of species present in pre-disturbance and in the surrounding plant communities. The other 25% may include species

native in the foothills fescue natural subregion, but not necessarily present immediately adjoining the site in question.

7.3.2 Plant Community Composition

In addition to re-vegetating the site successfully with native species, the composition of these native species is important. The plant community composition must represent the previous plant community. This means that the plant community must be composed of either the same species or those of the same ecological function. The grazing response of species will be one of the major criteria used to group species within the assessment to determine how successful the restoration process has been. Grazing responses in many ways replicates the successional levels with Decreasers (Type 1) representing climax species, Increaser 1 (Type 2) representing mid successional species, and Increaser 2 (Type 4) representing early successional species. Understanding this we can at each successional level estimate what proportion of the species in the community should be made up of each of these groups of species. This allows a robust assessment of the trajectory of the plant community without requiring that exactly the same species must be present for success to be determined. The following four grazing responses have been utilized for rangeland management in Alberta and are currently used within the 2010 reclamation criteria:

- Type 1 Species (Decreasers): “These are native species present in the control vegetation, that decrease in relative abundance as disturbance increases. These are normally what is considered as the most desirable and productive native species in the native plant community (Alberta Environment 2010).”
- Type 2 Species (Increaser-Type 1): “These are species that are present in the control and they increase in relative abundance as the decreasers decline. They are commonly shorter, less productive species and more resistant to grazing and other disturbances. Initially, Type 1 species increase with disturbance but then will decrease in abundance later grazing or other disturbance pressures continue to increase (Alberta Environment 2010).”
- Type 3 Species (Invaders): “(Invaders are introduced, non-native species and not normally components of the reference plant community (Alberta Environment 2010).”
- Type 4 Species (Increaser – Type 2): “This is a minor group of native increasers that continue to increase in abundance as grazing or other disturbances continue to increase (e.g. low sedge, fringed sage or blue grama grass). These species are highly adapted to disturbance. A high abundance of these species on a reclaimed site may provide a false indication of reclamation success and that the plant community remains at a juvenile stage of succession. Therefore the amount of cover of these species that is considered acceptable is limited to the amount that is found in the control or 5%, whichever is greater. (Alberta Environment 2010)”

Specific Goals:

Plant community composition within disturbed sites will be required to achieve a similar ecological function to the surrounding plant communities. To measure this a comparison of the cover of each species type (as listed above) in the surrounding plant communities will be made against the disturbed plant community during the final assessment. Cover of each category will be required to be maintained.

Type 1 species are the most desirable species. Presence of these species above those found in the surrounding plant community can automatically be used as substitutes for the other categories of species. Absence of Type 1 species will be considered a failure.

Type 2 species must be maintained at no less than 15% of the surrounding communities, but Type 1 species can be used as substitutes.

Type 4 species must occur at no more than 10% higher cover than in the surrounding communities, but Type 1 and 2 species can be used as substitutes.

Climax species, which are the dominant species in a given community, are the most important of the Type 1 species in a given site. For this reason the focus of re-vegetation will be on establishing these species at the highest level that is possible. These species, in the absence of disturbance, dominate the plant communities. They usually provide critical habitat for wildlife and agriculture in herbaceous ecosystems and as such are critical to the long term ecological integrity of a region. Climax species, specifically foothills rough fescue in this region, will be required to achieve a cover of 50% of the previous and surrounding plant communities. If the cover of the climax species falls below 30% of the previous and surrounding plant communities, then the site will automatically fail to meet the necessary standards for reclamation success.

Infilling by species not present in the seed mix will be required as a sign that the plant community trajectory is moving towards the original plant community. The level of infilling required will be 10% cover of new native species from the surrounding plant communities.

Plant community structure is another important measure of the plant community composition. This measure is taken within the range health assessments as described by Adams et al. (2004). A minimum of two layers may be missing from the plant community for restoration to be successful.

7.3.3 Litter

Litter accumulation is a critical portion of plant community function aiding in: water sequestration, erosion control, nutrient cycling, and modifying light infiltration. Measurement of the litter levels in the control and on the disturbed area will be conducted as described by Adams et al. (2004). Because of the critical nature of litter it must be maintained at healthy levels for the target plant community within the plant community guide for the foothills eco-region (Adams et al. 2003) and the field guide for rangeland health assessments (Adams et al. 2004).

7.3.4 Weeds

Controlled weeds such as restricted and noxious weeds will be required to be eliminated from disturbed sites. Invasive grasses will be required to be maintained at a cover level comparable to the surrounding plant communities or lower.

8 CONSTRUCTION AND RECLAMATION CHECKLIST

- □ Map plant communities on all proposed disturbances (detailed vegetation inventory and range health assessments)
- □ Complete rare species surveys
- □ Complete soils survey and literature review
- □ Create a site specific reclamation plan
- □ Minimize area to be physically disturbed
- □ Select appropriate season to minimize construction
- □ Control all weeds on site
- □ Strip and store soil in appropriate layers
- □ Complete Construction
- □ Contour the landscape
- □ Replace soils
- □ Test for compaction
- □ Control weeds
- □ Mitigate for erosion
- □ Seed and plant the site
- □ Monitor establishment of the new plant community (years 1, 2, and 3)
- □ Monitor any weed issues (years 1, 2, 3, 4, and 5)
- □ Augment plant community to set it on the appropriate trajectory
- □ Modify the final completion date depending on results of the interim monitoring program
- □ Final completion of reclamation (approximately year 5)
- □ Continue to monitor for controlled weeds long term.

9 REFERENCES

ACIMS. (Alberta Conservation Information Management System). 2017. List of Tracked and Watched Elements – June, 2013. Alberta Tourism Parks and Recreation, Parks Division, Edmonton Alberta. http://www.albertaparks.ca/albertaparksca/management-land-use/alberta-conservation-information-management-system-%28acims%29.aspx

Adams, B.W., Ehlert, G., Stone, C., Lawrence, D., Alexander, M., Willoughby, M. et al. (2004). Rangeland health assessment for grassland, forest and tame pasture. Public Lands and Forests Division, Alberta Sustianable Resource Development.

Adams, B.W., Ehlert, R., Moisey, D. & McNeil, R.L. (2003). Rangeland plant communities and range health assessment guidelines for the foothills fescue natural subregion of Alberta. Rangeland Management Branch, Public Lands Division, Alberta Sustainable Resource Development Lethrbidge.

Alberta Environment (2010). 2010 reclamation criteria for wellsites and associated facilities for native grasslands. Alberta Environment, Edmonton Alberta.

Beckingham, J., Corns, I.G.W. & Archibald, J.H. (1996). Field guide to ecosites of west-central Alberta. Canadian Forest Service. Northwest Region, North Forestry Centre.

Desserud, P.A. (2006). Restoration of rough fescue grassland on pipelines in southwestern Alberta. ,. Range Management Branch, Public Lands Division, Alberta Sustainable Resource Development, Lethbridge Alberta.

Didham, R.K., Tylianakis, J.M., Hutchison, M.A., Ewers, R.M. & Gemmell, N.J. (2005). Are invasive species the drivers of ecological change? Trends in Ecology and Evolution, 20, 470-474.

Dormaar, J.F., Smoliak, S. & Willms, W.D. (1990). Distribution of nitrogen fractions in grazed and ungrazed fescue grassland ah horizons. Journal of Range Management, 43, 6-9.

Government of Alberta. 2008. Weed Control Act. Statues of Alberta, 2008. Chapter W-5.1. Current as of October 1, 2011. Alberta Queen's Printer, Edmonton, Alberta. 20 pp.

Government of Alberta (1). 2017. AGRASID. http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sag10372. Alberta Agriculture and Rural Development.

Grovernment of Alberta (2). 2017. Grassland Vegetation Inventory. https://maps.srd.alberta.ca/Biophys/?Viewer=Biophys

Government of Canada. 2017. Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Retrieved June 2016, from Wildlife Species Search: http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm

MacDougall, A.S. & Turkington, R. (2005). Are invasive species the drivers or passengers of change in degraded ecosystems? Ecology, 86, 42-55.

Mack, R.N. (1986). Alien plant invasion into the intermountain west: A case history. ecology of biological invasions of North America and Hawaii.

Mack, R.N. (1989). Temperate grasslands vulnerable to plant invasions: Characteristics and consequences. Biological invasions: a global perspective (eds J.A. Drake, H.A. Mooney, F. di Castri, R.H. Groves, F.J. Kruger, M. Rejmanek et al.), pp. 155-179. John Wiley & sons, Brisbane, Australia.

Mueggler, W.F. (1988). Aspen community types of the intermountain region., USDA Intermountain Research Station.

SAS Institute Inc (2008). 2008. SAS/STAT 9.2 user's guide. SAS Institute Inc, Cary, NC.

10 CLOSURE

Tannas Conservation Services

September 11, 2017

Steven Tannas
President, Senior Ecologist
T 403.850.9052
E steven@tannasenvironmental.com

Appendix P: Response Report to AEP Review and Reassessment

Appendix A: Response Report to Alberta Environment & Parks Review and Reassessment of the Windy Point Wind Park

Submitted to the:

Alberta Utilities Commission

Submitted by:

Windy Point Wind Park Limited

Suite 1320, 396-11th Ave. SW - Calgary, AB, T2R 0C5

March 1, 2018

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Abbreviations

AEP	Alberta Environment and Parks
AESO	Alberta Electric System Operator
AESRD	Alberta Environment and Sustainable Resource Development
AUC	Alberta Utilities Commission
BMP	Best Management Practice
EE	Windy Point Wind Park Environmental Evaluation, September 2017
EMP	Environmental Management Plan, appended to the EE.
EPP	Environmental Protection Plan
EWB	Experienced Wildlife Biologist
FWMIS	Fisheries and Wildlife Management Information System
FEHA	Ferruginous hawk
MW	Megawatt
PCMP	Post Construction Mitigation Plan
PRFA	Prairie falcon
STGR	Sharp-tailed grouse
SWHA	Swainson's hawk
WTG	Wind Turbine Generator

A. Background

1. The following document is provided in response to the Windy Point Wind Park - AEP Review and Reassessment, dated November 30, 2017 and is also provided in support of the forthcoming Amendment Application to the Alberta Utilities Commission for the Windy Point Wind Park (the "Amendment Application").

2. Windy Point Wind Park Ltd. (the “Applicant” or "Proponent") is a wholly owned subsidiary of Alberta Renewable Power Limited Partnership (the "Partnership"), a joint venture between Boralex Inc. (“Boralex”) and Alberta Wind Energy Corporation (“AWEC”).

3. The Proponent is proposing the construction and operation of the Windy Point Wind Park, a 50.4 megawatt[1] (“MW”) Wind Energy Power Plant (the “Power Plant”) and Boulder Run Substation[2] (the "Substation"). The Power Plant and Substation (combined, the "Project") will be located approximately 15 km north-east of the Town of Pincher Creek, Alberta.

4. The Proponent submitted Application No. 1607515 to the Alberta Utilities Commission (the "AUC" or "Commission") on July 22, 2011 for power plant approval. On July 31, 2012, pursuant to Section 11 and Section 18 of the Hydro and Electric Energy Act ("HEEA"), the Commission approved the Application in Decision 2012-205 and issued Permit and Licence No. U2012-368 for the construction and operation of the Power Plant.

5. The Proponent, by Application No. 1609799, registered on July 26, 2013, applied to the Commission for a time extension from August 31, 2013, until August 31, 2015 in order to complete construction of the Power Plant. Pursuant to sections 11 and 19 of the *Hydro and Electric Energy Act*, the Commission approved Application No. 1609799 in Decision 2013-284.

6. The Proponent by Application No. 1610948, registered on October 23, 2014, applied to the Commission for a time extension from August 31, 2015 to August 31, 2016, in order to complete construction of the Power Plant. Pursuant to sections 11 and 19 of the *Hydro and Electric Energy Act*, the Commission approved Application No. 1610948 in Decision 2014-434.

7. In email correspondence to the AUC dated February 12, 2015, the Proponent advised Commission staff that it was preparing a revised noise impact assessment for the Power Plant because it was going to seek approval for a wind turbine generator ("WTG" or "turbine") change. A WTG change is necessary because the Siemens SWT-3.0-101 WTG, for which the Power Plant is currently approved, is no longer available from the manufacturer.

8. On April 10, 2015, Alberta Environment and Parks ("AEP") advised the Proponent that updated environmental studies will be required for the Project.

[1] Amended nameplate capacity
[2] Substation Application 1610942-1, Proceeding 3485

9. Between April 2015 and July 2017, the Proponent completed updated environmental studies requested by AEP. The updated studies reveal that wildlife constraints have changed at the Project Site since the previous environmental studies were completed in 2010. Further details of these studies are provided in this document.

10. On September 26, 2016, the Proponent submitted to AEP the updated 2015-2016 environmental study results and Environmental Protection Plan ("EPP"), outlining proposed environmental impact mitigation strategies in view of the shifting wildlife constraints at the Project Site.

11. On November 14, 2016, AEP provided a Renewable Energy Referral Report, based on the updated environmental studies conducted by the Proponent (the "2016 Referral Report"[3]).

12. As requested by AEP, in June 2017, the Proponent completed a further round of migratory bird studies in order to keep environmental survey information current. Further details of these studies are provided in this document.

13. On September 28, 2017, the Proponent provided to AEP an Environmental Evaluation Report (the "Environmental Evaluation") in support of the Amendment Application.

14. On November 30, 2017, AEP provided to the Commission the Windy Point Wind Park - AEP Review and Reassessment[4] (the "Reassessment Report"), which provided AEP's comments on the Environmental Evaluation.

15. Since the Proponent was not given the opportunity to respond directly to AEP regarding the Reassessment Report, this document has been prepared in support of the Amendment Application.

[3] 2016 Referral Report provided in Appendix A-3
[4] The Reassessment Report is provided in Appendix A-4

B. History of the Project

The Windy Point Wind Park development began in 2005. Project siting was initially conducted in 2005-2006 with the support of landowners, the local community and the Municipal District of Pincher Creek. The Project is situated entirely on private lands. In 2006 and 2007, several environmental studies were conducted, including bird surveys by R.A. Owens Environmental Services Ltd. In 2009-2010, a comprehensive environmental study was conducted by Stantec Consulting Ltd., Matrix Solutions Inc. and various sub-contractors.

On June 15, 2011, Alberta Sustainable Resource Development - Alberta Fish and Wildlife Division ("AESRD") provided a Wind Energy Referral Report[5] (the "2011 Referral Report") with the following recommendations:

1. *"Mitigation Measures: Upon encounter of unexpectedly high levels of bat fatalities, Windy Point Wind Park Ltd, in consultation with AESRD, will implement operational mitigation measures, such as increasing the cut in speed of wind turbines. Determination of what constitutes high levels of bat fatalities will be based on consultation with bat experts in Alberta."*[6]

2. *"Wildlife Monitoring Recommendations: A post construction monitoring plan will be provided 6 months prior to anticipated completion of construction. Post construction monitoring program will consist of an approved and agreed upon bird and bat carcass survey."*[7]

In addition to the recommendations, the 2011 Referral Report noted that *"if no construction has occurred with[in] 2 years, new data may be requested"*[8]. As will be discussed in further detail, the Proponent conducted updated environmental studies in 2015-2017.

On July 22, 2011, the Proponent made a Power Plant Application to the AUC for the Project (Application No. 1607515). On July 31, 2012, the AUC issued Decision No. 2012-205 granting the Proponent Power Plant Approval (No. U2012-368) to construct and operate the Power Plant. The Decision included the following statement:

> *"38. In making its decision, the Commission considered that the Fish and Wildlife Division has reviewed the proposed power plant and is satisfied with the proposed location, mitigation strategies and post-construction mitigation program as reflected in the Fish and Wildlife Division's Wind Referral Report. However, the Commission considers it important for Windy Point to develop and implement a post-construction monitoring program, including bird and bat carcass surveys for at least two years, and that such a*

[5] 2011 Referral Report is provided in Appendix A-1
[6] 2011 Referral Report, page 2
[7] Ibid.
[8] Ibid.

> *program be acceptable to the Fish and Wildlife Division. Also, Windy Point must file the results from its post-construction monitoring with the Fish and Wildlife Division, post the results in the Fish and Wildlife Division's management information system and submit, to the AUC, copies of those reports and all correspondence from the Fish and Wildlife Division in regard to those reports."*[9]

The Proponent confirms that it remains committed to meeting the above monitoring requirements.

In late 2012, the Alberta Electric System Operator ("AESO") notified the Proponent that it would be required to build a separate substation for the Project rather than expand the existing Oldman 2 Substation 112S[10] as was originally proposed. On October 22, 2014, the Proponent made Application to the AUC for the Boulder Run Substation 501S[11] (Proceeding No. 3485), to interconnect the Project to the transmission system. The Boulder Run Substation is planned to be immediately adjacent to the Oldman 2 Substation and is effectively an expansion of that substation's footprint. Triggered by the referral to the AEP for the application of the Boulder Run Substation, on April 10, 2015, AEP requested updated environmental surveys for the Project, including:

a) Spring and fall migration surveys at dawn and dusk for songbirds; three surveys each
b) Two breeding bird surveys
c) Spring and fall migration surveys mid day for raptors; three surveys each season
d) Early spring surveys of Richardson ground squirrels
e) Spring surveys for sharp-tailed grouse
f) Two wintering bird surveys
g) Bat surveys using protocols acceptable to the Alberta Bat Action Team
h) Surveys to determine the presence of rare plant communities

Throughout 2015 and 2016, the Proponent conducted the requested surveys (conducted by Tetra Tech Inc, and McCallum Environmental Ltd.). As outlined further below, the 2015-2016 environmental surveys were largely confirmatory of the results of the environmental studies conducted in 2006-2007 and 2009-2010 and relied upon by AEP (AESRD) and the Commission in approving the Project in the first instance.

Table A-1 provides a summarized comparison between the environmental survey findings from 2009 and 2010 versus the findings in the 2015-2017 environmental surveys.

[9] AUC Decision No. 2012-205, page 7
[10] Substation 112S is named the Windy Point Substation by the AESO. However, to avoid confusion, Substation 112S will be referred to in this document as the Oldman 2 Substation.
[11] The Boulder Run Substation 501S will be the substation servicing the Windy Point Wind Park.

Table A-1: Comparison of environmental survey information

Valued Component	2009-2010 Environmental Study[12]	2015-2017 Environmental Study
Vegetation and Land Cover	The vegetation cover of the Windy Point Project area is dominated by native prairie at 57% of the total area. The remainder of the area is improved pasture and cultivated fields. No wetlands were identified within the Windy Point Project Study Area during the spring and summer surveys 2009. One wetland was identified during the mapping process.	The project area is comprised of native prairie grassland, improved pasture, and cultivated land. One (1) Class II and two (2) Class III wetlands were observed in the project area, as well as native coulee land cover and valley breaks.
Bird mortality	Comparison of bird inventories for the Project Site and those obtained elsewhere suggest the Project Site is not remarkable in terms of breeding bird species diversity or numbers present during the breeding season. No concentrations of migratory birds were detected within the Project Site.	Risk for bird mortality during project operation has been rated as medium[13].
Bat mortality	The relatively high level of overall bat observations, including migratory bat species recorded in fall 2009 suggests that there could be a potential moderate to high[14] risk of bat mortality.	Risk of bat mortality has been rated as high[15] at the Project Site, based on number of bat passes per night during fall migration acoustic surveys.
Disturbance to species of "Special Interest or Concern"	Within the Project Study Area, five wildlife key areas were observed; a prairie falcon nest, two Swainson's hawk nests, a red-tailed hawk nest and a sharp-tailed grouse lek.	The project area includes one active prairie falcon nest, one active red-tailed hawk nest, one active Swainson's hawk nest, one potentially vacant ferruginous hawk nest, and four active sharp-tailed grouse leks.

[12] *Windy Point Wind Park: A Report to ASRD in Support of an AUC Rule 007 Application - Vegetation and Wildlife Review*, Stantec, 2010
[13] Environmental Evaluation, page 124
[14] *Windy Point Wind Park: A Report to ASRD in Support of an AUC Rule 007 Application - Vegetation and Wildlife Review*, Stantec, 2010
[15] Environmental Evaluation, page 124

The only new material findings resulting from the 2015-2016 environmental surveys versus the 2009-2010 environmental surveys were:

1. The observation of a new grouse lek (referred to in this document as "LEK04")

2. The observation of two new "satellite" grouse leks (referred to in this document as "LEK02 and LEK03"). Both LEK02 and LEK03 were locations where two individual sharp-tailed grouse were observed in 2015 with no individuals observed at those locations in 2016 surveys. No lekking behavior was reported. Nevertheless, the Proponent has followed AEP's guidance and considered these leks active and included them as siting constraints for the Project despite minimal evidence that these areas are actually used as leks.

3. The re-emergence of a grouse lek previously observed in 2007, but not observed in surveys done in 2009 (referred to in this document as "LEK01").

4. The observation of one Class II and two Class III wetlands in the Project Area.

The emergence of grouse leks resulted in several of the approved WTG locations[16] to be sited within the recommended 500m setback.

On September 26, 2016, a revised EPP was submitted to AEP - Wildlife Management Division in order to mitigate for the above mentioned changes in wildlife features. The EPP was uploaded to the AUC's e-filing system in draft form as Exhibit 21868-X0018.

1. Renewable Energy Referral Report (2016)

Following AEP's review of the EPP, the 2016 Referral Report was provided to the Proponent on November 14, 2016. The 2016 Referral Report indicated the Project posed a "*high unmitigated risk to wildlife and wildlife habitat*", which was in stark contrast to the "sign-off" provided in the 2011 Referral Report. A copy of the 2016 Referral Report is provided in Appendix A-3. Upon reviewing the 2016 Referral Report, the Proponent submits there is no foundation for AEP's conclusion that the "*updated wildlife assessment identified a significant change in risk from the original assessment for multiple species of wildlife and wildlife habitat.*"[17] On the contrary, the risks identified were generally the same as those initially identified and considered by the Commission in granting the initial approval of Decision No. 2012-205 subject to conditions identified by AEP to mitigate those very risks. On February 6, 2017, the Proponent articulated its opposition to the 2016 Referral Report by submitting to the Commission its detailed response provided in *Supplemental Response to Information Request #3*[18]. A copy of the *Supplemental Response to Information Request #3* is provided in Appendix A-2.

2. AWEC / Boralex Partnership

On December 14, 2016, Boralex partnered with AWEC on the Project, bringing over 20 years of renewable energy development experience to the partnership. This was Boralex's first renewable

[16] Turbine locations approved in Decision 2012-205
[17] Referral Report, page 1
[18] Exhibit 21868-X0023

energy investment in the province and management committed to a long term development strategy in the Alberta market.

Boralex is a publicly traded company and has adopted an environmental mandate to prioritize environmental concerns in decision-making on the construction and operation of its projects. The mandate is reported out on a quarterly basis to the Administrators of the Environmental Health and Safety Committee, and includes components such as: adhere to the environmental laws and regulations; ensure implementation of an environmental action plan at each operations centre; and adopt a proactive, responsible and respectful approach to the environment when developing sites, to minimize the impacts and risks associated with operating power generation facilities.

3. AEP Re-engagement

On May 24, 2017 a meeting was held between representatives of the Proponent and AEP. During this meeting the following topics were discussed:

1. Introduction of Boralex Inc. as a new development partner for the Project.
2. Proposed changes to the Project including the intention to re-site WTG locations and infrastructure outside of wildlife setbacks.
3. Specific information requests from the AEP and an agreement to reassess the Project based on the proposed Project changes.

4. WTG Location Amendment

Between June and July 2017, the Proponent revised the Project's WTG layout and infrastructure configuration. WTG relocation was undertaken to achieve AEP's requirement to situate WTGs outside of wildlife setbacks[19] and reduce footprint on grasslands, while maintaining adherence to AUC Rule 012 and municipal noise and other setback regulations.

Table A-2 compares the changes in Project infrastructure and WTG proximity to wildlife features between the 2011 Project configuration[20] and proposed Amended Project configuration [21].

[19] Wildlife setbacks included new wildlife setbacks observed in the 2015-2017 environmental field studies (i.e. LEK01, LEK02, LEK03 and LEK04)
[20] As approved in Approval No. 2014-434
[21] Amended WTG layout as proposed in the Amendment Application (2018 Layout).

Table A-2: Comparison of Approved Project configuration vs. Amended Project configuration

Feature	2011 configuration	Amended configuration
LEK01	Two WTG locations and two access roads located within LEK01 setback.	No infrastructure within LEK01 setback.
LEK02 (satellite lek)	Two WTG locations and one access road within LEK02 setback.	No infrastructure within LEK02 setback.
LEK03 (satellite lek)	Four WTG locations and one access road within LEK03 setback.	One access road and one buried collector cable within LEK03 setback. (located approximately 375m from LEK03)
LEK04	Three WTG locations and two access roads within LEK04 setback.	No infrastructure within LEK04 setback.
Prairie Falcon Nest	Three WTG locations, two access roads, one buried collector cable and Substation located within Prairie Falcon Nest setback.	One buried collector cable and Substation located within Prairie Falcon Nest setback.
Vegetation and Land Cover	53.2 ha of Project construction footprint and 7.18 ha of Project operation footprint on native grassland[22].	Less infrastructure on native grassland: 25.46 ha of Project construction footprint and 4.01 ha of Project operation footprint on native grassland[23].
Wetlands	No infrastructure within wetlands or wetland setbacks.	One buried collector cable within the setback to a wetland that is adjacent to an existing roadway. Collector line sited to parallel existing linear disturbance.

5. Prairie Falcon Nest Setback Considerations

In 2011, a verbal agreement was made between the Proponent and AESRD that the setback from a prairie falcon nest ("PRFA"), located at NE 27-7-29-W4, would be altered from 1000m to 750m in order to conform to the setback relaxation provided by AESRD to the adjacent Oldman 2 Wind Farm. The setback relaxation from 1000m to 750m is why the 2011 Referral Report does not make reference to any encroachment on the setback: *"23. The Fish and Wildlife Division stated that all setbacks had been adhered to"*[24].

The Proponent has relied on the 2011 Referral Report and the AUC Decision 2012-205 in its continued investment and development of the Project.

[22] See Table 2: Land Cover Footprint Comparison 2011, 2016, 2017 and 2018 Layouts
[23] Ibid.
[24] AUC Decision 2012-205, page 4

There currently exist six operating turbines, an operating substation, a 138kV transmission line and a provincial highway within 1000m of the PRFA.

It should be noted that the Proponent originally planned to use the existing Oldman 2 Substation 112S for the Project interconnection, thus not requiring a separate AUC permit specific to the Substation. However, in 2012, the Proponent was notified by the AESO that two owners of one substation is not allowed under its policies. Therefore, although the Substation will in fact be an expansion of the existing Oldman 2 Substation, it will require a separate AUC permit and substation designation from the AESO. As previously mentioned, the Proponent made an AUC application for the Substation on October 22, 2014 (Proceeding No. 3485).

Following discussions with AEP in 2015, it was understood that the Substation will be placed immediately adjacent to the existing Oldman 2 Substation, outside the aforementioned setback of 750m, but within 1000m of the PRFA setback (actual location of the Substation will be approximately 857m from the PRFA).

The Proponent provided to AEP the following technical and environmental justifications regarding the required placement of the Substation at the proposed location:

i. The Substation location is in an already disturbed area immediately adjacent to the existing Oldman 2 Substation 112S, between an existing wind turbine and Highway 785. The proposed location is ideal as it would cause significantly lower overall environmental impact versus construction activities and placement of a new substation on an undisturbed area outside of the PRFA setback.

ii. AESO does not allow a four-point connection on the 893AL transmission line. If the Substation were to be located outside the PRFA setback, it would require another tap point to 893AL, thus causing a four-point connection. By utilizing the tap point for the Oldman 2 Substation 112S, the Project avoids a forth connection point on the line.

Therefore, the proposed Substation is at the most logical location for technical and environmental reasons.

In an effort to mitigate the risks to wildlife posed by the proximity of the Substation to the PRFA, the Proponent has proposed new and more stringent construction and operational mitigation plans, including timing restrictions, as discussed in Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9-M5.

6. WTG Model Amendment

In addition to proposed WTG layout changes, the Proponent will amend the power generating equipment and associated facilities, including make, model and nominal capability of the WTGs for the

Project. The Amendment is required because the Siemens SWT-3.0-101 WTG for which the Power Plant is currently approved[25] is no longer available from the manufacturer.

Table A-3 outlines the dimension comparison between the approved Siemens SWT-3.0-101 WTG to the Vestas V136 4.2 MW WTG proposed in the Amendment Application.

Table A-3: Comparison of Approved WTG and Amended WTG

Item	Siemens SWT101 3.0 MW	Vestas V136 4.2 MW
Rated power	3000 kW	4200 kW
Number of blades	Three	Three
Rotor Diameter	101m	136m
Blade length	49m	66.7m
Tower height	80m	105m
Total height	130.5m	173m
Total number of WTG	Twenty-one (21)[26]	Twelve (12)[27]

In July and August, 2017, the Proponent conducted a Participant Involvement Program ("PIP") for the revised WTG model and locations, in accordance with the guidelines outlined in AUC Rule 007. Further details of the PIP are provided in Amendment Application Appendix G. The Proponent has provided an updated avian risk assessment based on the increased WTG dimensions in Appendix A-5: Windy Point Wind Park 2018 Update (revised avian risk report). The updated assessment did not change the estimated mortality of birds due to turbine collision, characterized as a medium magnitude residual effect.

7. Collector and Access Road Adjustments

During the period between submission of the Environmental Evaluation to AEP in September 2017 and submission of the Amendment Application to AUC, of which this is a part, minor changes to the collector line and access road alignments have been made to further reduce landscape and grassland fragmentation. Therefore, the collector and road alignments shown on the Project maps in the Amendment Application differ slightly from those on the Figures in the Environmental Evaluation and discussed below in Section D. No changes to WTG positions were made between the 2017 and 2018 layouts, there are no additional incursions into wildlife habitat or setbacks, and there are no changes to Table A-2 above. The layout as proposed in the Amendment Application is defined as the “2018 Layout”.

C. Environmental Evaluation

On September 28, 2017, the Proponent provided to AEP the Environmental Evaluation report, Environmental Management Plan and Reclamation Strategy in support of the Amendment Application. The Environmental Evaluation was specifically designed to meet the information needs of AUC Rule 007,

[25] Approval No. U2014-434
[26] As approved in Approval No. U2014-434
[27] As proposed in the Amendment Application

as well as meet the expectations of AEP's *Wildlife Guidelines for Alberta Wind Energy Projects* (AESRD 2011) and *Wildlife Directive for Alberta Wind Energy Projects* (AEP 2017*a*). A copy of the Environmental Evaluation and associated documents is provided in Amendment Application: Appendix S.

The Environmental Evaluation highlighted the following potential interactions between the existing environment and proposed Project components and activities. Valued Components ("VCs") have been selected to help describe and assess the potential effects of the Project. The VCs are parts of the natural environment considered important to regulatory bodies, stakeholders and the Proponent:

1. **Project Design:** The layout of the Project has been designed to avoid and minimize potential effects to the VCs through consideration of the environmental, regulatory and technical constraints. The Project footprint will minimize disturbance on native prairie and will adhere to wildlife feature setbacks, with the exception of the Substation, which will be further discussed in this document.

2. **Land Cover:** Potential effects to land cover may result from Project site clearing activities during construction, resulting in temporary and permanent loss of native grassland land cover types and disturbance to agricultural land uses. With the implementation of Project design measures to minimize direct footprint effects, mitigation to avoid disturbing native and non-native land cover, and a commitment to conduct pre-construction surveys to support a Reclamation Plan with monitoring and adaptive management specific to grassland habitats, a moderate level of effect to grasslands is considered likely.

3. **Designated Areas:** The Project area, including the Project footprint, does not occur within any Important Bird Areas, parks and protected areas, National Wildlife Areas, Migratory Bird Sanctuaries, the Grizzly Bear Zone, or Special Access Zones; as such no direct effects to these types of designated areas are anticipated.

4. **Wetlands and Waterbodies:** The Proponent has completed a wetland assessment in accordance with Alberta Wetland Identification and Delineation Directive (Government of Alberta 2015) and reviewed and incorporated the completed wetland assessment into the final layout of the Project to minimize effects to wetlands. A section of the collector line system has been located adjacent to Road 291 to minimize the Project footprint and fragmentation, however, of the three identified wetlands in the Project area, one Class III wetland immediately adjacent to Road 291 may be affected. With the mitigation to either locate the collector line within the road right of way, or if not possible to avoid the wetland, to complete a wetland impact assessment with site specific mitigation; adverse low level residual effects have been assessed (a conservative approach as effects may be avoided), that are low magnitude, a very small portion of the Project footprint, and short term (construction and decommissioning). There are no named waterbodies within the Project area or within 1 kilometre (km) of the Project footprint. Unnamed waterbodies may be crossed by Project infrastructure. Prior to construction, water courses will be evaluated for fish presence and classification, and standard best management practices will be implemented as needed, including monitoring. Sediment and

erosion controls will be implemented through the Environmental Management Plan (EMP), as well as a Reclamation Plan and spill response planning. With these measures, adverse low-level residual effects to unnamed waterbodies are likely to be low magnitude, comprise a small portion of the Project footprint (confined to road and collector line crossings), of short term duration limited to the periods of the construction and decommissioning of the roads and collector line, and occurring once, with a low likelihood of occurring.

5. **Soils and terrain:** There is a potential for Project activities to interact with soil and terrain, resulting in a loss of soil (quantity), soil erosion, adverse effects to soil quality such as admixing, rutting, compaction, and loss of structure, during construction and decommissioning, and contamination during all Project phases. Proposed mitigation measures for land cover, developed for both land cover and soil, are reducing the Project footprint (to reduce direct loss of soil), avoiding disturbance of native grassland and non-native land covers (to reduce indirect effects and aid reclamation measures), and preparation of a Reclamation Plan based on the Reclamation Strategy. In addition, soil salvage, an erosion and sediment control plan and best management practices for fuel and chemical storage are required. With these measures in place, residual effects from erosion are not considered likely. An adverse low level residual effect for change in soil quantity is likely to be low magnitude. Adverse low level residual effects characteristics for change in soil quality in temporarily disturbed areas are likely to be low magnitude; within the reclaimed portion of the Project construction footprint; medium term, lasting until vegetation and soil development processes are re-established; occurring in the construction phase until salvaged soils are replaced; and with a medium probability of occurrence.

6. **Hydrogeology:** With the implementation of the standard best management practices in the EMP (including maintaining drainage patterns), residual effects to groundwater quantity from changes in surface infiltration in surfaced areas are considered unlikely. The potential for effects to groundwater quality are associated with hydrocarbon spills during construction and decommissioning phases. Implementation of mitigation procedures for spill prevention and response planning will reduce residual effects on groundwater quality, and it is anticipated that groundwater conditions will return to pre-construction (baseline) conditions shortly after a spill event. With mitigation to determine the location of the spring in the field, and determine protection measures, no residual effects to the spring are considered likely.

7. **Vegetation:** The implementation of mitigation to minimize the introduction of noxious weeds, and monitor for and remove invasive plant species found within the Project footprint is well-understood and known to be effective; therefore, residual effects are not likely for the introduction or spread of noxious weeds. Given the small number of rare plants anticipated to be affected (relative to the total respective population sizes observed in the vicinity), the potential loss of individual plants is not likely to be detrimental to the continued success of the overall populations of these species within the Project area, and low residual effects are likely during construction and decommissioning. The anticipated adverse low-level residual effects of the Project to change in sensitive botanical resources are assessed to be low magnitude.

8. **Wildlife and Wildlife Habitat:** Measures to minimize habitat effects include the mitigation for land cover, access management, implementation of timing constraints, wildlife monitoring within the Key Wildlife and Biodiversity Zone and wildlife feature setbacks, and implementation of the Construction EMP. With the implementation of these measures, the construction, and decommissioning of the Project are likely to result in a moderate magnitude, short term, continuous, and moderate level residual effects to habitat within the Project area. Residual effects to habitat during operation are also likely to be moderate within the Project footprint, and low level magnitude. The construction and decommissioning of the Project may also adversely affect mortality risks, with a low magnitude, short term, low level of residual effect within the Project footprint, mainly limited to animal vehicle collisions. Operation of the Project may adversely affect mortality risk, primarily for mortality to birds and bats from WTG operation. To address potentially high mortality risks, the Proponent has proposed a robust post construction monitoring and adaptive management plan, to implement operational timing constraints to avoid mortality from the WTG blade collisions during high risk seasons and nocturnal timeframes such that thresholds are not likely to be exceeded. With the implementation of this plan, moderate level residual effects to mortality are likely to be moderate (birds) to high (bats) in magnitude, within the Project area, frequent, and medium term.

9. **Summary:** With the implementation of the mitigation measures, residual effects are not likely to be significant (high level of effect) for land cover, designated areas, wetlands, and hydrology, and wildlife and wildlife habitat, as Project design and construction measures to minimize the footprint and disturbance, and to implement a focused reclamation plan with monitoring and adaptive management, are likely to manage residual effects at low to moderate levels. For wildlife, residual effects to habitat are likely to be moderate during construction and operation. During operation, the Proponent has proposed a robust post-construction monitoring and mitigation plan to confirm the predicted effects to birds and bats and, as may be necessary, implement changes to Project operation to manage WTG collision mortality to within Alberta thresholds (e.g., Bat Mitigation Framework, Government of Alberta 2013).

Following its review of the Environmental Evaluation, on November 30, 2017, AEP submitted the Reassessment Report to the Commission. A copy of the Reassessment Report is provided in Appendix A-4.

The Proponent was not given an opportunity to directly respond to the AEP's concerns in the Reassessment Report. Therefore, the Proponent provides its detailed response to the comments and conclusions reached in the Reassessment Report below. The Proponent submits it has shown a history of collaborative problem solving with AEP on potential ecological issues from construction of the Project, and a willingness to further develop mitigation actions as necessary. All identified environmental impacts will be mitigated in accordance with the conditions previously imposed by the Commission and mandated by the *Wildlife Guidelines for Alberta Wind Energy Projects* (AESRD 2011) and the *Wildlife Directive for Alberta Wind Energy Projects* (AEP 2017*a*).

D. Responses to the Reassessment Report

In the following section, each of AEP's comments and issues indicated in the Reassessment Report will be summarized, followed by a response from the Proponent.

Attached to the Reassessment Report was '*APPENDIX A AEP's detailed review of Windy Point Wind Park September 28th 2017 Submission*' ("AEP Detailed Review"). The Proponent has provided an itemized response to the AEP Detailed Review in Appendix A-5: Response to the AEP Detailed Review with Revised Mitigation Measures. The responses provided in Appendix A-5 and the associated Revised EE Table 10-1 Summary of Project Mitigation supersede the commitments made previously for the Project. The responses in Appendix A-5 are intended to clarify the information provided previously to AEP and to revise and expand mitigations based on AEP's review.

As discussed in Section B.7, minor changes have been made to the collector line and access road layouts since the submission of the Environmental Evaluation to AEP to further reduce fragmentation. These changes, though minor, have been differentiated as the "2017 Layout", which is the layout submitted to AEP, and the "2018 Layout", which is the layout submitted in the Amendment Application. The tables appended to Appendix A-5 include descriptions of both the 2017 and 2018 Layouts, though, for consistency, the responses to the Detailed Review are based on the 2017 Layout.

The Reassessment Report comments were organized into two categories: "General Issues" and "Site specific wildlife or wildlife habitat issues".

A. General Issues

1. **AEP comment: 1) Unclear application of mitigation plan (Reassessment Report, Page 3):** use of non-committal terms and qualifying statements.

   Proponent's Response: The use of qualified statements such as "to the extent possible", "where practical", "where possible", "as necessary" and "where feasible" has been typical practice in the industry for years and has been used extensively in the past on environmental evaluations for other projects. However, the Proponent appreciates the AEP's current viewpoint on this issue and will remove all ambiguous terms; thereby committing the Proponent to the statements made in the Environmental Evaluation and associated documents. Further details to this AEP comment are provided in the Proponent's response to the AEP Detailed Review, in Appendix A-5.

2. **AEP comment: 1) Unclear application of mitigation plan (Reassessment Report, Page 3):** *"...the proponent identifies alternative mitigation that will be used if the standard mitigation cannot be adhered to. The proponent does not identify where alternative mitigation will be used or provide rational/justification for proposing alternatives. Therefore it is not clear what mitigation will be implemented, where it will be implemented and how it will be implemented...clear commitments to implement standard wildlife mitigation must be stated, as per AEP Guidelines and Directive.*

Where alternative mitigations are proposed, they must be clearly identify a location and the alternative mitigation to be implemented."

Proponent's Response: Table 1.2-1 of the Environmental Evaluation provides a description of construction activities that will be undertaken. Mitigation measures are identified in the Mitigation Measures section for each environmental component (i.e., Sections 3.5, 4.5, 5.5, 6.5, 7.5, 8.5, and 9.5 of the Environmental Evaluation)

Mitigation measures have been added and revised to provide additional detail regarding specific wildlife feature setbacks and restricted activity periods, including proposed alternative mitigation measures. See Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Sections 9M-2, 9M-4, 9M-5, 9M-6, 9M-7, and 9M-11.

3. **AEP comment: 2) Alterations of Standard Mitigation Options (Reassessment Report, Page 4):** *"The updated submission for Windy Point incorrectly calculates wildlife setbacks by measuring the distance between the centerpoint of the disturbance (ex. roads, feeder lines, rotor swept area) to the center point of the wildlife feature. This may result in setback requirement being incorrectly applied and project infrastructure being proposed within setbacks, while being identified as being outside setbacks and not requiring further mitigation.*"

   Proponent Response: Wildlife feature setbacks were correctly calculated as were the distances from Project infrastructure.

   The method used to determine setback distances is as follows: Wildlife features were collected as UTM locations. Setbacks as per the Directive were applied to each feature. Where infrastructure intersections with the wildlife feature setbacks were identified, the distance between the edge of the infrastructure and the edge of wildlife feature were measured.

   For turbines, blade tip length was calculated from the centrepoint of the WTG. If the bladetip intersected a wildlife feature setback, the closest distance to the edge of the wildlife feature from the edge of the bladetip was provided.

   Please see Appendix A-5: Table 3 Wildlife Feature Setback Analysis, which references the closest distances of infrastructure to the wildlife features. Also see Appendix A-5: Figure 9-2, which shows the Project infrastructure and environmental constraints, including the rotor swept area.

4. **AEP comment: 2) Alterations of Standard Mitigation Options (Reassessment Report, Page 4):** *"Based on the maps provided, AEP is concerned that multiple additional setbacks may be infringed upon. AEP was not provided information on the exact locations of infrastructure to accurately identify which setbacks are being infringed upon...Based on the updated submission setback distances have not been calculated correctly. Therefore mitigation plans for the impacts on wildlife and wildlife habitat have not been adequately identified."*

Proponent Response: Please see Appendix A-5: Table 3 Wildlife Feature Setback Analysis, which references the closest distances of infrastructure to the wildlife features. Also see Appendix A-5: Figure 9-2, which shows the Project infrastructure and environmental constraints, including the rotor swept area.

B. Site specific wildlife or wildlife habitat issues

These issues were identified by AEP in Table 1 of the Reassessment Report, pages 5-14.

1. **General Issue: Infrastructure sited on Native Grassland (Reassessment Report, Page 5):**

Proponent Response: An analysis of the footprint differences between the 2011 (Approved Power Plant layout)[28], 2016[29] ,2017[30] and 2018 (Amended Power Plant layout)[31] layouts are provided in Appendix A-5: Table 2 Project Land Cover Footprint Comparisons 2011, 2016, 2017, 2018. The Proponent recognizes that the Project is in the Foothills Fescue Natural subregion, an area of native grassland; however, professional biologists have further categorized the land cover types in the Project Area at a more detailed level and these classifications are used for the analyses. There are currently 8 WTGs within the native grassland land cover; 3 WTGs within the improved pasture (see line 30 of Appendix A-5 for definition); 2 WTGs within cultivated field; and 1 WTGs within a farmyard land classification. The native grassland footprint of the Project has been substantially reduced since 2011. The construction footprint within native grassland is reduced from 53.20 ha for the 2011 layout, down to 25.46 ha for the 2018 layout. The operation footprint is reduced from 7.18 ha for the 2011 layout, down to 4.01 ha for 2018 layout.

The Proponent considers it has addressed concerns related to the disturbance of native grassland responsibly, and has recognized that components of the Project are located in native grassland through the development of mitigation measures. The Proponent has developed a WTG layout within the Project Area that utilizes the non-grassland areas as much as possible: the layout considered wildlife features (WTGs avoid all nest setbacks), used existing roads, accesses WTGs from the periphery of the Project area to minimize fragmentation, locates laydown areas in non native land cover, and undergrounds the collector lines. The Proponent also has to consider noise, heritage resources, and municipal setback constraints in the development of a workable layout.

The mitigation measures proposed have considered best practices for development in native grassland. For example, the Proponent has committed to a Range Health assessment to support the development of detailed construction alignment sheets and reclamation plans, and minimizing the introduction of invasive species. Please see Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Sections 3-M5, 3-M4 and 3-M6 for more details.

[28] The 2011 layout refers to the currently approved WTG layout as per AUC Approval No. U2014-434.
[29] The 2016 layout refers to the WTG layout submitted to AEP in 2016.
[30] The 2017 layout refers to the WTG layout (14 WTGs) as provided to AEP in the Environmental Evaluation.
[31] The 2018 layout refers to the Amended Power Plant WTG layout (12 WTGs) as indicated in the Amendment Application: PP14.

2. **General Issue: Wildlife Setbacks and Timing Restrictions: Prairie Falcon Nest (Reassessment Report, Page 6):**

   Proponent Response: As discussed in section B.5: Prairie Falcon Nest Setback Considerations, the proposed Substation is at the most logical location for both technical and environmental reasons.

   The timeline for construction of the Substation has been revised to align with the timing restriction for the prairie falcon nest, and the role of the EWB ("Experienced Wildlife Biologist") has been clarified. Please see Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Sections 9M-3, and 9M-5.

   The EWB will have stop work authority and will monitor for presence of the prairie falcon within the nest setback during construction and for any unnecessary encroachment into the nest setback. Proposed mitigation to minimize disturbance of the prairie falcon nest is provided in Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9-M5.

   The Proponent has committed to installing underground collector lines throughout the Project, including within the Prairie Falcon nest setback. Construction activities within the setback will occur outside of the restricted activity period, and regular maintenance activities at the Substation will be scheduled outside of the restricted activity period (See Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9-M5).

3. **General Issue: Wildlife Setbacks and Timing Restrictions: Sharp-tailed Grouse Leks (Reassessment Report, Page 6):**

   Proponent Response: Wildlife feature setbacks were correctly calculated as were the distances from Project infrastructure. See Section D.A.3: General Issues comment #3.

   Both LEK02 and LEK03 were locations where two individual sharp-tailed grouse were observed in 2015 with no individuals observed at those locations in 2016 surveys. No lekking behavior was reported. Nevertheless, the Proponent has followed AEP's guidance and has considered these leks active and included them as siting constraints for the Project despite minimal evidence that these areas are actually used as leks.

   No infrastructure is sited within the setbacks of LEK01, LEK02 and LEK04. Please see Appendix A-5: Table 3 Wildlife Feature Setback Analysis, which references the closest distances of infrastructure to the wildlife features including those recorded for LEK03.

   The locations of all leks are listed in Environmental Evaluation Table 9.4-4 (including UTM locations and Legal Subdivision). These locations and their 500 m setbacks are also shown in

Appendix A-5 on Figure 9-2. All leks listed in Table 9.4-4 were used as siting constraints in the Project design process.

See Section D.A.3: General Issues comment #2 regarding mitigation measures in reference to wildlife setbacks.

4. **General Issue: Wildlife Setbacks and Timing Restrictions: Ferruginous Hawk Nest (Reassessment Report, Page 7):**

Proponent Response: It is the Proponent's understanding that mitigation measures are being undertaken for a ferruginous hawk nest more than 1000 m to the south of the Project Area, and not for this nest. The nest near the Project Area was vacant in 2015, and occupied by Swainson's hawks in 2017. However, the Proponent will follow AEPs recommendation that the nest be considered active in 2017 since there has not yet been two years of observation of inactivity. In consideration of this nest, the Proponent has sited Project infrastructure to minimize encroachment into the nest setback. No WTGs, collector lines, or temporary work spaces are located within the nest setback. The FEHA setback is overlapped by the existing Range Road 291 and a portion of the existing access road (to be upgraded) to the decommissioned residence/farmyard, to be used as a laydown area.

Project infrastructure within the nest setback is limited to a short, upgraded segment of existing spur road on an existing road alignment, from Range Road 291 to WTG V-11 and one of the laydown areas, which are located outside the nest setback. WTG V-11 has been sited on existing decommissioned residence/farmland land cover, to minimize the footprint on native grassland. The spur road is situated on the opposite side of Range Road 291 from the nest and is oriented away from the nest. The closest distance from the spur road to the nest is 680 m. The Proponent considered that use of the existing road would incur less disturbance than building a new road outside of the setback.

Proposed mitigation measures to minimize disturbance of the ferruginous hawk nest at this location are provided in Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9-M4.

Wildlife feature setbacks were correctly calculated as were the distances from Project infrastructure. See Section D.A.3: General Issues comment #3.

5. **General Issue: Wildlife Setbacks: Valley Breaks and Coulees (Reassessment Report, Page 8):**

Proponent Response: As per the *Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta*

Wind Energy Projects[32] (the "Grandfathering Process"), the Project may apply the 2011 Guidelines for all pre-construction activities, including siting of components. The 2011 Guidelines do not include a 100 m setback from coulee and valley breaks, and therefore this setback does not apply to the Project. Despite the Grandfather Process status of the Project, all WTGs, with the exception of WTG #08, have been sited to avoid the setback for coulees and valleys, and the two incursions into coulees are for the linear disturbance of collector lines, which will be installed underground.

Mitigations for the two collector line crossings of coulees are provided in Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9M-7.

6. **General Issue: Wildlife Setbacks and Timing Restrictions: Grassland Birds (Reassessment Report, Page 8):**

Proponent Response: Potential effects to grassland birds will be mitigated through adherence to grassland bird restricted activity periods and setbacks. Please see Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9M-3 and 9M-11.

If subsequent construction (i.e. during subsequent construction seasons, and not including ground clearing) or decommissioning activities (including reclamation) in native grassland cannot be scheduled outside the grassland bird restricted activity period (April 1 to July 15), a pre-disturbance migratory bird nest search will be conducted by an EWB of the Project footprint plus up to a 100 m setback to identify potential wildlife features that could be impacted by construction activities. Additionally, any wildlife features (e.g. raptor nests) that were identified in the pre-construction wildlife surveys will be checked within 1,000 m of the proposed construction activity (for clarity, this applies to any new wildlife features identified and not the existing PRFA or FEHA nests or STGR leks).

If wildlife features with setbacks intersecting Project infrastructure are identified prior to construction (during initial or subsequent activities), species-specific setbacks and restricted activity periods will be applied based on Appendix A of the Wildlife Directive. If setbacks and restricted activity periods cannot be applied, mitigation will be planned and implemented following AEP guidance.

7. **Construction: Authority of Wildlife Monitor (Reassessment Report, Page 9):**

Proponent Response: The Proponent is committed to the setbacks previously presented in the Environmental Evaluation and the Environmental Protection Plan and has no intent to change the identified setbacks and mitigation.

[32] Administrative Procedure: *Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects* (Wildlife 2016 No. 7), January 27, 2017, Page 1

All measures presented in Appendix E, including the quoted text, were intended only for contingency measures should new features be identified by the Environmental Monitor or the Experienced Wildlife Biologist during the course of construction. The Proponent acknowledges that AEP has responsibility for approval of alterations to setbacks, and has altered text in Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9-M13 as follows:

> *"If active wildlife features with setbacks not previously identified (nests, dens) are encountered by the Environmental Monitor during Project activities, species-specific buffers and timing restrictions will be applied based on Appendix A of the Wildlife Directive and consultation with AEP. If buffers or timing restrictions cannot be applied, mitigation will be planned and implemented pending AEP approval."*

8. Construction: Wildlife Monitor - Stop Work Criteria (Reassessment Report, Page 9):

Proponent Response: The Proponent has committed to having an Experienced Wildlife Biologist ("EWB") on-site during the FEHA nesting season, and will monitor for signs of disturbance above baseline levels. The EWB will have stop work authority if changes in behavior are observed.

An EWB will be on site during construction to stop work if ungulates are within 200 m of construction activity, during adverse weather conditions (i.e., deep snow (20 cm or greater depth)), at the discretion of an EWB when large groups of ungulates may congregate for shelter and/or grazing purposes.

The EWB will have stop work authority and will monitor for presence of prairie falcon within the nest setback during construction and for any unnecessary encroachment into the nest setback. Use of the substation area during the restricted activity period will be monitored by an EWB with stop work authority if prairie falcon are present and are showing signs of agitation above baseline levels.

Please refer to Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 9-M2, 9-M3, 9-M4, 9-M5, and 9-M6.

9. Underground vs. Above ground Collector Lines (Reassessment Report, Page 10):

Proponent Response: The Proponent confirms that all collector lines will be placed underground. If the Proponent discovers, upon completion of detailed geotechnical surveys or during construction that ground conditions do not allow for underground installation, alternatives will be discussed with AEP.

10. Construction: Underground Collector Lines Installation (Reassessment Report, Page 11):

Proponent Response: The Proponent anticipates that depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, the Proponent will advise AEP of these specific locations and discuss alternative methods such as trench excavation. The collector crossing adjacent to one wetland (Class III) and collector crossings at two watercourses will be completed via trench excavation. Please refer to Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures, Section 5-M1, 5-M2, 5-M3, and 6-M2 and the updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the watercourse crossings.

11. Bird Mortality Rates (migration survey issues) (Reassessment Report, Page 11):

Proponent Response: The Environmental Evaluation characterized the magnitude of the residual effect of change in mortality risk as a medium magnitude effect for birds due to potential turbine collision mortality during the Operations phase of the Project. The information provided in Appendix A-5: Windy Point Wind Park 2018 Update (revised avian risk report) did not alter the residual effect characterization.

12. Bat Mortality Rates (Reassessment Report, Page 12):

Proponent Response: The Proponent is committed to following the consultation threshold levels and recommended mitigation measures outlined in the Bat Mitigation Framework in place at the time, and consulting with AEP prior to implementing any adaptive management strategies. Post-construction operational mitigation that could be implemented includes but is not limited to: altering cut-in speeds; feathering turbine blades; periodic turbine shut-down (i.e., at night during bat migration periods); and alternative acceptable mitigation that is deemed appropriate based upon the site-specific circumstances following consultation with AEP.

13. Post-construction Monitoring Plan: Survey Dates (Reassessment Report, Page 13):

Proponent Response: The preliminary construction schedule identifies commercial operation beginning in the late fall / winter, and as such monitoring starting in the first spring after commissioning captures the high-risk periods.

If the Project is commissioned before the onset or completion of fall migration (July to October), monitoring will begin in the first fall season.

14. Post-construction Monitoring Plan: Experienced Biologist (Reassessment Report, Page 13):

Proponent Response: The Proponent recognizes AEP's concern with having unqualified personnel complete the post construction wildlife monitoring, and confirms that searchers with the level of education and experience outlined in the Directive will be used for the surveys.

15. Post-construction Monitoring Plan: Mortality Thresholds (Reassessment Report, Page 13):

Proponent Response: See response to # 12

16. **Post-construction Monitoring Plan: Additional Wildlife Surveys (Reassessment Report, Page 13):**

Proponent Response: The Proponent has committed to conduct these surveys as per requests in the AEP referral letter Nov 2016. The methods are listed in the Post Construction Mitigation Plan ("PCMP"):

- Breeding bird surveys
- Raptor nest surveys
- Sharp-tailed grouse lek surveys

The Proponent will commit to acoustic monitoring surveys concurrent with post-construction monitoring, the conduct of which might offer value to refining post-construction monitoring. We are open to such discussions with AEP.

17. **Post-construction Mitigation Details (Reassessment Report, Page 14):**

Proponent Response: Please refer to Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation Measures.

Conclusion

The Project has a number of benefits that support its construction and operation as being in the public interest, including:

- Strong wind resource, thereby potentially providing a cheap source of electricity for Alberta ratepayers;
- Furthers the Government of Alberta and Minister's goals and priorities as set out in the Climate Leadership Plan and the *Renewable Electricity Act*;
- General landowner and community acceptance, as demonstrated through the recent PIP conducted in 2017;
- Interconnection located at the Project Site and no requirement for overhead transmission line construction;
- Existing Municipal and AUC permits in place;
- Project owner is a wind farm operator (providing a long term commitment to the Project);
- The Project has manageable environmental impacts;
- The Project has the potential to create over 100 jobs during construction and approximately 10 long term jobs to the local community; and
- Significant property tax revenues for the local municipality.

The Proponent has done everything requested by AEP, including additional environmental studies conducted in 2015, 2016 and 2017 and relocation of turbines and associated infrastructure to avoid wildlife setbacks.

The 2015-2017 environmental studies were largely confirmatory of the findings from the initial environmental surveys conducted in 2009-2010 and reviewed and approved by AESRD in 2011 and the Commission in 2012. The only material change between the initial environmental studies conducted in 2006, 2009 and 2010 and the environmental studies conducted in 2015 - 2017 were the observations of grouse leks LEK01 thru LEK04 and three new wetlands. To mitigate for the new grouse lek findings, the Proponent has relocated all WTGs in order to be outside of the lek setbacks.

Despite the prairie falcon nest setback relaxation from 1000m to 750m as agreed to by AESRD in 2011, the Proponent has relocated WTGs outside the 1000m setback as well proposed further mitigation measures to the construction and operation of the Substation to reduce the risk to the prairie falcon nest.

The Proponent reiterates its commitment to an industry leading reclamation program to address impacts to native grasslands and a three year monitoring program for potential bat and bird fatalities. If the bat or bird mortality rate is found to be high, the Proponent will develop a mitigation plan in collaboration with AEP using industry best practices.

The Proponent has also committed to construction and operations & maintenance timing restrictions and other mitigation measures to further reduce wildlife and vegetation impacts (as provided in Appendix A-5: Revised EE Table 10-1 Summary of Project Mitigation).

The Project has been in development for over ten years and throughout that time the Proponent has acted in good faith in its interactions with municipal, provincial and federal agencies, including AEP. There have been no changes to pre-construction AEP policy since the 2011 Referral Report; the Project remains to be governed by the *2011 Policy - Wildlife Guidelines for Alberta Wind Energy Projects* for all pre-construction activities, including wildlife setbacks. The Proponent reiterates its commitment to adhering to the current AEP Wildlife Directives for all post construction activities.

The Proponent has invested considerable time and resources in reliance upon AEP's initial position on potential environmental impacts associated with the Project and submits that there have been no material changes in environmental risk or policy that justify AEP's change in position on key environmental matters.

The Project will be highly beneficial for Alberta, as it will contribute to reducing reliance on fossil fuel power generation and create long term jobs and economic activity for the local area. The Proponent plans to participate in the ongoing Government of Alberta's Renewable Electricity Program under the *Renewable Electricity Act*.

In conclusion, the Proponent submits that Amendment Application approval should be granted by the Commission since the proposed Project changes do not result in any additional environmental risks beyond those previously identified and addressed when Permit and Licence No. U2012-368 was initially granted by the Commission.

As always, the Proponent is open to further discussions and remains committed to working collaboratively with AEP and AUC to resolve any outstanding issues.

Appendix A-1: AESRD-AFWD Wind Energy Referral Report

Government of Alberta

Wind Energy Referral Report - Alberta Fish and Wildlife Division (AFWD)

A. Alberta Fish and Wildlife Division Review:

The project Windy Point Wind Park was reviewed by the Regional Wildlife Contact (Appendix 1-Wind Energy Wildlife Contact map). ASRD-FWD has reviewed the proposal (including turbine locations) and is satisfied with the monitoring and mitigation of impacts to wildlife and their associated habitats, including Species at risk. ASRD-FWD has reviewed the proposed location, proposed mitigation strategies, including associated infrastructure and construction plans, and post construction monitoring program, as detailed below. **ASRD- FWD Office:** Blairmore (Pincher Creek)

The Windy Point Wind Park Ltd. Wind energy wildlife mitigation plan for Windy Point Wind Park meets with the recommended mitigation strategy developed by ASRD-FWD.

Signature: Daryl Wig Digitally signed by Daryl Wig DN: cn=Daryl Wig, o=Alberta Sustainable Resource Development, ou=Fish & Wildlife Division, email=daryl.wig@gov.ab.ca, c=CA Date: 2011.06.15 11:59:37 -06'00' Date: 15-Jun-2011

Printed Name: Daryl Wig

B. Project Details

Project Name: Windy Point Wind Park

Company name: Windy Point Wind Park Ltd. **AUC Application #:** _____

Location of Project: Section:___ TWP: 7-8 RGE: 29 Meridian: 4

Project Details: Area: 10.4 km^2 Turbines #: 21 Height: 80 m Blade Length: 100 m

C. Wildlife Issues to be addressed (list current impacts)**:**

Site Selection:

Potential impacts exist to high levels of bat fatalities associated with this development.
Concerns on fatalities of raptors, especially "sensitive" or "at-risk" species known to occur in this area

Wildlife Impacts:

Potential impacts exist to high levels of bat fatalities associated with this development.
Concerns on fatalities of raptors, especially "sensitive" or "at-risk" species known to occur in this area

Other potential impacts:

Loss of native prairie from placement of turbines

D. Industry Submission of Wildlife Monitoring Program *(*submission to *Fisheries and Wildlife Management Information system*-FWMIS*)*

Research License #:_____

Pre-construction survey data submitted within 2 years of project construction: ☑
Note: If no construction has occurred with 2 years, new data may be requested.

Post-construction Survey dates: From 01-Apr-2014 **to** 31-Dec-2016.

Annual Due date for Post construction Survey data submittal (dd/mm): 31-Dec

E. ASRD-FWD recommendations (noting accepted deviations from existing Guidelines and based upon Proposed mitigation plan)*:*

Recommendations Relating to Site Selection (List strategies and documents –setbacks based from tip of turbine blade)**:**

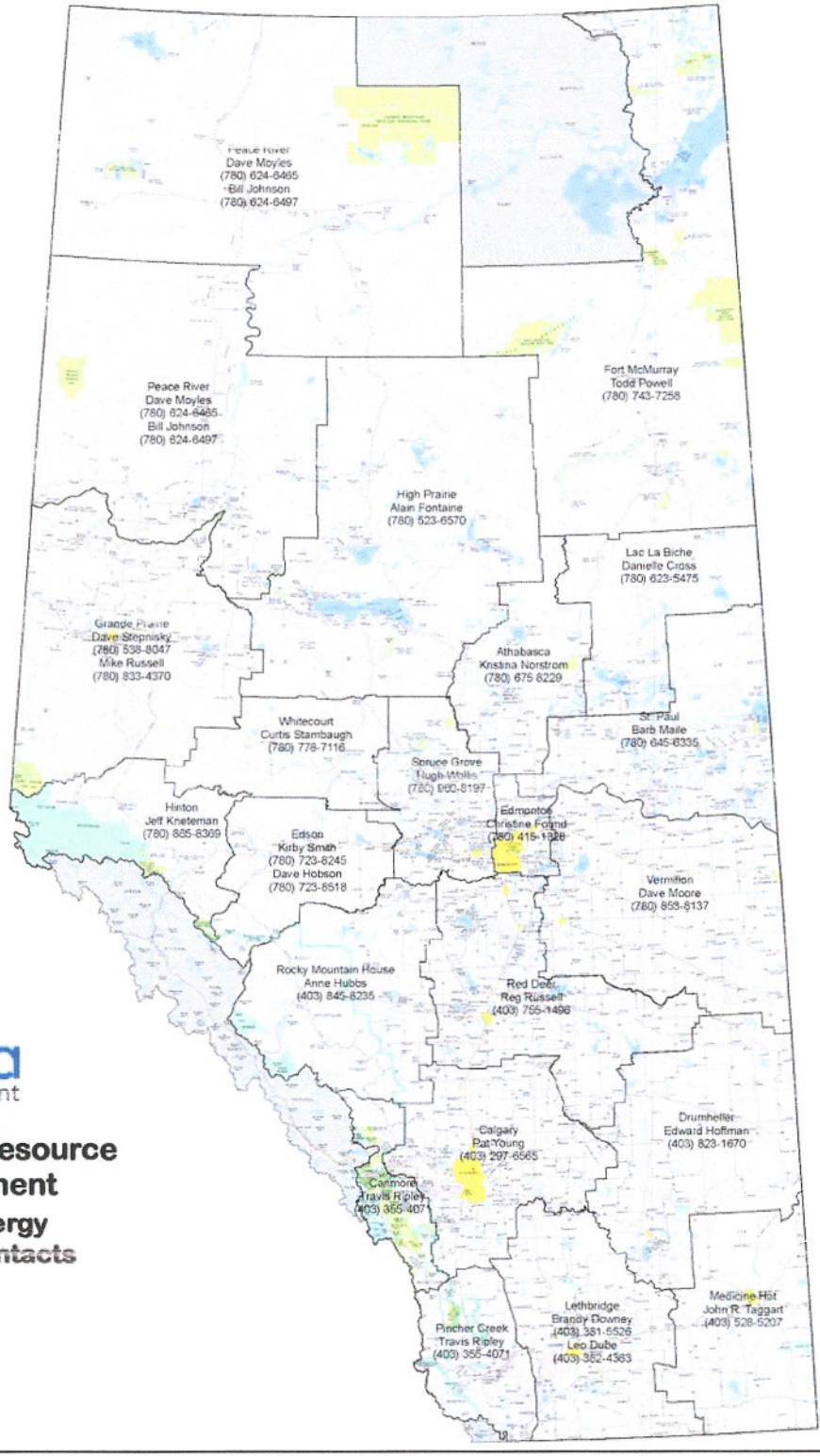
All appropriate setbacks have been adhered to in this proposed development: Wetland setbacks at 100 m.
Reports reviewed in this assessment include:
1. "Windy Point Wind Park. A Report to ASRD in Support of an AUC Rule 007 application. Vegetation and Wildlife Overview" dated May 26, 2010
2. "Windy Point Wind Park: Spring Bat Monitoring Report. A Supplemental Report to ASRD in Support of an AUC Rule 007 Application" dated November 15, 2010
3. "Environmental Protection and Reclamation Planning Framework for Windy Point Wind Park" dated May 17, 2011
4. Letter from Stantec Consulting Ltd., "Request for ASRD sign-off, AUC Rule 007, Windy Point Wind Park" dated June 9, 2011

Recommended Mitigation to Reduce Impact On Wildlife(List strategies and documents) **:**

Upon encounter of unexpectedly high levels of bat fatalities, Windy Point Wind Park Ltd., in consultation with ASRD, will implement operational mitigation measures, such as increasing the cut-in speed of wind turbines. Determination of what constitutes high levels of bat fatalities will be based on consultation with bat experts in Alberta.

Wildlife Monitoring Recommendations (List strategies and documents)**:**

A post-construction monitoring plan will be provided 6 months prior to anticipated completion of construction. Post-construction monitoring program will consist of an approved and agreed upon bird and bat carcass survey. Prior to commencement of this survey, it is a requirement to ensure proper regulations are followed and research permits and collection licences issued. Information collected under authority of a provincial research permit and collection licence requires annual submission of data to Alberta's FWMIS. Survey time lines will be determined in consultation with ASRD staff.
Note that post-construction survey dates given above are based upon completion of construction in 2013. Any extension of this date will extend the dates of post-construction monitoring accordingly.



Alberta
Government

Sustainable Resource Development

Wind Energy Wildlife Contacts

Appendix A-2: Supplemental Response to Information Request #3

Windy Point Wind Park

Proceeding ID: 21868

Application No. 21868-A001

Alberta Utilities Commission
Supplemental Response to Information Request No. 3
Windy Point-AUC-2016SEP30-001

Submitted by:

Windy Point Wind Park Limited

Windy Point Wind Park Ltd. - Suite 1320, 396-11th Ave. SW - Calgary, AB, T2R 0C5

February 3, 2017

Windy Point-AUC-2016SEP30-001

Reference: Exhibit 21868-X0009, Windy Point information response round 2

Issue: Wildlife survey

Quote: In response to the information request Windy Point-AUC-2016SEP01-002(a), Windy Point stated:

> "Discussions between Windy Point and AEP are ongoing. Windy Point will be providing AEP with additional wildlife study information, that was recently requested, and a revised draft Environmental Protection Plan (EPP) within the next week. While it is the intention to conclude discussions with AEP as soon as possible, Windy Point cannot guarantee the EPP discussion will be finalized with AEP by September 30, 2016."

In response to the information request Windy Point-AUC-2016SEP01-002(b), Windy Point stated:

> "As with the EPP, Windy Point intends to conclude discussions with AEP as soon as possible, but cannot guarantee an updated sign-off letter will be granted by AEP by September 30, 2016."

Request:

(a) Please submit a copy of the project's revised environmental protection plan once it is finalized.

(b) Please submit a copy of the updated sign-off referral letter for the amended project once this letter is obtained from AEP's local wildlife biologist.

Supplemental Response:

(a) The Project's revised Environmental Protection Plan ("EPP") was submitted to Alberta Environment and Parks - Wildlife Management ("AEP") on September 26, 2016. It was uploaded to the AUC's e-filing system in draft form as Exhibit 21868-X0018. Windy Point Wind Park Ltd. ("WPWP") has made repeated unsuccessful efforts to meet with AEP to discuss, among other things, the contents of the EPP.

(b) Without meeting with, or even receiving prior notice from AEP, on November 14, 2016 WPWP received the *Renewable Energy Referral Report – Alberta Environment and Parks – Operations Division, Wildlife Management* from AEP (the "Referral Report"). A copy of the Referral Report is attached hereto as Appendix "A". In the Referral Report, AEP concludes that "the Windy Point Wind Farm as proposed, based on updated wildlife assessment data provided by the proponent, poses a high, unmitigated risk to wildlife and wildlife habitat."[1] As outlined in further detail below, WPWP was caught entirely by surprise by the Referral Report, which was based on AEP's review of a number of updated wildlife surveys conducted by WPWP in 2015 and 2016. WPWP submits that its updated wildlife surveys were largely confirmatory of the results of its initial surveys upon which AEP's (formerly Alberta Sustainable Resource Development - Fish and Wildlife Division) initial sign-off was granted on June 15,

[1] Referral Report, page 1

2011 (the "2011 Referral Report") and upon which WPWP has relied on in making considerable investment in the Project. A copy of the 2011 Referral Report is attached hereto as Appendix "B".

The AEP wildlife guidelines used in the 2011 Referral Report remain the current policy guidelines to be applied to the Project:

> *"A wind energy project that has submitted an application to AUC, has AUC approval, or has been commissioned may use the 2011 Policy - Wildlife Guideline for Alberta Wind Energy Projects."*[2]

WPWP submits that there is no foundation for AEP's conclusion that the "updated wildlife assessment identified a significant change in risk from the original assessment for multiple species of wildlife and wildlife habitat."[3] On the contrary, the risks identified were generally the same as those initially identified and considered by the Commission in granting the initial approval of Decision No. 2012-205 subject to conditions identified by AEP to mitigate those very risks.

Moreover, WPWP submits that the conclusions reached in the Referral Report give no consideration of, and are wholly inconsistent with, the Government of Alberta's Climate Leadership Plan and its stated environmental priority of bringing 5000 MW of renewable energy onto the Alberta grid by 2030.

In December 2016, Boralex Inc. ("Boralex") partnered with Alberta Wind Energy Corp. ("AWEC") on the Windy Point Wind Park, bringing over 20 years of renewable energy development experience to the partnership. This will be Boralex's first renewable energy investment in the province and management has committed to a long term strategy in the Alberta market.

Boralex has adopted an environmental mission, to prioritize environmental concerns in decision-making on the construction and operation of its projects. The mission is reported out on quarterly to the Administrators of the Environmental Health and Safety Committee, and includes components such as: adhere to the environmental laws and regulations; ensure implementation of an environmental action plan at each operations centre; and adopt a proactive, responsible and respectful approach to the environment when developing sites, to minimize the impacts and risks associated with operating power generation facilities.

As an example of the corporation's commitment to the environment and sustainability, Boralex's Jamie Creek Hydroelectric Project in southwestern BC received EcoLogo certification in May 2016. EcoLogo is a Government of Canada program designed to support the continuing effort to improve or maintain environmental quality. Receipt of the certification confirms that the electricity produced at the Jamie Creek site is considered 2010 CCD-003 Renewable Low-Impact Electricity.

Since receiving the Referral Report, WPWP has made numerous efforts to meet with AEP to discuss the Referral Report and EPP, which WPWP submits is robust and, along with other commitments WPWP is prepared to make, will reasonably mitigate the risks identified in the Referral Report. WPWP remains committed to working collaboratively with AEP, but AEP has indicated that the Referral Report is reflective of its position has not been willing to discuss the matter further. WPWP provided a copy of this filing in draft form to AEP in advance of filing it with the Commission in hopes that AEP would be

[2] Administrative Procedure: Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects (Wildlife 2016 No. 7), January 27, 2017, Page 1

[3] Referral Report, page 1

prepared to meet to discuss it or provide comment. AEP did not provide feedback to this document. WPWP remains hopeful that engagement with AEP through the Commission's process may be of assistance in resolving the apparent impasse with AEP.

WPWP provides its detailed response to the conclusions reached in the Referral Report below. WPWP submits that the responses show a history of collaborative problem solving with AEP on potential ecological issues from construction of the Project, and a willingness to further develop mitigation actions as necessary. In summary, WPWP submits that the requested extension to facilitate completion of construction of the Project should be granted by the Commission as the extension does not result in any material environmental risks beyond those previously identified and addressed when the permit was initially granted by the Commission. Furthermore, all identified environmental impacts will be mitigated in accordance with the conditions previously imposed by the Commission.

I. History of the Project

The Windy Point Wind Park is a wind energy project currently owned by Windy Point Wind Park Ltd. ("WPWP"), a joint venture between Alberta Wind Energy Corporation and Boralex Inc.

The Windy Point Wind Park (the "Project") development began in 2005. Project siting was initially conducted in 2005-2006 with the support of landowners, the local community and the Municipal District of Pincher Creek. The Project is situated entirely on private lands, and within close proximity to highway 785. In 2006 and 2007, several environmental studies were conducted, including bird surveys by R.A. Owens Environmental Services Ltd. In 2009-2010, a comprehensive environmental study was conducted by Stantec Consulting Ltd., Matrix Solutions Inc. and various sub-contractors.

On June 15, 2011, Alberta Sustainable Resource Development - Alberta Fish and Wildlife Division (ASRD) provided a Wind Energy Referral Letter (the "2011 Referral Report") with the following recommendations:

1. *"Mitigation Measures: Upon encounter of unexpectedly high levels of bat fatalities, Windy Point Wind Park Ltd, in consultation with ASRD, will implement operational mitigation measures, such as increasing the cut in speed of wind turbines. Determination of what constitutes high levels of bat fatalities will be based on consultation with bat experts in Alberta."*[4]

2. *"Wildlife Monitoring Recommendations: A post construction monitoring plan will be provided 6 months prior to anticipated completion of construction. Post construction monitoring program will consist of an approved and agreed upon bird and bat carcass survey."*[5]

In addition to the recommendations, the 2011 Referral Report noted that *"if no construction has occurred with[in] 2 years, new data may be requested"*[6]. As will be discussed in further detail, WPWP conducted updated environmental studies in 2015-2016.

On July 22, 2011, WPWP made a Power Plant Application to the AUC for the Project (Application No. 1607515). On July 31, 2012, the AUC issued Decision No. 2012-205 granting WPWP Power Plant Approval (No. U2012-368) to construct and operate the Project (the "AUC Permit" or "Decision 2012-205"). The Decision included the following statement:

> *"38. In making its decision, the Commission considered that the Fish and Wildlife Division has reviewed the proposed power plant and is satisfied with the proposed location, mitigation strategies and post-construction mitigation program as reflected in the Fish and Wildlife Division's Wind Referral Report. However, the Commission considers it important for Windy Point to develop and implement a post-construction monitoring program, including bird and bat carcass surveys for at least two years, and that such a program be acceptable to the Fish and Wildlife Division. Also, Windy Point must file the results from its post-construction monitoring with the Fish and Wildlife Division, post the*

[4] 2011 Referral Report, page 2
[5] Ibid.
[6] Ibid.

results in the Fish and Wildlife Division's management information system and submit, to the AUC, copies of those reports and all correspondence from the Fish and Wildlife Division in regard to those reports."[7]

WPWP confirms that it remains committed to meeting the above monitoring requirements.

In late 2012, the Alberta Electric System Operator (AESO) notified WPWP that it would be required to build a separate substation for the Project rather than expanding the existing Oldman 2 Substation 112S[8]. On October 22, 2014, WPWP made Application to the AUC for the Boulder Run Substation 501S[9] (Proceeding No. 3485), to interconnect the Project to the transmission system. The Boulder Run Substation is planned to be immediately adjacent to the Oldman 2 Substation and is effectively an expansion of that substation's footprint. Triggered by the referral to the AEP for the application of the Boulder Run Substation, on April 10, 2015, AEP requested updated environmental surveys for the Project, including:

a) Spring and fall migration surveys at dawn and dusk for songbirds; three surveys each
b) Two breeding bird surveys
c) Spring and fall migration surveys mid day for raptors; three surveys each season
d) Early spring surveys of Richardson ground squirrels
e) Spring surveys for sharp-tailed grouse
f) Two wintering bird surveys
g) Bat surveys using protocols acceptable to the Alberta Bat Action Team
h) Surveys to determine the presence of rare plant communities

Throughout 2015 and 2016, WPWP conducted the requested surveys (conducted by Tetra Tech Inc, and McCallum Environmental Ltd.). As outlined further below, the 2015-2016 surveys were largely confirmatory of the results of the environmental studies conducted in 2006-2007 and 2009-2010 and relied upon by AEP (ASRD) and the Commission in approving the Project in the first instance.

As will be explained below, the only new finding resulting from the 2015-2016 wildlife surveys was the observation of a new grouse lek (referred to in this document as "Grouse Lek #4") and the re-emergence of a grouse lek previously observed in 2007, but not observed in surveys done in 2009 (referred to in this document as "Grouse Lek #1"). The emergence of these leks place several of the Project turbine locations within the recommended 500m setback. Therefore, as a result of these grouse leks, WPWP has proposed in the EPP additional mitigation measures, including restricting construction activities during the breeding season when the leks are active. Please see Appendix "C" for a map depicting the approved Project turbine layout and identified wildlife constraints.

On July 29, 2016, WPWP submitted a request for an amendment to the AUC Permit to accommodate an extension of the construction completion date to September 30, 2018 for the Project. (Proceeding No. 21868). On September 26, 2016, WPWP provided the EPP and 2015-2016 wildlife survey reports to AEP. As previously mentioned, the Referral Report was delivered to WPWP on November 14, 2016.

[7] AUC Decision No. 2012-205, page 7
[8] Substation 112S is named the Windy Point Substation by the AESO. However, to avoid confusion, Substation 112S will be referred to in this document as the Oldman 2 Substation.
[9] The Boulder Run Substation 501S will be the substation servicing the Windy Point Wind Park.

II. Responses to Referral Letter

In the following discussion, WPWP provides its response to each of the comments and recommendations in the Referral Report.

a) **"AEP-WM identified the potential negative effects of siting wind energy facilities in areas of native grasslands on wildlife, in particular on species at risk. AEP-WM recommends siting the wind energy facility and associated infrastructure on cultivated or other previously disturbed lands to significantly reduce most of the negative effects on wildlife habitat."**[10]

- **WPWP Response:** Windy Point Wind Park is not a newly sited project. The Project has been in development for over ten years. On June 15, 2011, ASRD, provided the 2011 Referral Report, which did not identify any potential negative effects on wildlife from siting the wind energy facility in areas of native grasslands. The Project subsequently received an AUC Power Plant Permit on July 31, 2012 (the "AUC Permit" noted above). The AUC Permit applies to 21 turbine locations, collector system and infrastructure, and included the requirement for WPWP to fulfill the commitment to minimize disturbance to native grasslands through construction scheduling and techniques, along with restoration and reclamation.

  As stated in the AUC Decision 2012-205:

  > *"42. In making its decision the Commission also considered Windy Point's commitments to minimizing disturbance of native grasslands, implement a comprehensive reclamation strategy and to restore fescue grasslands. In granting approval, the Commission is relying upon Windy Point to fulfill those commitments and, at the end of the useful life of the facility, promptly decommission the facility, and reclaim and restore disturbed areas as described in the application. When providing notice of facility decommissioning to the AUC, Windy Point shall fully describe the decommissioning, reclamation and restoration work conducted."*[11]

  WPWP confirms that it remains committed to meeting the above requirements.

  There has been no change to the area of grasslands at the Project area since the 2011 approval. Native grasslands occur in different levels of density throughout the Project area. Sections with high fescue percent cover (70 to 80%) are located in the northeastern portion of the Project area (SE-3-8-29 W4M and SW-35-7-29 W4M). Areas with moderate percent cover (40 to 60%) are located in the central portion of the Project area (LSD 2-2-8-29-W4M, SW-2-8-29 W4M and NE-35-7- 29 W4M). Areas with lower percent cover (less than 40%) are located in southern portion of the Project area (NE-35-8-29 W4M and SW-34-8-29 W4M) (Stantec 2010). Furthermore, the Project is sited within close proximity to highway 785 and several existing wind farms, thereby

[10] Referral Report, page 2
[11] AUC Decision No. 2012-205, page 7

reducing the Project's potential to increase fragmentation of intact areas of native grasslands.

WPWP has proposed to employ techniques that minimize disturbance to grasslands (e.g. use of matting) and to undertake construction activities during dormant periods (as presented in the reclamation program provided to ASRD on May 17, 2011)

As stated in the AUC Decision 2012-205:

> *"20. Windy Point recognized the sensitive nature of the native grasslands to be disturbed and committed to a comprehensive strategy of assessment, low-impact construction techniques and, reclamation and monitoring to minimize adverse effects. Windy Point targeted construction during the dormant period as the primary means of minimizing disturbance of native prairie with the use of matting during construction proposed as an alternate mitigation. Windy Point acknowledged that restoration of native prairie was a complex process and committed to using the most current and advanced approaches to restoring fescue grassland habitat disturbed by the project.*"[12]

Due to sound level restrictions and turbine spacing requirements, situating all Project turbines only on cultivated lands is not possible.

b) "AEP-WM recommends that predevelopment wildlife surveys, as per the Wildlife Guidelines for Alberta Wind Energy Projects, be conducted prior to applying for the Windy Point Wind Park to the Alberta Utilities Commission."[13]

- **WPWP Response:** WPWP conducted a substantial number of vegetation and wildlife surveys over the past ten years using qualified and experienced companies, as per the Wildlife Guidelines for Alberta Wind Energy Projects, including:

  i. Bird Study Report, July 2007 by R.A. Owens Environmental Services Ltd.
  ii. Richardson's Ground Squirrel and Grouse Lek Surveys, August 2009 by Matrix Solutions Inc.
  iii. A Report for ASRD in Support of AUC Rule 007, March 5, 2010 by Stantec Consulting Ltd. including:
    1. Wetland study
    2. Plant Study
    3. Uplands Study
    4. Fall, Winter and Spring Bird Surveys
    5. Spring and Fall Migration Surveys
    6. Sharp-tailed Grouse Surveys
    7. Richardson's Ground Squirrel Survey
    8. Fall Bat Monitoring
    9. Amphibian Studies
  iv. Spring Bat Monitoring Report, November 15, 2010 by Stantec Consulting Ltd.

[12] AUC Decision No. 2012-205, page 3
[13] Referral Report, page 2

v. Wildlife and Rare Plant Survey, December 1, 2015 by McCallum Environmental Ltd.
vi. Fall Migration Studies December 21, 2015 by McCallum Environmental Ltd.
vii. Winter Wildlife Survey, March 15, 2016 by McCallum Environmental Ltd.
viii. Spring Migration Studies August 8, 2016 by McCallum Environmental Ltd.
ix. Sharp Tailed Grouse Lek and Bat Surveys, September 19, 2016 by Tetra Tech Inc.

As a result of these studies, WPWP has accumulated a broad understanding of the environmental characteristics of the site. Additional studies would not provide new significant information, and WPWP is confident that the available data sufficiently demonstrates that the Project will not result in any potential adverse environmental effects that cannot be mitigated. Furthermore, WPWP has committed to completing two years of post-construction monitoring for birds and bats.

c) "AEP-WM recommends that areas immediately adjacent to key wildlife habitats be avoided by appropriate setbacks and timing restrictions"[14]

- **WPWP Response:** The following tables show the Project turbine locations and Boulder Run Substation location that encroach on the recommended setbacks of wildlife habitats:

Grouse Lek #1			
Location	**Distance from Lek**	**Recommended Setback**	**Setback Encroachment**
Turbine 10	215m	500m	285m
Turbine 11	330m	500m	170m

Grouse Lek #4			
Location	**Distance from Lek**	**Recommended Setback**	**Setback Encroachment**
Turbine 8	340m	500m	160m
Turbine 13	475m	500m	25m

Prairie Falcon Nest			
Location	**Distance from Nest**	**Recommended Setback**	**Setback Encroachment**
Turbine 8	888m	1000m	112m
Turbine 13	936m	1000m	64m
Turbine 14	815m	1000m	185m
Substation	857m	1000m	143m

Currently there are no legislated species at risk in proximity to the Project turbine locations or other infrastructure components that were not previously contemplated in the reports provided to ASRD for the assessment and resultant 2011 Referral Report. The only species at risk in the Project area is the prairie falcon, which is listed as Sensitive (General Status) and Species of Special Concern (Detailed Status).

[14] Referral Report, page 2

Prairie Falcon Nest

In 2011, it was agreed the setback from the prairie falcon nest (located at NE 27-7-29-W4) would be altered from 1000m to 750m in order to conform to the alteration provided to the adjacent Oldman 2 Wind Farm. The setback alteration to 750m is why the 2011 Referral Report and AUC Permit does not make reference to an encroachment on the prairie falcon nest 1000m setback: *"23. The Fish and Wildlife Division stated that all setbacks had been adhered to"*[15].

WPWP has relied on the 2011 Referral Report and the AUC Decision 2012-205 in its continued investment and development of the Project.

There currently exist six operating turbines, an operating substation, a 138kV transmission line and a provincial highway within 1000m of the prairie falcon nest (Oldman 1 Wind Farm, Oldman 2 Wind Farm, Oldman 2 Substation 112S, 893AL transmission line, and Highway #785). Please see photograph in attached Appendix "D".

Furthermore, the three Project turbine locations within 1000m of the nest are located north behind the ridge where the nest is situated, reducing their potential impact on the falcon's perch viewscape.

It should be noted that WPWP originally planned to use the existing Oldman 2 Substation 112S (submitted in initial Power Plant Application, July 2011), thus not requiring a separate AUC permit specific to the substation. However, in 2012, WPWP was notified that the Alberta Electric System Operator ("AESO") does not allow two owners of one substation. Therefore, although the Boulder Run Substation will in fact be an expansion of the existing Oldman 2 Substation, it requires a separate AUC permit and substation designation from the AESO. Please see substation layout diagram in Appendix "E". As previously mentioned, WPWP made an application to the AUC for the Boulder Run Substation on October 22, 2014 (Proceeding No. 3485).

Following discussions with AEP in 2015, it was understood that the Boulder Run Substation will be placed immediately adjacent to the existing Oldman 2 Substation, outside the aforementioned altered recommended setback of 750m, but within 1000m of the prairie falcon nest.

WPWP provided to AEP the following technical and environmental justifications regarding the required placement of the Boulder Run Substation at this location:

i. The proposed location immediately adjacent to the existing Oldman 2 Substation 112S, between an existing wind turbine and the east west Highway 785, is ideal as it would cause significantly lower overall environmental impact versus disturbing a new area outside of a 1000m setback.

[15] AUC Decision 2012-205, page 4

ii. AESO will not allow a four-point connection on the 893AL transmission line. If the Boulder Run Substation were required to be located outside of a 1000m setback, it would require another tap point to 893AL, thus causing a four-point connection. By utilizing the tap point for the Oldman 2 Substation 112S, the Project avoids a forth connection point on the line.

Therefore, the proposed Boulder Run Substation is at the best location for technical and environmental reasons, even though it will be approximately 857m from the prairie falcon nest.

In an effort to mitigate the risks to wildlife posed by the presence of the prairie falcon nest, WPWP has proposed new and more stringent construction and operational mitigation plans, including timing restrictions, as discussed in response g) below.

Sharp-tailed Grouse Leks

In 2007, bird surveys were conducted on the Project site by R.A. Owens Environmental Services Ltd, which reported a grouse lek observed at location NW 35-7-29-W4 ("Grouse Lek #1").

In the 2009, *Richardson's Ground Squirrel and Grouse Lek* Surveys 2009 report by Matrix Solutions Inc. and included in the March 5, 2010 *Wildlife & Vegetation Report for ASRD*, authored by Stantec Consulting Ltd. it stated: *"the study area was searched for the presence of an active lek site on April 6, April 7, and May 1, 2009. No sharp-tailed grouse were detected during the 2009 survey at any of the 26 survey points in the study area"*[16]. Therefore, Grouse Lek #1 observed in 2007 was considered vacated in 2009, and the presence of a grouse lek was not contemplated in the Project turbine layout, nor was it mentioned in the 2011 Referral Report.

During the course of the breeding bird surveys conducted in 2015-2016, Grouse Lek #1 was again observed, as well as a new grouse lek observed at NE 27-7-29-W4 ("Grouse Lek #4"). Two further grouse "satellite leks" were observed by Tetra Tech in 2015, however, these "satellite leks" were seen only once and consisted of only two individuals and therefore are not considered permanent leks. WPWP acknowledges the reappearance of Grouse Lek #1 and the new observation of Grouse Lek #4. It should be noted that Sharp-tailed Grouse are not a species at risk or concern in Alberta.

In an effort to mitigate the risks to wildlife posed by these two leks, WPWP has proposed in the EPP new and more stringent construction and operational mitigation plans, including timing restrictions, as discussed in response h) below.

d) "AEP-WM recommends siting wind energy facilities away from migration routes for birds and bats and away from nest, house or den of specific species at risk."[17]

- **WPWP Response:** During the bird surveys listed previously, the Project was not observed to be within a migratory path for birds. There is minimal risk of mortality to

[16] *Richardson's Ground Squirrel and Grouse Lek Surveys*, August 2009 by Matrix Solutions Inc, page 4
[17] Referral Report, page 3

migrating birds. As noted in the 2015 Fall Migration report for the Windy Point Wind Park:

> "*Following spring migration surveys, there is no indication of topographic funneling of migratory species over or adjacent to the Project area. No major flyways appear to be present over the project lands."* and *"There do not appear to be key areas that attract higher proportions of individuals. No large staging or resting areas are located within the Project area."*[18]

With the exception of the Prairie Falcon Nest at NE 27-7-29-W4, there is no known nest, house or den of any species at risk at the Project site.

Bats

According to bat surveys completed by Tetra Tech in 2015, the highest number of bat passes occurred during the fall migration period, and in this period, bat activity appeared to be concentrated only on certain nights, with August 22 having the highest number of bat passes. A total of 894 bat passes were detected in Fall 2015, with an average detection rate of 5.92 bat passes per detector night (0.55 bat passes per detector hour). Spring bat activity was significantly lower with a total of 75 bat passes detected in Spring 2015, with an average detection rate of 0.54 bat passes per detector night (0.05 bat passes per detector hour). This is considered a low risk during the spring migration period.

The 2015 data are comparable to the data collected by Stantec in Fall 2009 and Spring 2010.

- Spring Bat Survey: (Stantec 2010 = 99 bat passes (0.51 passes per detector night); Tetra Tech 2015 = 75 bat passes (0.54 passes per detector night).
- Fall Bat Survey: (Stantec 2009 = 1,189 bat passes (4.85 passes per detector night); Tetra Tech 2015 = 894 bat passes (5.92 passes per detector night).

No known bat hibernacula exist in or near the Project area. (Stantec 2010)

As discussed in response k) below, WPWP commits to mitigation strategies should high bat mortalities result from the operation of the wind farm.

e) "For all approved wind farms, AEP-WM recommends that 2 years of post construction monitoring be completed to determine risk of the facility for wildlife."[19]

- **WPWP Response:** As described in the AUC Decision 2012-205, WPWP commits to at least two years of post construction monitoring. WPWP reiterated this commitment in Section 8 of the EPP provided to AEP on September 26, 2016.

[18] 2016 Spring Migration Survey, McCallum 2016, page 16
[19] Referral Report, page 3

f) "The Windy Point Wind Farm layout is sighted [sic] **primarily on native grasslands."**[20]

- **WPWP Response:** The Project layout has not changed since the 2011 Referral Report was submitted. Development on native grasslands was well documented in the vegetation studies completed by Stantec Consulting at that time. It is clear in the 2011 Referral Report and AUC Decision 2012-205 that adequate mitigation and strategies were provided by WPWP.

  WPWP understands there are unique challenges to construction on native grasslands. A rigorous and comprehensive approach to native grasslands during construction and operations has been outlined in the EPP and previously agreed to in the Environmental Protection and Reclamation Planning Framework for Windy Point Wind Park, May 17, 2011.

  WPWP is also an active participant and contributor to the Alberta Prairie Conservation Forum's development of guidelines for activity by the wind energy industry on Alberta native grasslands. As such, WPWP is aware of the challenges associated with reclaiming native grasslands and will continue to liaise with industry experts as this area of study advances.

  Significantly, no change to the layout of the Project has been proposed by WPWP since receipt of the AUC Permit. Furthermore, the same *Wildlife Guidelines for Alberta Wind Energy Projects* dated September 19, 2011 remain the applicable guidelines and, as before, WPWP submits that the Project continues to meet the guidelines. WPWP is proposing the smallest footprint technically possible for the Project. For the native grassland that may be disturbed, as outlined further below, WPWP has proposed a reclamation program developed by experts that have experience with native grasslands and a track record of successfully reclaiming native grasslands

  While WPWP is committed to grasslands reclamation efforts, AEP has failed to articulate what constitutes an actual outcome of reclamation. WPWP anticipates these conversations prior to construction activity. WPWP will manage any impacts with a reclamation program developed by experts and employing current best practices and techniques.

g) "Although the company describes in detail a reclamation program for the disturbed sites, there has been no successful reclamation of Foothills fescue Grasslands in Alberta to date."[21]

- **WPWP Response:** WPWP retained Tannas Conservation Services ("TCS") for reclamation planning for the Project. TCS authored the Environmental Protection and Reclamation Planning Framework for Windy Point Wind Park, May 17, 2011. TCS are well-regarded in Alberta for their skill and experience in restoration ecology, particularly for this region, and the associated species. In recent conversations with TCS, TCS has confirmed that successful reclamation of fescue grasslands has occurred on oil well reclamation sites in Alberta. Please see attached 'Appendix F' memo outlining TCS's

[20] Referral Report, page 4
[21] Referral Report, page 5

experience in successful fescue grasslands reclamation in Southern Alberta.

h) "Turbine 7,8,10,11,12,13 and their associated infrastructure is sited within the identified 500 meter year around setback of Sharp-tailed Grouse leks. The proposed plan is inconsistent with AEP-WM recommendations and policy. Alternative mitigation in the Environmental Protection Plan provided by Windy Point Wind Farm Inc does not meet the intent of the AEP-WM policy and recommendations."[22]

- **WPWP Response:** As previously discussed, bird surveys were conducted on the Project site by R.A. Owens Environmental Services Ltd in 2007. In this report, a grouse lek ("Grouse Lek #1") was reported being seen at location NW 35-8-29-4. In the *Richardson Ground Squirrel and Grouse Lek Surveys, August 2009* conducted by Matrix Solutions Inc. and in the *Wildlife & Vegetation Report for ASRD* of March 5, 2010 authored by Stantec Consulting Ltd., no grouse leks were reported at the Project site and were therefore not contemplated as a constraint in the Project turbine layout, nor were they mentioned in the 2011 Referral Report.

  During the course of the breeding bird surveys conducted in 2015-2016, Grouse Lek #1 was once again observed; as well a new grouse lek was observed at NE 27-8-29-4 (Grouse Lek #4).

  In an effort to mitigate the risks to wildlife posed by these leks, WPWP has proposed, in the EPP, construction and operational mitigation plans, including the following:

  Construction Considerations**:**
  - Between March 15 and June 15, during the sharp-tailed grouse reproduction period, no construction activities will occur within 500 meters of identified leks. Signs will be posted to outline this restriction.
  - At all times do not construct fences within 400 metres of identified leks.
  - No construction from 6:00 a.m. to 8:30 a.m. at locations within 500 metres of identified leks, year-round.

  Operational Considerations:
  - Maintenance activities on turbines during the operations phase will be minimized between 6:00 a.m. and 10:00 a.m. between March 15 and June 15 for turbines within 500 meters of identified leks. Signs will be posted to outline this restriction.
  - WPWP will consult with landowners to request that no pesticides will be used for weed control on T10, T11 or along the access between T10 and T11 and T10 to T6. Mowing or other methods of control will be the preferred method of implementation.

  In response to the appearance of sharp-tailed grouse leks, these mitigation efforts go beyond the mitigation conditions previously imposed by the Commission in Decision No. 2012-205.

[22] Referral Report, page 5

In addition, as mentioned in the EPP, an Adaptive Management Plan will be implemented on the site. Any Adaptive Management employed on the Project will be developed by Qualified Professionals in consultation with AEP utilizing the following principles:

- Baseline conditions monitoring during the pre-design and design phases will continue to provide data that will inform detailed design elements and identify changes to the existing environment that may affect Project outcomes. Any changes identified through pre-design and design phase monitoring can be incorporated into the detailed design and can inform the potential need for amendments if necessary;
- Compliance monitoring will ensure compliance with commitments and ensure that the Project is constructed according to the recommended design requirements and final design elements.
- The Adaptive Management process will begin once the Project begins construction; and,
- Environmental monitoring will measure if the mitigation for the Project functions as intended during the construction and operational phases.

Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta document states:

> *"if it is decided to allow activities closer than the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program should be implemented to ensure that wildlife species are not detrimentally affected by these alternative management practices."*[23]

WPWP submits it will be implementing a monitoring program in accordance with the above mentioned recommendation. As discussed, an adaptive management plan with rigorous reporting was discussed in the EPP and WPWP submits that its plan fulfills the intent of the recommendation.

It is important to note that Sharp-tailed grouse are not a species at risk in Alberta. Sharp-tailed grouse are currently considered game birds and listed in the 2016 Alberta Hunting Regulations as an actively hunted species. WPWP submits that the timing restrictions and adaptive management plans submitted meet the intent of AEP policy and recommendations.

i) "Turbine 8, 13, 14, the substation and their associated infrastructure are sited within the 1000 meter year round setback for the Prairie falcon nest. Alternative mitigation in the Environmental Protection Plan provided by Windy Point Wind Farm Inc does not meet the intent of the AEP-WM policy and recommendations."[24]

[23] *Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* published by Sustainable Resource Development - Fish and Wildlife Division, page 4

[24] Referral Report, page 6

- **WPWP Response:** The existence of the prairie falcon nest has been known since the start of the Project's development in 2005. As previously discussed, there currently exist six operating wind turbines and an operating substation within 1000m of the prairie falcon nest. Furthermore, the three Project turbine locations within 1000m are located north of the ridge and behind where the nest is situated and is not visible from the nest area, reducing the potential impact on the falcon's perch viewscape.

  The current policy that the Project operates under is the Wildlife Guidelines for Alberta Wind Energy Projects (2011). In that guideline document, it states that the document:

  > "*provides guidelines for minimizing impacts of such projects on wildlife. It is designed to guide Alberta Sustainable Resource Development (SRD) Fish and Wildlife Division (FWD) staff in their advisory role to wind energy developers seeking consultation, in responding to stakeholder inquiries related to regulatory applications, and to help standardize their responses to wind energy applications submitted to the Alberta Energy Utilities Board."*[25]

  Furthermore, within those guidelines, it states:

  > *"Where significant wildlife resources have been identified through pre-construction planning and surveys, ongoing wildlife surveys may be recommended. Post-construction monitoring requirements will be site specific and will be based on an adaptive management approach to local wildlife issues. Ongoing requirements may include monitoring of the presence, abundance and distribution of local breeding populations or migrating birds and bats. Proponents are expected to discuss proposed study methods with ASRD - FWD and CWS during all stages of pre and post construction monitoring. It is strongly recommended that proponents contact SRD-FWD early in the project planning process to facilitate discussions on site selection and pre-development monitoring requirements."*[26]

  With respect to these guidelines and in an effort to further mitigate the risks to the prairie falcon nest, WPWP has proposed the following construction and operational mitigation plans in the EPP, which go beyond the mitigation conditions previously imposed by the Commission in Decision No. 2012-205:

  Construction Considerations**:**
  - No construction activities will take place within 750m of the prairie falcon nest year-round.
  - No construction will take place within 1000m of the prairie falcon nest between March 15 and June 15, during the prairie falcon reproduction period.
  - In the event the prairie falcon nest remains active following June 15, an Adaptive Management Program will be developed in consultation with AEP.

[25] *Wildlife Guidelines for Alberta Wind Energy Projects*, Sep 19, 2011 published by Sustainable Resource Development - Fish and Wildlife Division, page 1
[26] Ibid., page 11

WPWP is open to discussing additional actions that AEP may propose that would further contribute to the ongoing monitoring and adaptive management. The Post Construction Monitoring Plan, discussed above, will be developed in consultation with AEP and include specific reference to the prairie falcon nest.

j) "The construction, operation and maintenance of the wind farm impedes on the timing restricted required for nesting birds under the recommended *Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* from April 1st - July 15th. Additional restrictions apply between December 15th and April 30th on projects described in the *Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones*"[27]

- **WPWP Response:** The above mentioned guidelines referenced in the Referral Report were not in place when the Project was initially approved in 2012. WPWP has made substantial investments and commitments in the Project's development based on the guidelines in place at the time of being granted the AUC Permit.

  The Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones pertain primarily to ungulate habitat and protection. The Project is located on the fringe of the biodiversity zone boundary and is not known to be in a key wildlife corridor. Furthermore, the Project is located in an existing disturbed area in the vicinity of a number of other wind energy facilities including Oldman 2 Wind Farm, Summerview 1 & 2 Wind Farms and the proposed Welsch and Heritage Wind Farms.

  As provided in the Power Plant Application (Application No. 1607515), and committed to in the AUC Permit, the EPP, and subsequent correspondences, WPWP has been open to adjusting the construction schedule and techniques with the aim to mitigating potential adverse effects to wildlife and grasslands.

  Mitigation mentioned in response h) and i) have focused on restricting activities during the most critical period for both sharp-tailed grouse and prairie falcon.

k) "The bat monitoring for the Windy Point Wind Farm exceeded the acceptable associated risk to Bats at 5.92 passes/detector/night in 2015 this project has a high to extremely high potential for bat mortalities."[28]

- **WPWP Response:** According to bat surveys completed by Tetra Tech in 2015, the highest number of bat passes occurred during the fall migration period, and in this period, bat activity appeared to be concentrated only on certain nights, with August 22 having the highest bat passes. A total of 894 bat passes were detected in Fall 2015, with an average detection rate of 5.92 bat passes per detector night (0.55 bat passes per detector hour). Spring bat activity was significantly lower with a total of 75 bat passes detected in Spring 2015, with an average detection rate of 0.54 bat passes per detector night (0.05 bat passes per detector hour). This is considered a low risk during the spring migration period.

[27] Referral Report, page 6
[28] Referral Report, page 7

The 2015 data are comparable to the data collected by Stantec in Fall 2009 and Spring 2010.

- Spring Bat Survey: (Stantec 2010 = 99 bat passes (0.51 passes per detector night); Tetra Tech 2015 = 75 bat passes (0.54 passes per detector night).
- Fall Bat Survey: (Stantec 2009 = 1,189 bat passes (4.85 passes per detector night); Tetra Tech 2015 = 894 bat passes (5.92 passes per detector night).

AUC Decision 2012-205 stated that *"The Fish and Wildlife Division required post-construction monitoring to evaluate the level of bird and bat mortality. The Fish and Wildlife Division also stated that, should unexpected high levels of fatalities occur during operations, Windy Point must, after discussion with the Fish and Wildlife Division, implement operational mitigation measures such as raising the cut-in speed of the wind turbines."*[29]

WPWP remains committed to implementing operational mitigation measures such as raising the cut-in speed of the wind turbines, which has proven to be very effective, should the wind farm experience high levels of bat fatalities during operations.

This commitment by WPWP was re-iterated in the EPP, which states:

"Mitigation for bats, through consultation with the responsible regulator, will follow the Operational Mitigation Strategies outlined in the Wildlife Management – Bat Mitigation Framework for Wind Power Development, April 29, 2013 and may include increasing the cut-in speed of the turbines during the critical migration periods (as shown by pre-construction sampling and post-construction monitoring), only at turbines shown to exhibit high mortalities, and only in conditions known to be conducive to bat activity. Analysis of meteorological data and bat fatalities to seek correlations will be conducted only if there is an identified need to implement cut-in speed changes. The purpose of this analysis is to guide the location, timing and duration of cut-in."[30]

l) "Project will result in high bird and bat mortalities"[31]

- **WPWP Response:** Studies completed in 2015 and 2016 concluded that the risk to birds is low. Quotation from the 2016 Spring Migration Survey completed by McCallum Environmental Ltd: "*Following spring migration surveys, there is no indication of topographic funneling of migratory species over or adjacent to the Project area. No major flyways appear to be present over the project lands."* and *"There do not appear to be key areas that attract higher proportions of individuals. No large staging or resting areas are located within the Project area."*[32]

[29] AUC Decision 2012-205, page 7
[30] EPP, page 34
[31] Referral Report, page 7
[32] 2016 Spring Migration Survey, McCallum 2016, page 16

As stated in the EPP, WPWP will put in place a 2 year monitoring program, including mortality search. If the mortality rate is found to be high, WPWP will develop a mitigation plan in collaboration with AEP.

m) "Proposed avoidance and/or mitigation strategies to address the high risk of bird and bat mortality were not provided as part of the Environmental Protection Plan"[33]

- **WPWP Response:** As described on page 34 of the EPP: *"Mitigation for bats, through consultation with the responsible regulator, will follow the Operational Mitigation Strategies outlined in the Wildlife Management – Bat Mitigation Framework for Wind Power Development, April 29, 2013 and may include increasing the cut-in speed of the turbines during the critical migration periods."*[34]

  It is important to have a full understanding of the causes and timing of the mortality in order to develop effective mitigation measures. If mitigation measures are necessary, a mitigation program will be developed in collaboration with AEP.

n) "The Post Construction Monitoring Plan was listed as a commitment but no formal plan was submitted to AEP-WM."[35]

- **WPWP Response:** The 2011 Referral Report requested a post construction monitoring plan be provided 6 months prior to completion of construction. In anticipation of submitting a post construction monitoring plan, WPWP has discussed monitoring throughout the EPP, including an entire section titled "Operational Monitoring". WPWP expects to develop the Post Construction Monitoring Plan through consultation with AEP, six months prior to the anticipated completion of construction activities as requested in the 2011 Referral Report.

  The Monitoring Plan will respect the relevant guidelines, including the Wildlife Guidelines for Alberta Wind Energy Projects, which recommends that: *"post construction monitoring be carried out at all wind energy sites to identify any wildlife impacts. This monitoring should be conducted and/or supervised by a qualified and experienced wildlife biologist."*[36]and *"Methods may require infrared, thermal imagery, radar, and acoustical monitoring equipment to assess bird and bat movements."*[37]

[33] Referral Report, page 7
[34] EPP, page 34
[35] Referral Report, page 7
[36] *Wildlife Guidelines for Alberta Wind Energy Projects*, Sep 19, 2011 published by Sustainable Resource Development - Fish and Wildlife Division, page 8
[37] Ibid., page 9

III. Conclusion

WPWP submits that the Project has a number of benefits that support its construction and operation as being in the public interest, including:

- Strong wind resource;
- Furthers the Government of Alberta and Minister's goals and priorities as set out in the Climate Leadership Plan and the *Renewable Electricity Act*;
- Landowner and community acceptance;
- Interconnection at site and no requirement for transmission line construction (lower environmental impact);
- Existing Municipal and AUC permits;
- Owner is project operator (long term commitment); and
- Manageable environmental impacts

WPWP completed the additional environmental studies requested by AEP in 2015 & 2016 and these studies were largely confirmatory of the findings in its initial surveys previously reviewed and approved by AEP (ASRD) and the Commission. The only change between the initial environmental studies conducted in 2009/2010 and the environmental studies conducted in 2015/2016 studies was two new sharp-tailed grouse lek observations (Grouse Lek #1 and #4). In an effort to mitigate the risks from these new lek observations, WPWP has proposed additional construction and operational mitigation measures in the EPP, including adjustments to the construction schedule to restrict construction during breeding season when the leks are active.

In addition, despite the recommended prairie falcon nest setback alteration from 1000m to 750m as agreed to be the AEP in 2011, WPWP has proposed further mitigation measures to reduce the risk to the prairie falcon nest. These mitigation measures include a construction timing restriction during the prairie falcon reproduction period when the nest is most active.

WPWP also reiterates its commitment to a reclamation program to address impacts to native grasslands and a two year monitoring program for potential bat and bird fatalities. If the bat or bird mortality rate is found to be high, WPWP will develop a mitigation plan in collaboration with AEP using industry best practices.

The Project has been in development for over ten years and throughout that time WPWP has acted in good faith in its interactions with all municipal, provincial and federal agencies. There have been no changes to AEP policy since the 2011 Referral Report; the Project remains to be governed by the *2011 Policy - Wildlife Guidelines for Alberta Wind Energy Projects*. WPWP has invested considerable time and resources in reliance upon AEP's initial position on potential environmental impacts associated with the Project and submits that there have been no material change in environmental risk or policy that justify AEP's change in position on key environmental matters. Accordingly, WPWP submits that the extension request (Application No. 21868-A001) should be granted by the Commission.

The Project will be highly beneficial for Alberta, as it will contribute to reducing reliance on fossil fuel power generation and create long term jobs and economic activity for the local area. WPWP plans to participate in the Government of Alberta's first Renewable Electricity Program auction process under the *Renewable Electricity Act* to be conducted by the Alberta Electric System Operator in the coming months, and to submit a bid associated with the Project.

As always, WPWP is open to further discussions and remains committed to working collaboratively with AEP and AUC to resolve any outstanding concerns.

Appendix A-3: AEP Renewable Energy Referral Report

Government of Alberta

Renewable Energy Referral Report - Alberta Environment and Parks- Operations Division, Wildlife Management (AEP-Wildlife Management)

A. AEP-Wildlife Management Review:

The project Windy Point Wind Farm was reviewed by the Regional Wildlife Contact. AEP-Wildlife Management (AEP–WM) has reviewed the proposed location, proposed mitigation strategies, including associated infrastructure and construction plans, and post construction monitoring program, as presented by the applicant in an application dated: September 26, 2016.

Documents reviewed for the application included:

Windy Point Environmental Protection Plan (EPP) Final Sept 26

RPT-AWEC-Windy Point- Lek and Bat Surveys

Windy Point Wind Park 2015 Wildlife-Vegetation-Final

Windy Point Wind Park 2015 Fall Migration Summary Report-Final

Windy Point Wind Park 2016 Spring Migration Summary Report-Final

The AEP-WM provided a referral letter for Windy Point Wind Farm, on June 15th, 2011. This November 2016 referral letter was completed at the request of the Alberta Utility Commission, which required an updated wildlife assessment be conducted by the proponent. This review was conducted to assess the overall current risk of the proposed project on wildlife and their associated habitat. The updated wildlife assessment identified a significant change in risk from the original 2011 assessment for multiple species of wildlife and wildlife habitat. The results of this review are detailed in this referral report.

In summary:

Alberta Environment and Parks - Wildlife Management has determined the Windy Point Wind Farm as proposed, based on updated wildlife assessment data provided by the proponent, poses a high, unmitigated risk to wildlife and wildlife habitat.

AEP-Wildlife Management District: South Saskatchewan Region

Signature: _____ Date: November 14, 2016

Printed Name: Kim Morton
Resource Manager, South Saskatchewan Region
Alberta Environment and Parks

B. Project Details:

Project Name: Windy Point Wind Farm

Company name: Windy Point Wind Farm Inc (Boralex and Alberta Wind Energy Corporation)

AUC Proceeding #: 1371, 3485 and 3541

Location of Project: Section: TWP: 7, 8 RGE: 29 Meridian: 4

Project Details: Area: 10.4 km^2 Turbines #: 13 Maximum Height: 155 m Maximum Blade Length: 130 m **Note: Turbine type has not been provided.**

Megawatts: 63

For sighting of turbines please refer to Table #2

C. Wildlife Issues Related to Wind Energy:

Habitat Loss, Disturbance and Avoidance:

Wind Energy facilities may result in the direct loss of habitat for wildlife. Negative effects may include, but are not limited to; habitat fragmentation, site abandonment, loss of movement corridors and loss of foraging/breeding/brood rearing habitat. AEP–WM identified the potential negative effects of siting wind energy facilities in areas of native grasslands on wildlife, in particular on species at risk. AEP–WM recommends siting the wind energy facility and associated infrastructure on cultivated or other previously disturbed lands to significantly reduce most of the negative effects on wildlife habitat.

Direct Wildlife Impacts:

AEP–WM identified concerns over the potential of negative effects on wildlife and their associated habitat caused by wind turbines or related infrastructure including access roads, and collection lines. This may include direct and indirect negative effects on the house, nest or den of a prescribed wildlife species. AEP-WM recommends that predevelopment wildlife surveys, as per the *Wildlife Guidelines for Alberta Wind Energy Projects,* be conducted prior to applying for the Windy Point Wind Farm to the Alberta Utilities Commission. If a species of management concern is identified, AEP–WM recommends that areas immediately adjacent to key wildlife habitats be avoided by appropriate setbacks and timing restrictions as outlined in the:

-Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta
http://esrd.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/WildlifeLandUse-SpeciesHabitatGrasslandParkland-Apr28-2011.pdf

- Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones
http://aep.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/KeyWildlifeBiodiversityZones-Apr08-2015.pdf

Wildlife Mortality Concerns

Bird and bat mortalities have been documented at a number of wind energy facilities in North America. There is an increased risk of mortality for birds and bats during migration. Wind energy projects that are built within migration routes present a large hazard and an increased mortality risk. AEP-WM recommends siting wind energy facilities away from migration routes for birds and bats and away from the nest, house, or den of specific species at risk.

For all approved wind farms, AEP-WM recommends that 2 years of post-construction monitoring be completed to determine risk of the facility for wildlife. If mortality rates are determined to be high, then post-construction mitigation methods may be required. Post-construction monitoring must meet the following standards:

a. Extent: surveys will occur at 20 turbines or 1/3 of the turbines. Where projects are smaller than 20 turbines, all turbines will be surveyed.
b. Survey area: Surveys will be completed around the entire turbine in an area at least half the maximum height of the turbine (measured from tip of blade to the ground) or a radius of 50m, whichever is larger
c. Frequency: surveys will be conducted weekly at each turbine site selected for monitoring.
d. Seasonality: Surveys must be conducted March 1st- October 30th.
e. Duration: Post-construction wildlife monitoring must be completed for a full three years. Additional survey years may be required if post-construction mitigation is required.
f. Survey Type: Post construction monitoring will include carcass searchers, and evaluation of searcher efficiency and scavenger removal rates.

D. Industry Submission of Wildlife Monitoring Program (submission to *Fisheries and Wildlife Management Information system*-FWMIS)*:*

Research License #: N/A

Pre-assessment survey data submitted within 2 years of application: Surveys were completed in 2015 and 2016

a) Spring Migration Surveys for Raptors and Songbirds: Surveys were completed between mid-March and mid-May, with a total of five rounds of surveys in 2016.
b) Fall migration Surveys: Surveys completed between mid-Aug and mid-Oct, with a total of 5 rounds of surveys completed in 2015.
c) Three breeding bird counts completed on May 31st, June 1st and June 19th, 2015.
d) Sharp-tailed grouse surveys, 2015
e) Wildlife surveys, including Richardson Ground Squirrel surveys, 2015
f) Incidental amphibian observations, 2015
g) Two rare plant surveys were conducted during seasonally appropriate survey periods (early summer – late June and late summer – August), 2015
h) Winter wildlife surveys, including raptors: Surveys were conducted between mid-December and mid-March, with a total of three rounds of surveys completed in 2015-2016.
i) Bat surveys 2015:

Surveys are considered current within 2 years of the last survey date. AEP-WM recommends that all project proposals maintain current survey data to adequately define the risk of the proposed project for wildlife and wildlife habitat and any changes in risk that may occur prior to project construction.

Post-construction Survey dates: From date of operation to 2 years post construction.

Post construction plan was not submitted; please refer to the Post Construction Section Below.

E. AUC Application Avoidance and Mitigation of Wildlife Risks:

Review of the proposed wildlife avoidance and mitigation strategies identified within the AUC application was completed by comparing with AEP's Wind and Wildlife Directives (*Wildlife Guidelines for Alberta Wind Energy Projects)* and the *Bat Mitigation Framework for Wind Power Development*:

Habitat Loss, Disturbance and Avoidance:

The Windy Point Wind Farm layout is sighted primarily on native grasslands. All turbines, T3-T16, and their associated roads, collections lines and other infrastructure are sited on native grasslands. This is not consistent with the *Wildlife Guidelines for Alberta Wind Energy Projects.*

The native grassland within the Windy Point Wind Farm is Foothills Fescue Grasslands which are located within the Key Wildlife and Biodiversity Zone. These grasslands have been identified as important grassland for a number of species at risk including:

Table 1: Potentially Present Sensitive and Keystone Species

SPECIES	ALBERTA GENERAL STATUS	Alberta Wildlife Act Status	FEDERAL STATUS (COSEWIC)
Ferruginous Hawk	At Risk	Endangered	Threatened
Prairie Falcon	Sensitive	Species of Special Concern	Not at Risk
Red-tailed Hawk	Secure	N/A	Not at Risk
Swainson's Hawk	Sensitive	N/A	N/A
Short-eared Owl	May be at Risk	N/A	Special Concern
Sharp-tailed Grouse	Sensitive	Game Bird	N/A
Sprague's Pipit	Sensitive	Species of Special Concern	Threatened
Long-billed Curlew	Sensitive	Species of Special Concern	Special Concern
Chestnut-collared Longspur	Sensitive	In process, recommended as Threatened	Threatened
Loggerhead Shrike	Sensitive	Species of Special Concern	Threatened
American Badger	Sensitive	N/A	Special Concern

Although the company describes in detail a reclamation program for the disturbed sites, there has been no successful reclamation of Foothills Fescue Grasslands in Alberta to date. It is highly unlikely the habitat for nesting birds would be restored to pre-disturbance state. Therefore alternative mitigation identified for the Windy Point Wind Farm is inconsistent with the AEP-WM *Wildlife Guidelines for Alberta Wind Energy Projects.*

Direct Wildlife Impacts:

Wildlife data was collected on the Windy Point Wind Farm project area in 2015-2016 as listed by survey in section D. Specific to the Windy Point Wind Farm Project, the following issues were identified from the pre-assessment wildlife surveys:

- **Sharp-tailed Grouse Leks:** Turbine 7, 8 10, 11, 12, 13 and their associated infrastructure , is sited within the identified 500 meter year round setback of Sharp-tailed Grouse leks (Table 2). This setback is identified within the *Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* and the *Alberta Wildlife Guidelines for Wind Energy Projects*. The 500 meter setback applies year around to all aspects of a project including, but not limited to; infrastructure, turbines, substation, collections lines, roads and construction sites such as laydown areas. The proposed plan is inconsistent with AEP-WM recommendations and policy. Alternative mitigation in the *Environmental Protection Plan* provided by Windy Point Wind Farm Inc. does not meet the intent of the AEP-WM policy and recommendations.

- **Prairie Falcon Nest**: Turbine 8, 13, 14, the substation and their associated infrastructure are sited within the 1000 meter year round setback for the Prairie Falcon nest (Table 2). This setback is identified within the *Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* and the *Alberta Wildlife Guidelines for Wind Energy Projects*. The 1000 meter setback applies year around to all aspects of a project including but not limited to infrastructure, turbines, substation, collection lines, roads and construction sites such as laydown areas. The proposed plan is inconsistent with AEP-WM recommendations and policy. Alternative mitigation in the *Environmental Protection Plan* provided by Windy Point Wind Farm Inc. does not meet the intent of the AEP-WM policy and recommendations.

- **Planned Construction Timing**: The construction, operation, and maintenance of the wind farm impedes on the timing restricted required for nesting birds under the recommended *Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta* from April 1st- July 15th. Additional restrictions apply between December 15th and April 30th on projects described in the *Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones.*

The proposed plan is inconsistent with AEP-WM recommendations and policy. Alternative mitigation in the *Environmental Protection Plan* provided by Windy Point Wind Farm Inc. does not meet the intent of the AEP-WM policy and recommendations.

Table 2: Windy Point Wind Farm proposed turbine locations which do not meet the setback distances or recommended sighting related to native grasslands.

Turbine	Latitude	Longitude	Ground Elevation (m ASL)	Structures within 500 m Lek Setback	Structures within 1000 m Prairie Falcon setback	Infringe on Native Prairie Grasslands
3	49.6241	-113.8345	1211			Turbine, collection lines and access road
4	49.6192	-113.8378	1173			Turbine, collection lines and access road
5	49.6137	-113.8496	1259	Collection line		Turbine, collection lines and access road
6	49.6130	-113.8440	1258	Collection line		Turbine, collection lines and access road
7	49.6017	-113.8476	1220	Turbine, collector lines and access road	Collector line and access route	Turbine, collection lines and access road
8	49.5988	-113.8469	1240	Turbine, collection lines and access road	Collector line and access route	Turbine, collection lines and access road
9	49.6129	-113.8346	1184			Turbine, collection lines and access road
10	49.6086	-113.8351	1272	Turbine, collection lines and access road		Turbine, collection lines and access road
11	49.6047	-113.8362	1267	Turbine,		Turbine, collection lines

				collection lines and access road		and access road
12	49.6015	-113.8368	1257	Turbine, collection lines and access road		Turbine, collection lines and access road
13	49.5988	-113.8374	1261	Turbine, collection lines and access road	Turbine, collection lines and access road	Turbine, collection lines and access road
14	49.5967	-113.8357	1260		Turbine, collection lines and access road	Turbine, collection lines and access road
16	49.6164	-113.8350	1176			Turbine, collection lines and access road
Substation					Substation collection line and transmission connector	Collector line

Wildlife Mortality Concerns

The bat monitoring for the Windy Point Wind Farm exceeded the acceptable associated risk to Bats at 5.92 bat passes /detector/night in 2015. AEP-WM identified within the *Bat Mitigation Framework for Wind Power Development* that 2 bat passes/detector/night is a high risk of post construction bat mortality. Based on the *Bat Mitigation Framework for Wind Power Development*, this project has a high to extremely high potential for bat mortalities. Results of post construction wildlife monitoring at adjacent wind farms to this project support the results of this risk assessment. Bird species and legislative status of species found within the Project area has been determined by AEP-WM as a high risk of post construction mortality to several *Species at Risk*. Results of post construction wildlife monitoring at adjacent wind farms to this project support this risk assessment. This project will result in high bird and bat mortalities.

Proposed avoidance and/or mitigation strategies to address the high risk of bird and bat mortality were not provided as part of the *Environmental Protection Plan.* This is inconsistent with AEP-WM recommendations and policy, which require the Post Construction Mitigation Plan to be submitted prior to the issuing of an AEP-WM Referral Report.

The Post Construction Monitoring Plan was listed as a commitment but no formal plan was submitted to AEP-WM. This is inconsistent with AEP-WM recommendations and policy. AEP-WM cannot assess the potential effectiveness of the monitoring and post construction mitigation plan.

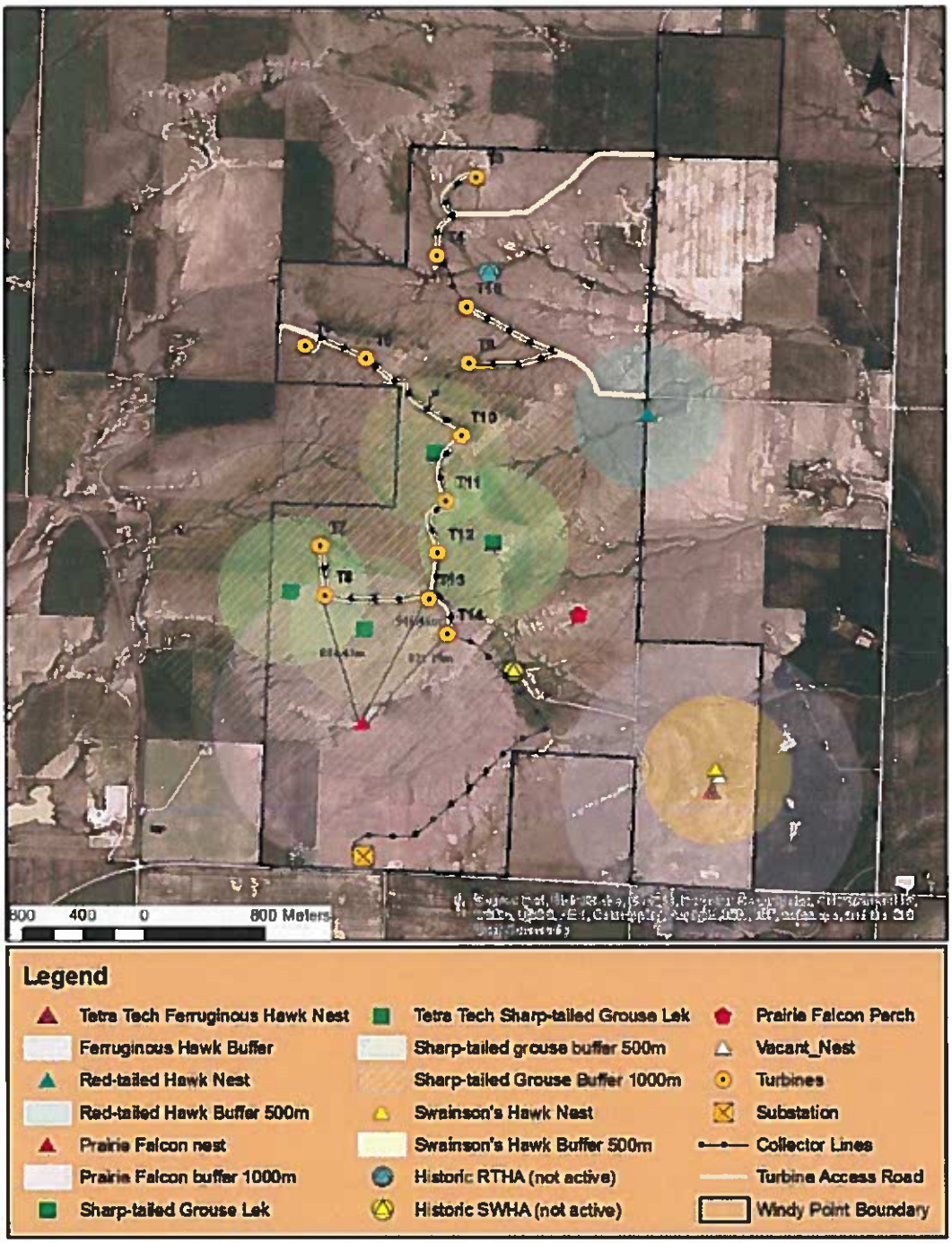


Figure 1: Windy Point Wind Farm proposed turbine siting in relation to wildlife setbacks (buffers). Map provided by proponent as part of the EPP.

Appendix A-4: AEP Review and Reassessment Report

Alberta Environment and Parks

Operations
South Saskatchewan Region
2nd Floor, YPM Place
530 – 8 Street South
Lethbridge, AB T1J 2J8
Telephone: 403-
Fax: 403-381-5723
www.esrd.alberta.ca

November 30th 2017

Wade Vinnneau
Executive Director – Facilities Division
Email: Wade.Vienneau@auc.ab.ca

Alberta Utilities Commission
400, 425 - 1 Street SW Calgary, AB T2P 3L8

Subject: Windy Point Wind Park –AEP Review and Reassessment

Summary of Process to Date

AEP provided a referral letter for Windy Point Wind Park, on June 15th, 2011. The project was not constructed and the proponent failed to keep pre-construction wildlife surveys up to date, as required by AEP. In 2015, Alberta Utilities Commission requested that the proponent submit an updated AEP Wildlife Referral Report. To enable an updated AEP Referral Report the following wildlife surveys were completed: fall and spring bird migration surveys; spring and fall acoustic bat surveys; breeding bird surveys, raptor nest surveys; sharp-tailed grouse lek surveys; and winter bird surveys. The updated wildlife assessments identified a significant change in risk from the original 2011 assessment for multiple wildlife species and wildlife habitats. AEP conducted a risk assessment of the proposed project siting, layout, construction and operation plan and post-construction monitoring and mitigation plan based on the results of the 2016 pre-construction wildlife surveys and AEP policy. *AEP determined that the Windy Point Wind Park as proposed, based on the updated wildlife assessment and data provided by the proponent, posed a high unmitigated risk to wildlife and wildlife habitat.* AEP submitted this assessment in an updated Renewable Energy Referral Report to the proponent and AUC on November 14th, 2016.

In April of 2017 the proponent contacted the AUC and AEP management to formally request AEP to re-assess the risk of the proposed project based on alternations made to the proposed project. The proponent affirmed that these alternations would better align the project with existing AEP policy and where this was not possible, the proponent would identify alternative mitigation or strategies to meet the intent of AEP policy and therefore lower the previously assessed risk to wildlife and wildlife habitat. The proponent did not complete additional wildlife surveys but based the project plans on the 2015 and 2016 wildlife results previously submitted to AEP. AEP agreed to re-assess the risk and hosted a meeting on May 24th, 2017 to clarify requirements within AEP policy and deficiencies identified in the 2016 Referral Report.

AEP received an updated submission on the Windy Point Wind Park on September 28th, 2017. This document provides a summary of AEP's review.

AEP Review of the Windy Point Wind Park: October 2017

AEP conducted a review of the updated submission from Windy Point Wind Park in October 2017. AEP reviewed the following documents submitted on September 28th, 2017:

1. Windy Point Wind Park Environmental Evaluation
    a. Environmental Evaluation
    b. AEP Renewable Energy External Wind Checklist A
    c. Summary Table of Wildlife Directives
    d. Environmental Management Plan (EMP)
    e. Wildlife Survey Report(s)
    f. Post-Construction Monitoring Plan (PCMP)

Additionally AEP reviewed the following documents on file for the Windy Point Wind Park project:

    g. AEP Renewable Energy Referral Report November 2016
    h. Windy Point Windfarm Follow-up Meeting Minutes May 24, 2017

The proposed Windy Point Wind Park is located northeast of Pincher Creek, immediately north of the Oldman 2 Wind Power Project. The project is proposed to generate 58 MW from a maximum of 14 wind turbines. The Project is jointly owned by Boralex, Alberta Wind Energy Corporation and Windy Point Wind Park Ltd (hereafter referred to as the proponent). AEP conducted this review in October of 2017 as per the *Wind Energy Review Process: Transition from old (2011) Wildlife Guidelines for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects.* Whereby the pre-construction wildlife work was reviewed under the 2011 *Wildlife Guidelines for Alberta Wind Energy Projects* (hereafter Guidelines) and construction, operation and post-construction monitoring/mitigation plans were reviewed under the 2017 *Wildlife Directive for Alberta Wind Energy* Projects (hereafter Directive).

The purpose of the AEP review was to determine if the wildlife and wildlife habitat issues identified in AEP policy had been adequately avoided and mitigated. AEP recommends that the applicable AEP Guidelines and/or Directive be adhere to. Clear plans, implementation strategies and firm commitments to align with these policies will result in an assessment of lower risk for most projects. Where alternative mitigation or strategies are proposed, they must include the necessary details for AEP to determine if these alternative proposals will achieve the intent of the applicable AEP policy. The AEP risk assessment and subsequent AEP Renewable Energy Referral Report is based on the project meeting the intent of the applicable AEP policy.

The 2017 submission was determined to be deficient in providing the information, proposed mitigation, and firm commitments necessary to effectively re-assess the risk to wildlife and wildlife habitat. AEP has categorized the deficiencies in the 2017 submission as either:

1. General issues: generalized issues that impacts multiple species, or is a systemic deficiency in the plan.
2. Site specific wildlife or wildlife habitat issues: a deficiency of the plan to address a site specific issue for a specific wildlife species, feature or species group.

AEP summarized the plan deficiencies in this letter, first as a list of general issues and secondly as related to specific wildlife features or AEP requirements (Table 1). A detailed account of all the deficiencies identified by AEP is available in Appendix A.

AEP identified two recurring General Issues in the Windy Point Plan which caused the majority of questions and concerns, 1) unclear application of mitigation and 2) alterations to standard mitigation options. These issues are summarized below:

1) **Unclear Application of Mitigation**: Throughout the plan the proponent uses terms such as "to the extent possible", "where practical", "where possible" "as necessary" and "where feasible". Non-committal terms were used in at least 60 separate statements within the proposed plan[1]. These terms are consistently used in reference to standard avoidance and mitigation measures with no additional details about when, where or how the measures will be implemented. This includes, but is not limited to wildlife setbacks, wildlife timing restrictions and implementation of alternative mitigation. These terms are used to qualify the majority of commitments to wildlife mitigation and therefore it is not clear to what extent wildlife mitigation will be applied or implemented. Qualifying statements are made in regards to both standard mitigation and proposed alternative mitigations. Therefore impacts to wildlife are not effectively addressed in this submission. For more information please refer to Table 1 for the summary of individual issues or Appendix A for an itemized list.

   Additionally, in the plan the proponent makes statements to adhere to specific standard mitigation as identified by AEP in either the Guidelines or the Directive. However, in subsequent parts of the plan the proponent identifies alternative mitigation that will be used if the standard mitigation cannot be adhered to. The proponent does not identify where alternative mitigation will be used or provide rational/justification for proposing alternatives. Therefore it is not clear what mitigation will be implemented, where it will be implemented and how it will be implemented. Inconsistent statements were identified for the following issues: infrastructure sited on native grassland; wetland setbacks; siting of collection lines; location of collection lines (above or below ground) and adherence to setbacks from valley/coulee breaks.

   AEP previously informed the proponent that clear commitments to implement standard wildlife mitigation must be stated, as per AEP Guidelines and Directive. Where alternative mitigations are proposed, they must clearly identify a location and the alternative mitigation to be implemented. This requirement is consistent with all reviews of proposed renewable energy developments conducted by AEP. Based on the

[1] AEP searched the document for the following terms, when applicable, when necessary, if absolutely necessary, where practical, where practicable, extent possible, extent practical, extent practicable, where feasible, as necessary, where necessary, as practical, and if not feasible. Please note this is not an exhaustive list and therefore additional non-committal terms may have been used by the proponent.

submission by the proponent, AEP is not able to determine if mitigation to avoid or limit impacts on wildlife and wildlife habitat will be implemented, therefore AEP cannot amend the risk assessment completed November 14th, 2016.

2) **Alterations of Standard Mitigation Options:** Setbacks and timing restrictions are identified by AEP in the Guidelines and Directive as a key mitigation tool for reducing risk to sensitive wildlife species and their required habitats. Wildlife setbacks are measured from the edge of the disturbance (ex. roads, feeder lines, rotor-swept area) nearest the wildlife feature to the closest edge of the wildlife feature. This measurement is the standard AEP process for measuring setbacks across all industries in Alberta.
The updated submission for Windy Point incorrectly calculates wildlife setbacks by measuring the distance between the center point of the disturbance (ex. roads, feeder lines, rotor-swept area) to the center point of the wildlife feature. This may result in setback requirements being incorrectly applied and project infrastructure being proposed within setbacks, while being identified as being outside setbacks and not requiring further mitigation.
Based on the maps provided, AEP is concerned that multiple additional setbacks may be infringed upon. AEP was not provided information on the exact locations of infrastructure to accurately identify which setbacks are being infringed upon. The following site specific issues have been identified in relation to this general issue: prairie falcon nest; ferruginous hawk nest; sharp-tailed grouse leks (4); red-tailed hawk nest; Swainson's hawk nest; valley breaks/coulees; and wetlands.
Based on the updated submission setback distances have not been calculated correctly. Therefore mitigation plans for the impacts on wildlife and wildlife habitat have not been adequately identified. AEP cannot amend the risk assessment completed November 14th, 2016.

The *General Issues* identified above, are systemic and have substantively increased the number of issues identified as *Site specific wildlife or wildlife habitat issues*. The *Site specific wildlife or wildlife habitat issues* have been summarized by AEP in Table 1. It should be noted that this summary is not inclusive of all identified issues and/or concerns, but a summary of the primary wildlife or wildlife habitat issues identified by AEP. Please refer to Appendix A for an itemized list of all issues/concerns identified in AEP's review.

Table 1: Summary of site specific wildlife or wildlife habitat issues and deficiencies identified by AEP in the review of the updated Windy Point Wind Park submission dated September 28th, 2017.

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
1	**Infrastructure sited on Native Grassland**	The total number of turbines associated with the project has increased from 13 (2016) to 14 (2017) turbines. The proponent has stated in this submission that they have reduced the operation footprint (turbines, roads collector lines) from ~18 ha to 7 ha. This included reducing the number of turbines sited on native grassland. Of the 14 proposed turbines, 9 are sited on native grassland (65% of turbines) compared to the 2016 submission which had all 13 turbines (100%) were sited on native grassland. In addition to the turbines, all associated infrastructure for the 9 turbines sited on native grassland is sited on native grassland. Approximately 4.5 ha of the project operation footprint are located on native grassland. The proponent has identified mitigation that may be used for the 9 turbines sited on native grassland; however, there is no firm commitment to the proposed mitigation. Therefore, in the opinion of AEP the impacts to native grassland habitat and wildlife species that rely on this habitat are not avoided or mitigated. The proponent identified a definition of native grassland that does not meet with the definition of native grassland identified by AEP. Therefore there may be additional infrastructure sited on native grassland over and above what has been identified and presented in the submission.	AEP has identified that native grassland habitat is important to wildlife, in particular species at risk. The pre-construction wildlife work (completed in 2016) has identified that this area is important to a number of wildlife species including, but not limited to, prairie falcon, sharp-tailed grouse, ferruginous hawk, Sprague's pipit, and long-billed curlew. The Guidelines and the Directive prioritizes avoidance of native habitat over mitigation measures. This has been clear throughout the process and this messaging has been discussed with the proponent on several occasions. Yet the project is preferentially sited on native grassland with at least 65% of the infrastructure still proposed on native grassland. Based on this submission the majority of the project footprint will impact native grassland. Without clear alternative mitigation or firm commitments to mitigate there are outstanding risks to multiple wildlife species. Therefore AEP cannot amend the risk assessment completed in November 2016.

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
2	**Wildlife Setbacks and Timing Restrictions: Prairie Falcon Nest**	The updated submission identifies that the prairie falcon nest setback will be infringed upon by the project substation and one or more collector lines. The proponent proposed siting infrastructure no closer than 750m to the nest, but setbacks were improperly calculated and therefore the setback is likely further reduced. The proponent has also identified the need for laydown yards and a Batch Plant adjacent to the prairie falcon setback. This infrastructure is likely within the nest setback, due to improper setback measurement. Mitigations for setback infringements include: minimal disturbance installation of collector lines, use of timing restrictions to work outside the period when falcons are present, and the use of a wildlife monitor to limit disturbance when falcons are present. For all the above mitigation techniques non-committal wording is used and in many cases contradictory statements indicate the mitigation will not be implemented. For example collector lines may be above ground, work may occur within the restricted activity period and the wildlife monitor may change setbacks and timing restrictions based on their opinion. Please refer to the sections of this letter regarding the wildlife monitor, setback measurements, and non-committal statements for additional issues	This Prairie Falcon nest has been directly impacted previously by renewable energy construction within AEP setbacks and timing restrictions. This resulted in the abandonment of the nest and loss of productivity. The alternative mitigation proposed by the proponent is similar to the mitigation that failed in the previous situation. The Windy Point plan provides no details to how the alternative mitigation would be implemented or firm commitments to implement the alternative mitigations. The proponent has also indicated that their wildlife monitor may reduce setbacks, alter timing restriction or implement alternative mitigation without review and approval by AEP (refer to the Wildlife Monitor sections of this table). The proponent has identified a number of conditions which nullify the limited commitments made to protect the prairie falcon nest. Based on the above impacts to the nest and lack of mitigations, the updated submission is not aligned with the intent to protect this wildlife feature and therefore AEP cannot amend the risk assessment completed in November 2016. The 2016 AEP Renewable Energy Referral Report identified the risk to the prairie falcon nest as a *High Unmitigated Risk,* and this risk ranking is still accurate.
3	**Wildlife Setbacks and Timing Restrictions: Sharp-tailed Grouse Leks**	In the updated submission it is stated that the sharp-tailed grouse setback for one lek (STGR lek 03) is infringed upon by one road and a collection line. However due to the issues identified in calculating setbacks it is expected that additional infrastructure infringes upon setbacks of all four identified sharp-	The calculation of setback distance for the sharp-tailed grouse leks were not calculated properly. Therefore it is unknown how many setback infringements are proposed and the type of infrastructure that may fall within the setbacks. Based on the figures provided AEP suspects that all

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		tailed grouse leks in the project area. Alternative mitigation includes seasonal timing restrictions for no human activities between March 15th and June 15th, daily timing restrictions for no human activities from half an hour before sunrise until 8:30am, and a wildlife monitor to assess disturbance to the site. However in Appendix C and Appendix E of Appendix C, these commitments are further conditioned to allow setback infringement year around if a wildlife monitor is present. In addition the conditions and criteria for this monitor are not clearly outlined (refer to wildlife monitor sections of this table). For all the above mitigation techniques non-committal wording is used and in many cases contradictory statements indicate the mitigation will not be implemented. For example collector lines may be above ground, work may occur within the restricted activity period and the wildlife monitor may change setbacks and timing restrictions based on their opinion. Please refer to the sections of this letter regarding the wildlife monitor, setback measurements, and non-committal statements for additional issues	four sharp-tailed grouse leks setbacks are infringed upon. There is no firm commitment to the proposed alternative mitigation. The proponent has also indicated that their wildlife monitor may reduce setbacks, alter timing restriction or implement alternative mitigation without review and approval by AEP (refer to the Wildlife Monitor sections of this table). The proponent has identified a number of conditions which nullifies the limited commitments made to protect the four sharp-tailed grouse leks. Based on the known impacts to sharp-tail grouse lek(s) and the lack of mitigations to address these impacts, the updated submission does not align with the Guidelines or Directive; therefore, AEP cannot amend the risk assessment completed in November 2016. The 2016 AEP Renewable Energy Referral Report identified the risk to sharp-tailed grouse leks as a *High Unmitigated Risk.*
4	**Wildlife Setbacks and Timing Restrictions: Ferruginous Hawk Nest**	The updated submission indicates that a collector line will infringe on the 1000 m setback of the ferruginous hawk nest and no alternative mitigations are clearly identified. For all the above mitigation techniques non-committal wording is used and in many cases contradictory statements indicate the mitigation will not be implemented. For example collector lines may be above ground, work may occur within the restricted activity period and the wildlife monitor may	This ferruginous hawk nest has been directly impacted previously by renewable energy construction within AEP setbacks and timing restrictions. This resulted in the abandonment of the nest and loss of productivity. The alternative mitigation proposed by the proponent is similar to the mitigation that failed in the previous situation. Therefore AEP considers this nest to be active and requires the setbacks to be adhered to. The proponent has not clearly identified the proposed

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		change setbacks and timing restrictions based on their judgement. Please refer to the sections of this letter regarding the wildlife monitor, setback measurements, and non-committal statements for additional issues	infringement of the setback due to incorrectly measuring the setback distance. Where project constraints require infringement on wildlife setbacks, the proponent must identify the location of infringement and commit to alternative mitigation that aligns the project with the intent of the Directive. At this time the proponent has not provided the necessary details and therefore AEP cannot amend the risk assessment completed in November 2016.
5	**Wildlife Setbacks: Valley Breaks and Coulees**	The updated submissions indicate that the100 m setback from valley breaks/coulees will be adhere to "where possible". The proponent has not identified specific areas that setbacks cannot be adhered to despite the fact that all infrastructure has been geographically identified in the plan. For all the above mitigation techniques non-committal wording is used and in many cases contradictory statements indicate the mitigation will not be implemented. For example collector lines may be above ground, work may occur within the restricted activity period and the wildlife monitor may change setbacks and timing restrictions based on their opinion. Please refer to the sections of this letter regarding the wildlife monitor, setback measurements, and non-committal statements for additional issues	The setbacks for the valley breaks/coulees were not calculated correctly. Therefore it is unknown how many setback infringements are proposed and the type of infrastructure that may fall within the setback. These details are required for AEP to identify the risk to wildlife and wildlife habitat. AEP requires for all renewable energy projects that the proponent identify if setbacks are upheld or if not possible to follow standard mitigations, alternatives are identified and committed to. This updated submission fails to provide this information. In addition, the proponent has conditioned the submission to allow the project to infringe on setbacks without further consultation or approval by AEP. At this time the proponent has not provided the necessary details to AEP and therefore AEP cannot amend the risk assessment completed in November 2016.
6	**Wildlife Setbacks and Timing Restrictions: Grassland Birds**	The majority of the project is sited preferentially on native grassland which represents and increased risk to grassland bird species. The core text of the Environmental Evaluation Plan or	The project is preferentially sited on native grassland and the standard mitigation as per the Directive and the Guidelines, clearly states the expectation that no construction

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		the Environmental Management Plan does not address this risk to grassland birds and the only mention of mitigations for grassland birds appears as a timing restriction described in Appendix E of Appendix C. The updated submission provides no clear commitment to standard mitigation or identification of alterative mitigation. Within the Appendix C it states that the timing window will be adhered to however setbacks are redefined to be 30 m instead of 100 m with no justification provided for the change. Additionally the plan states that the Wildlife Monitor can alter setback size, shape and duration without consultation with AEP. The subsequent conditions identified by the proponent degrades the suggested mitigations provided in the plan.	activity occurs between April 1st and July 15th. The proponent has not clearly committed to abiding by this requirement. The company has identified alternative mitigation, however, it does not meet with the requirements previously identified by AEP. Mitigations accepted by AEP include, but are not limited to, conducting regular nest sweeps, identifying and marking nest sites, and applying a 100 m setback to all active nest unless a higher level setback has been identified. The current mitigation identified is not consistent with Guidelines or Directive. Additionally the proponent has identified a number of conditions which degrades the limited mitigations identified to protect nesting grassland birds. Based on these deficiencies in the plan AEP cannot amend the risk assessment completed in November 2016. The 2016 AEP Renewable Energy Referral Report identified the risk to grassland birds as a *High Unmitigated Risk.*
7	**Construction: Authority of Wildlife Monitor**	In Appendix E of Appendix C of the updated submission, additional responsibilities and authorities of the wildlife monitor are defined. For example, the wildlife monitor is given the authority to "modify setbacks" based on site specific conditions and the monitor's opinion. Site conditions identified by the proponent may include species biology, sensitivity to disturbances, existing disturbance in the area, topography, and type of construction activity.	AEP does not support any modifications or application of alternative mitigation that has not been discussed and approved in an official review. Modifications made based on the opinion of a wildlife monitor effectively remove any commitments made to mitigate impacts to wildlife and wildlife habitat. Based on this, AEP cannot amend the risk assessment completed in November 2016. The risk to wildlife and wildlife habitat is considered a *High Unmitigated Risk.*
8	**Construction: Wildlife Monitor - Stop Work Criteria**	The updated submission identifies the use of a wildlife monitor with stop work authority as an alternative	The criteria for a stop work order is loosely described in the plan. Terms used to describe when stop work

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		mitigation for construction work during identified time periods in the Key Wildlife and Biodiversity Zones, within setbacks of sharp-tailed grouse leks, within setbacks of the prairie falcon nest and within setbacks of grassland bird nests. The plan lacks details on what conditions would trigger a stop work order or when it would be implemented, such as: • Criteria for a stop work order for each wildlife issue(temperature, adverse weather conditions, length of disturbance, proximity of disturbance, length of time eggs/young are left alone, behavior of the animals etc.). • Length of time of the stop work order is effective (temporary or a permanent). • Criteria for restarting work if the stop work order is temporary. • Reporting of stop work orders to AEP. • Inconsistent identification of areas, infrastructure or habitat features where this mitigation method is proposed (some locations are identified others are not).	orders will be needed such as "adverse weather conditions" or "change in bird behavior" are not defined. Without details describing what situations would lead to a stop work order it is impossible for AEP to determine if this mitigation replaces the need to adhere to standard mitigation (setbacks and timing conditions). Timelines for stop work orders or reporting needs have not been included in the plan. Wildlife features or specific infrastructure sites for which a wildlife monitor with the power to issue a stop work order have not been clearly identified in all cases. General statements made in the plan allows for the proponent to use this mitigation method without consultation with AEP. Based on these deficiencies in the plan AEP cannot amend the risk assessment completed in November 2016.
9	**Underground vs. Above ground Collector Lines**	The plan states that all collection lines will be installed underground "to the extent practicable". As the all of the locations for collection lines are identified the proponent is capable of identifying topographical constraints that would prevent installation of an underground collection line. For example collector lines may be above ground, work may occur within the restricted activity period and the	AEP expects proponents to commit to installing collector lines underground as per the Directives. Where there are environmental constraints that prevent installation of underground collector lines the proponent must identify the locations of proposed above ground collector lines, and alternative mitigation must be submitted to AEP for review. At this time the proponent has not provided the necessary details

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		wildlife monitor may change setbacks and timing restrictions based on their opinion. Please refer to the sections of this letter regarding the wildlife monitor, setback measurements, and non-committal statements for additional issues As the project is preferentially sited on native grassland above ground collector lines would have a high potential to impact wildlife species and their habitat.	to AEP and therefore AEP cannot amend the risk assessment completed in November 2016.
10	**Construction: Underground Collector Lines Installation**	The plan states that all collection lines will be installed underground using minimal disturbance techniques "where feasible". The proponent does not provide criteria for what is "feasible". The project is sited preferentially on native grassland with a number of collector lines infringing upon wildlife setbacks. As all of the locations for collection lines are identified, the proponent is capable of identifying constraints that would prevent or limit installation of an underground collection line using minimal disturbance techniques.	AEP requires proponents to commit to installing collector lines underground using minimal disturbance techniques. Where there are environmental constraints that prevent this, the proponent must identify the locations of proposed above ground collector lines, and alternative mitigation must be submitted to AEP for review. At this time the proponent has not provided the necessary details to AEP and therefore AEP cannot amend the risk assessment completed in November 2016.
11	**Bird Mortality Rates (migration survey issues)**	The Proponent identified that turbine specification would have a maximum hub height of 105 m, rotor diameter of 136m for a total height of 173 m. However the 2016 pre-construction bird spring and all bird surveys identify risks to bird for turbines with a hub height of 90 m, and rotor diameter of 130 m, for a total height of 155m. The data presented to AEP does not represent the risk to wildlife for the turbine specifications identified by the proponent. No corrections or alternative analysis is identified in the plan.	AEP has informed the proponent that the wildlife data collected must represent the submission and application of the Windy Point Wind Park. The data submitted for both the spring and fall bird migration are not consistent with the identified turbine specifications that will be installed for the project. Therefore any risk analysis conducted by AEP would be inconclusive. At this time the proponent has not provided the necessary details to AEP and therefore AEP cannot amend the risk assessment completed in November 2016.

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
12	**Bat Mortality Rates**	The proponent provided an estimated risk of mortality for all bats of 5.29 bat passes/detector night and 3.32 bat passes/detector night for migratory bats. The bat acoustic monitoring completed by the proponent suffered from technical difficulties. The acoustic detector located at 30 m above ground did not work and therefore data was not recorded at this site. It is unclear based on the plan how long this detector did not work, and if these issues were limited to a specific monitoring period (spring or fall migration monitoring). AEP has identified that the high tower acoustic monitor (30 m) is of vital importance as a number of the migratory species are not reliably detected by ground level acoustic detectors. Therefore the bat mortality estimates provided by the proponent are an underestimate of the potential mortality risk.	The Bat Risk Framework states that greater than 2 migratory bat passes/detector night is considered a high risk of bat mortality. The Windy Point Wind Park is ranked as an extremely high risk of bat mortality. The post construction mitigation plan (as discussed in this letter) is not consistent with the Directive. Therefore AEP cannot amend the risk assessment completed in November 2016. The 2016 AEP Renewable Energy Referral Report identified the risk to bats as a *High Unmitigated Risk.*
13	**Post-construction Monitoring Plan: Survey Dates**	The proponent states that "Weekly bird and bat mortality searches will be conducted at all 14 of the turbines (Directive Standard 100.4.4a), between March 1 and October 30 (Directive Standard 100.4.4d). The same plots will be used for both bird and bat morality searches". However in Table 2-1 it states that monitoring dates can be altered without discussion with AEP for all subsequent years (May 1st to October 30th). There have been no discussions with AEP in regards to these changes and this does not meet with the Directive. Additionally the plan states that monitoring will not commence until the first full year of operation. Therefore significant mortality could occur without documentation of the mortality events and/or mitigation being	AEP has clearly identified the period of time that all wind projects must conduct post construction monitoring in the Directive (March 1st-October 30th). This plan is not consistent with the Directive and alternatives proposed do not meet the intent of the Directive. AEP expects that post construction monitoring of the site will be conducted immediately following commissioning. The proposed delay outlined in this plan is not consistent with the Directive. The estimated high risk of wildlife mortality at this site does not justify this delay. The post-construction monitoring dates are not consistent with the Directive. AEP cannot amend the risk assessment completed in November 2016.

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		implemented.	
14	**Post-construction Monitoring Plan: Experienced Biologist**	The plan states the search crews will be directed by "an experienced biologist", however the plan does not state that the crew members will be biologists. The Directive requires that post construction monitoring be conducted by "experienced biologists". The plan does not include minimum level of education or experience that must be met by the search crew members.	Based on the plan presented to AEP the post-construction monitoring will not be completed by experienced biologists. Therefore the resulting mortality risks will not be accurate. This will directly impact the future operation of the project as well as local wildlife populations. The proposed plan is not consistent with the Directive or requirements.
15	**Post-construction Monitoring Plan: Mortality Thresholds**	The plan outlines when mortality thresholds that will trigger the implementation of post construction mitigation. The plan bases this on the proponent's interpretation of the Directive with no discussions with AEP. The proponent has increased thresholds for bat mortality in year two and three of monitoring. This result would be to allow greater bat mortality at the site without mitigation being required. The proponent has limited the need for mitigation for birds to species at risk only. This does not take into consideration high mortality of other risk groups including but not limited to raptors, grouse and passerines.	The requirement for post construction mitigation is determined by AEP not the proponent and is based on the Directive. Bat mortality rates greater than those identified in the AEP Bat Risk Framework will require mitigation to reduce the rates to acceptable levels. The estimated mortality rates at the proposed Windy Point Wind Park are extremely high. Based on risk, reduction of thresholds is not supported by AEP. Additionally there has been no formal discussions with AEP in regards to the mortality thresholds for the project. The current plan does not outline a clear commitment to implement necessary mitigation if mortality is determine to be high by AEP. Based on these deficiencies in the plan AEP cannot amend the risk assessment completed in November 2016. The risk is considered a *High Unmitigated Risk*.
16	**Post-construction Monitoring Plan: Additional Wildlife Surveys**	The proponent has identified the following wildlife surveys that will be repeated after the construction of the project as per the 2017 Directives: sharp-tailed grouse, and grassland birds. The plan does not include monitoring of the raptor nests (prairie falcon and ferruginous hawk), or	The proposed project is sited on native grassland and in close proximity to or within setbacks of identified wildlife features (sharp-tailed grouse leks, prairie falcon nest, and ferruginous hawk nest). The estimated bat mortality rate is extremely high. The proponents did not discuss the

Number	General Issue	Summary of Issue	AEP Concerns/Recommendations
		acoustic bat monitoring. The proponent has identified monitoring sites in year one and year three with no monitoring occurring in year two. No rational was provided in the plan for how surveys were selected or how often they would be repeated. For projects sited on native grassland AEP requires that all site specific wildlife surveys and grassland bird surveys be repeated for three years. For projects with an estimated high risk of bat mortality, acoustic monitoring is to be conducted for three years following construction.	proposed monitoring with AEP in advance. The proponent has not provided rational or justification for the proposed plan. The post-construction monitoring plan is not consistent with AEP's policy and requirements. Therefore AEP cannot amend the risk assessment completed in November 2016.
17	**Post construction Mitigation Details**	The proponent has identified a structured mitigation plan including mitigation type, mitigation dates, and time of day of mitigation. The specifics of this plan limits alterations based on actual results of the mortality monitoring that will be undertaken at the site. The proponent does not provide a clear plan or commitment to alter mitigation to ensure mortality rates are reduced below those rates identified by AEP as high as per the Directive. AEP requires proponents to commit to forms of mitigation to ensure that mitigation is feasible given the technical components and software of the turbines. The specific details of the mitigation plan are determined based on the results of the post construction monitoring.	The detailed mitigation plan provided in the submitted plan limits future mitigation to only those strategies identified within the plan. The proponent has not stated to implement mitigation if mortality is deemed high by AEP. Instead the proponent has identified a plan that allows them to set when mitigation is necessary and how it will be implemented. This is inconsistent with the Directive. This is inconsistent with the current process which all other wind projects must follow in the Alberta. This may result in mortality not being adequately addressed based on the real world results of the required post-construction monitoring. Based on these deficiencies in the plan AEP cannot amend the risk assessment completed in November 2016. The 2016 AEP Renewable Referral Report identified the risk to bats as a *High Unmitigated Risk.*

Conclusion

The updated submission for the Windy Point Wind Park does not provide adequate information, acceptable rationale for alternative mitigations, or firm commitments required for AEP to reassess the risk to wildlife and wildlife habitat. AEP will not be completing an amended AEP Renewable Energy Referral Report. AEP maintains that the risk ranking provided in the Renewable Energy Referral Report (dated November 14th, 2016) is still accurate in that the Windy Point Wind Park poses a *High Unmitigated Risk* to wildlife and wildlife habitat.

AEP has conducted three separate formal reviews of this proposed wind energy project and has met with the proponent and a number of different consultants retained by the proponent through this process. This review will be AEP's final review of the proposed mitigation plan in relation to the Windy Point Wind Park. Further details of this review are available upon request.

Sincerely,

Brandy Downey

Senior Species at Risk Biologist, Alberta Environment and Parks
Operations, South Saskatchewan Region
Brandy.downey@gov.ab.ca

CC.
Roger Ramcharita- Alberta Environment and Parks
Rob Simieritsch- Alberta Environment and Parks
Kim Morton- Alberta Environment and Parks
Kristin Cline- Alberta Environment and Parks
Marc Stachiw- Alberta Wind Energy Company
Alistair Howard- Boralex
Stewart Duncan- Boralex
Carlie Smith- Boralex
Mike Peckford- Hemmera

APPENDIX A AEP's detailed review of Windy Point Wind Park September 28th 2017 Submission

please refer to the AEP November 30th 2017 Letter to the AUC for summary of this review.

Number	General issue	Plan	Page	Statement from the report	AEP Comment/concern
1	General	Environmental Eval	4	The assessed Project layout in this document has reduced the Project operation footprint (turbines, roads and substation) from approximately 18 ha for the original project (Stantec 2010) to 7 ha.	Why is the 2010 stuff being referenced here? The purpose of this submission is to address the issues identified in the November 2016 AEP Referral Report. The 2016 project identified 13 turbines and there associated infrastructure on native grassland. This plan identifies 14 turbines, 9 of which are on native grassland (and associated infrastructure). What is the footprint difference between the 2016 and the 2017 submission ? What is the difference in area of native grassland impacted. Currently this is not clear.
2	Turbine size and wildlife surveys	Environmental Eval	4	The setbacks are based on a turbine that is 105 m at hub height, with 68 m blades, for a total tower height of 173 m (see discussion of turbine in Section 1.1.2.)	The turbines description (height, RSA etc.) does not equate for the areas surveyed for in the fall and spring migration surveys. Please refer to page 345 and page 376 of the pdf provided . Based on the information is provides an inconclusive assessment of risk for bird mortality. In order for AEP to assess the risk the results of the fall and spring migration surveys based on the new turbine size and RSA.

3	Setbacks	Environmental Eval	5	See Table 1.1-1	Table 1.1-1 indicates that all setbacks will be adhered to. However it is identified that setbacks were measured from the center of the disturbance to the center of the wildlife feature. (refer to #91 of this excel table). This is inconsistent with the AEP Guidelines or the AEP Directive. Setbacks must be measured from the nearest edge of the disturbance to the nearest edge of the wildlife feature. For turbines, setbacks are measured from the closest edge of the rotor swept area to the closest edge of the wildlife feature. Therefore all setbacks are measured wrong. AEP identified the following Turbine sites with potentially infringed upon setbacks VS8, 9, 10, 12, 11, 14 and associated infrastructure.
4	Collector Line	Environmental Eval	8	The collector system layout may be adjusted in final design to ensure avoidance of archaeological, environmental, and topographic features.	How will this impact the various wildlife features identified within the project? After reviewing the rest of the plan it is clear that no commitments have been made to adhere to standard mitigation or implement alternative mitigation. Statements like this one allow the proponent to change plans, project layout, or construction methods without accounting for wildlife or wildlife habitat issues. There is no commitment identified to work with AEP to identify and implement alternative mitigation if wildlife mitigation is impacted by these potential changes. This is required by the 2011 Guidelines and the 2017 Directives.

5	Non-commitment to requirements	Environmental Eval	8	The Project will require approximately 10 km of access roads that will be approximately 20 m wide during construction and 6 m wide during operation. **Where practical,** routing of the access roads will consider minimizing disturbance to landowners' agricultural practices and interfacing with existing roads,	Use of the term "where practical" . As all infrastructure has been identify all infrastructure that does not conform with the requirement must be identified with alternative mitigation for that specific site.
6	Non-commitment to requirements	Environmental Eval	8	Approximately 13 km of cable for each of the two circuits will be installed by direct ploughing **to the extent possible**, or trench excavation, using sand bedding for protection against mechanical damage. **Where possible** and/or practical routing of the cables will follow construction roads and avoid existing infrastructure	Use of the terms "to the extent possible" or " where possible" . AEP expects that all collection lines be placed underground through minimal disturbance techniques, such as ploughing in the line. If site specific conditions prevent this, they must be clearly identified and alternative construction methods and alternative mitigation must be identified. The proponent has not identified clear mitigation plans or provided firm commitments to the limited mitigations identified. Location of alternative mitigations are not provided and no justification/rational is provided. It is not clear to AEP if all collection lines will be installed underground using standard minimal disturbance techniques.

7	Laydown yards	Environmental Eval	9	Temporary laydown yards and work spaces will be constructed on previously disturbed land within the Project area, to provide secure locations for managing and storing materials, tools, and equipment during construction, to mobilize machinery, and to accommodate the contractor site offices. The temporary laydown and storage spaces will be a maximum of 6 ha in size and may be split in to two or more areas.	The Project area and Land Cover Types suggest that there are laydown yards within the native grassland areas. It is not clear if all laydown yards are not within grassland habitat or outside any wildlife feature and associated setbacks. Additionally the proponent has not clearly identified alternative mitigation where this requirement is not met.
8	Prairie Falcon	Environmental Eval	9	Figure Project Area and Land Cover, and If a temporary, on-site, concrete batch plant is necessary it will be located within the 6 ha of temporary laydown/workspace.	It appears as if the Batch Plant is planned adjacent to the prairie falcon setback. Based on the miss-measurement identified in line 91 it is expected that this batch plant will infringe upon the setback. Additionally due to the extreme high level of disturbance associated with this activity AEP recommends that the setback be increased to prevent further impacts to the prairie falcon nest. This site also appears to be native grassland and no mitigation has been identified to limit or prevent impacts on wildlife or wildlife habitat within this area including but not limited to the prairie falcon nest.

9	Setbacks: Temporary work space	Environmental Eval	9	equipment. Each turbine work area will consist of a crane pad and laydown area and will be approximately 1 ha in size. A temporary workspace will also be required at the substation for temporary equipment and materials storage. The substation temporary workspace will occupy approximately 1 ha.	Has temporary work space been included in setbacks from wildlife features (STGR leks, PRFA nest, FEHA nests, raptor nests, and wetlands)? Currently temp work spaces around each turbine are not clearly identified and commitments to adhere to standard setbacks for these areas are not clear. In addition there is the general issue in relation to setback measurement (refer to number 91). It is not clear if setbacks are adhered to and not clear alternative mitigation has been identified. AEP requires that setbacks be measured from the nearest edge of the temp work space to the edge of the wildlife feature.
10	Siting	Environmental Eval	9	As per the AEP (2017a) Wildlife Directive – Standard 100.1.1, the Proponent will locate temporary workspaces to avoid or minimize their occurrence in important wildlife habitats, by primarily siting them within previously disturbed areas (e.g., cultivated fields).	What does this mean, as 9 of the 14 turbines and associated infrastructure are within native grasslands? Temp workspace will be sited in native grassland areas and/or within species specific setbacks. How have impacts from wildlife and wildlife habitat been addressed (standard mitigation or alternative mitigation)? This plan does not provide the details necessary for AEP to conduct our review.
11	Construction: Delivery of equipment	Environmental Eval	10	Equipment will be delivered by truck and trailer as needed throughout the construction phase, and will be stored as necessary at a temporary storage facility at the site, as well as directly on each of the 14 wind turbine pads.	How will deliveries be coordinated with wildlife timing restrictions and setbacks? This is not clear based on schedule provided in Table 1.2-1 and 1.2-2.

12	Construction: Interim reclamation	Environmental Eval	10	Reclamation of the turbine base and vehicle turn-around area will reduce the turbine sites to an operationally maintained area of approximately 0.10 ha, to include the tower base and adjacent crane pad/workspace (final configuration to be determined in final design).	Will reclamation activities abide by all standard wildlife mitigation (setbacks, timing restrictions)? This is not adequately addressed in the plan.
13	Setbacks	Environmental Eval	10	Prior to construction, the boundaries of the construction areas, including wind turbine sites, substation site, access roads and collector system, and temporary workspaces will be surveyed and staked. All existing buried infrastructure (e.g., pipelines and cables) will be located and marked using the Alberta One-Call system.	Will setbacks be clearly marked or not? How will wildlife sites be identified so that employees/contractors adhere to the required mitigation? Marking is identified in parts of the plan (Appendix C) and not in others. Details are not clear and therefore it is unknown if wildlife features will be marked or not or how workers/contractors will be able to identify and follow identified mitigation.
14	Mitigation-Timing restrictions	Environmental Eval	10	Table 1.2-1	There is no reference to wildlife restricted timing periods except in a few specific instances (substation, laydown yards and PRFA, STGR leks and roads). AEP expects that all setbacks and timing windows will be adhere to unless there is a clear justification not to. In this case alternative mitigation needs to identified. Both the justification and the alternative mitigation must be submitted to AEP for review prior to the issuing of a AEP Referral Report.

15	Grassland Birds	Environmental Eval	10	Table 1.2-1	There is significant work planned within areas of native grasslands but no time periods for construction identified. There is no reference to mitigation such as abiding by grassland bird timing restrictions (April 1st-July 15th) or alternative mitigations for AEP to review. There is no reference to the EMP or other documents that might contain this information.
16	Construction: Turbine timeline	Environmental Eval	11	Table 1.2-1 blades. The assembly of all 14 turbines is anticipated to take approximately two to three months.	If the assembly of all 14 turbines will take less than 3 months, why can't timing restrictions for wildlife be adhered to? The currently plan does not provide firm commitments for abiding by timing restrictions for grassland birds, Prairie falcon, ferruginous hawk, other raptors, and sharp-tailed grouse. AEP requires firm commitments within the EMP and associated plans. Currently clear commitments have not been included. Where they have been included there are follow up exceptions or non-committal terms such as "to the extent possible", "where practical" etc. This is unacceptable.
17	Construction-Parking area	Environmental Eval	11	The primary construction parking areas will be at the temporary laydown yard. During operation parking will be at the substation	This forces all traffic and personal to move through the Prairie Falcon setback on a daily basis. There is no alternative mitigation identified. Due to setback miss-measurement, (refer to number 91 for details) the laydown yard may be within the prairie falcon setback. Currently this is not clear.
18	Non-commitment to requirements-collector lines	Environmental Eval	11	Where ploughing **is not feasible** due to soil characteristics the cables may be installed in a trench using a wheel-ditch or excavator.	Use of the term "is not feasible" . As all infrastructure has been identify all infrastructure that does not conform with the requirement must be identified with alternative mitigation for that specific site. The proponent has not provided adequate information for AEP to assess this risk.

19	Prairie Falcon Nest	Environmental Eval	11	Table 1.2-1Depending upon the local conditions at the time of construction, it is anticipated to take approximately six to twelve months to construct the substation.	This substation is within the Prairie Falcon Nest setback. This time line will not adhere to the prairie falcon nest timing restrictions. There is no clear alternative mitigation identified. This nest was impacted previously by a renewable development. This resulted in a compliance file and fines by the AUC. The setback and timing restrictions will not be reduced for the purpose of Windy Point. There is a lack of clear alternative mitigation or undefined mitigation (wildlife monitor/stop work orders). Therefore the development of the Substation is considered a High Risk activity.
20	Construction: Time table	Environmental Eval	12	Table 1.2-2	This does not provide details of timelines therefore it is not possible to determine if timelines meet with AEP recommendations or policy.
21	Operation: Timing	Environmental Eval	12	Preventative maintenance will be conducted regularly throughout the year. Maintenance is typically 30 to 40 hours per turbine per year, on a semi-regular and as-needed basis.	There is no reference to how wildlife timing restrictions or setbacks will influence regular maintenance of the facility. Due to the siting of the project and the number of key wildlife features identified this needs to be included in the plan. The plan is currently lacking.
22	Decommissioning	Environmental Eval	13	When decommissioning occurs, reclamation standards at the time of decommissioning will be followed, but are generally expected to require the creation of temporary workspaces, use of access roads, and the use of equipment similar to that used for Project construction, as described in Section 1.2.2	There is no reference to how wildlife timing restrictions or setbacks will influence decommissioning of the facility. It is AEP expectations that standard mitigation such as timing restrictions and setbacks will be adhered to. Additionally that pre-decommissioning wildlife surveys will be conducted to ensure that there are no wildlife related issues that need to be mitigated.

23	Regional Land Use Plans	Environmental Eval	14	The Project is within the boundaries of the approved South Saskatchewan Regional Plan (SSRP). SSRP objectives include that "opportunities for the responsible development of the region's renewable energy industry are maintained." (Government of Alberta 2017c p. 47).	please refer to the South Saskatchewan Regional Plan Page 68 Biodiversity and Ecosystem objective "Intact Grassland Habitat is sustained". The SSRP does not provide GOA support of the proposed project as the siting of the project does not support other important goals for the region (social, environmental and economic). Therefore the key term "responsible" is not adhered to.
24	Wildlife Sensitivity Zones/Layers	Environmental Eval	14	It is not within a recreational area or conservation area, however is located within a Key Wildlife and Biodiversity Zone.	Did not mention Sharp-tailed grouse, or Sensitive Raptor zones. This project has direct impacts on these species/groups of species. Why are they not mentioned here.
25	Environment Evaluation Approach	Environmental Eval	18	potential mitigation options that are technically and economically feasible to avoid or reduce potential Project effects; and,	What about required mitigation outlined in AEP policy, requirements, Directives or guidelines? These must be considered and referenced. Currently they are not. The plan must include clear commitments to adhere to wildlife timing restrictions and setbacks or other standard mitigation or avoidance strategies as outlined in AEP policy.
26	Environment Evaluation Approach-Valued Component	Environmental Eval	19	Table 2.4-1	Why are listed wildlife (Federal or provincial) not included as a value component? The proponent has not Included wildlife, especially the STGR leks, PRFA nest, FEHA nests and grassland birds as valued components. It is not clear how the proponent is considering these significant issues and addressing them throughout the project plan (siting, construction, operation etc.).
27	Environment Evaluation Approach-Temporal boundaries	Environmental Eval	20	Temporal boundaries of the project	There is no reference to AEP wildlife timing restrictions and how these will be assessed or included in the assessment. The plan must include these.

28	Environment Evaluation Approach-Spatial boundaries	Environmental Eval	21	Spatial boundaries of the project	There is no reference to AEP wildlife setback restrictions and how these will be assessed or included in the assessment.
29	Environment Evaluation Approach-Wildlife	Environmental Eval	21	Approach and wildlife	There is no reference to wildlife or wildlife habitat and how they will be assessed or included in the assessment.
30	Siting	Environmental Eval	24	Land cover in the Project area includes improved pasture, cultivated fields, improved pasture, residence/farmyard/road, dugouts and reservoirs and native grassland	What is improved pasture? Is it native or is it Tame. Use the definition of native grassland from public lands to provide clarity. (*an area of prairie in which natural veg consists primarily of perennial grasses. The native species composition must be greater than 30% (adams et. al, 2005*)). It is not clear if the proponent has defined the vegetation cover as per AEP policy and avoided those areas defined as native grassland by AEP.
31	Siting	Environmental Eval	24	The land cover classifications that are assumed to be included in the native grassland definition comprise 643 ha (59%) of the Project area, and of this area 225 ha is considered low (less than 40%) fescue. After native prairie, the most common land cover type is improved pasture (22%) (	What are these definitions of low or high fescue grasslands. These are not recognized classifications. All native grassland provides habitat for wildlife and will be evaluated as such by AEP. These different classifications create confusion as to how the project has been sited. For example is the 2.1% of native coulee land cover accounted within the 59% of native grassland land cover or is this in addition to? Additionally Table 3-3.1 land cover of native grasslands does not equate to the statements about native grassland. It is not clear where native grasslands have been avoided or where they have been impacted. The total area of native grassland (wildlife habitat) is not clear to AEP.

32	Activities on Native Grassland	Environmental Eval	28	Table 3.4-1 "Effects on Native Grassland"	This table just repeats the effects as "effects on native grassland" for all activities. What effects? The effects are not identified and are not clear. Therefore mitigation cannot be evaluated to determine if it is effective. The proponent has not provided the necessary details to allow AEP to conduct our review.
33	Construction-Parking area	Environmental Eval	30	Approximately 150 employee vehicles will be accessing parking in the laydown areas,	The laydown areas appears to partially be within the prairie falcon setback (based on corrected calculations) this is unacceptable. No alternative mitigation or justification for this has been identified.
34	Construction-Traffic and equipment/supply deliveries	Environmental Eval	30	Each turbine will require approximately 75 loads of concrete for the foundation delivered from a temporary onsite batch plant or a local supplier. Each turbine will require approximately 50 delivery vehicles for the turbine components. Delivery vehicles for concrete, turbine components and other supplies may affect local traffic through delays.	There is no information on how these will be coordinated to avoid key setbacks or wildlife timing restrictions. Details are not clear to AEP.

35	Non-commitment to requirements-AEP Policy	Environmental Eval	30	The Proponent has implemented AEP guidance **as feasible** in determining the layout of the Project presented in Section 1.0	Use of term "as feasible". What does this actually mean? Need firm commitments to what mitigation has been or will be implemented. It is not clear if alternative mitigation has been identified for each issues where adherence to AEP policy is not feasible. Or where these issues occur. Additionally no rational or justification is listed in relation to these issues. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this.
36	Siting	Environmental Eval	30	The Project layout follows guidance in the Wildlife Directives (AEP 2017) to preferentially locate Project components within these areas, rather than in native vegetation areas.	How? As most sites are on native grassland no comparison has been provided to illustrate how this project has been sited to avoid key wildlife habitats such as native grassland. At this time it appears that the project has been preferentially sited on native grassland. This statement is misleading.
37	Siting	Environmental Eval	30	Project layout in this document has reduced the Project operation footprint (turbines, roads and substation) from approximately 18 ha (Stantec 2010) to 7 ha. Of the 14 proposed turbines, 6 are not within native grassland, and only 4.5 ha of the Project operation footprint is located in native grassland.	The project had sited 13 turbines in 2016 not 21. The 13 turbines sited in 2016 were all on native grassland. In the 2017 plan there are 14 turbines, 9 of which are on native grassland. There has been a small reduction however the proponent has not provided alternative mitigation to address the risks to wildlife for the remaining 9 turbines on native grassland. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat on native grassland are to be mitigated.

38	Valley breaks	Environmental Eval	30	In addition to the above land covers, valley breaks and coulees may also be disturbed by the Project footprint.	There is a 100 meter setback from all coulee/valley breaks. Where is this infringed upon, why and what is the alternative mitigation proposed? Currently this is not included. Note inconsistent statements are made throughout this plan in regards to valley breaks.
39	Non-commitment to requirements	Environmental Eval	31	Following completion of construction, areas not containing permanent facilities will be reclaimed (including revegetated) to the **extent possible** to an equivalent land use capability	Use of the term "to the extent possible". As this is identified as a key mitigation for native grassland (wildlife habitat) these areas needs to be clearly defined. What will be reclaimed and what can not be reclaimed. This is required for AEP to determine risk of the project.
40	Siting	Environmental Eval	31	cannot be avoided, mitigation has been proposed to reduce the effect of Project infrastructure on wildlife habitat, as discussed in Section 9.6, however complete avoidance of grasslands is not feasible.	How has Native grasslands been avoided. 65% + of infrastructure is sited on native grasslands? Mitigation plans are not clearly defined or committed to. In general, the proponent has conditioned all potential mitigation with non-committal terms. It is not clear to AEP what mitigation will be applied to infrastructure sited on native grassland. This is required for AEP to determine risk of the project.
41	Prairie Falcon	Environmental Eval	31	The Project substation has been located adjacent to an existing substation and turbines. The interconnection point has been determined in consultation with AESO and is considered the most logical and technically feasible location [Wildlife Directive 200.2.5].	The substation is within the Prairie Falcon nest setback. There is no clear mitigation identified to mitigate this risk. AEP recognizes that the AESO has dictated that the substation must be sited within this area, however no clear mitigation has been identified. There is mention of maybe putting collector lines underground (but no commitment), using a wildlife monitor but the role is undefined. These are in the appendices of the appendices (Appendix C appendix B-E). It is not clear to AEP what mitigation will be applied to limit impacts to the prairie falcon nest. This is required for AEP to determine risk of the project.

42	Valley breaks	Environmental Eval	31	The Proponent will confirm the preliminary location of valley breaks (see Figure 9-2) during pre-construction surveys for those features with the potential to be within 100 m of the Project infrastructure [per Wildlife Directive 100.2.6], and if not feasible to avoid the feature, the Proponent will minimize the footprint, for example through perpendicular crossings.	All of the infrastructure has been sited and included on the maps (figures) provided. Where is the 100 m setback infringed upon and what is the justification for this. There is no mitigation identified to address these issues. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat in association with valley breaks will be mitigated. Note inconsistent statements are made throughout this plan in regards to valley breaks.
43	Non-commitment to requirements	Environmental Eval	32	**Where feasible**, collector lines and other Project infrastructure will be constructed within the road ROW during the same timeframe.	Use of the term "Where feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? What are the alternatives and justification. Firm commitments are needed. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat in association with collector lines will be mitigated. Note inconsistent statements are made throughout this plan in regards to collector lines.
44	Non-commitment to requirements Collection lines	Environmental Eval	32	Construct underground collector lines by ploughing versus trenching to the **extent practicable.** Ploughing will be used whenever soil and topography is suitable	Collection Lines: Where will it not be practical to plough in lines? As all collection line locations have been selected this should be known at this time. Firm commitments are needed. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat in association with collector lines will be mitigated. Note inconsistent statements are made throughout this plan in regards to collector lines.

45	Non-commitment to requirements wildlife timing conditions.	Environmental Eval	32	Schedule activities to reduce effects as specified in the Reclamation Strategy (Appendix D), and Section 9.0 Wildlife and Wildlife Habitat….	This statement is unclear as it starts with commitment to adhere to timing restriction but is followed up by exceptions without details of these exceptions. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
46	Reclamation-Native grasslands roads	Environmental Eval	32	replacement may be considered. These methods are unlikely to be practical for long duration ground disturbance (e.g., constructing access roads).	Earlier in the plan it identifies a key mitigation for native grassland is the reclamation of roads on native grasslands (reduction of road from 20m to 6m wide). However this statement makes this commitment unclear as it states that roads cannot be reclaimed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. The inconsistent statements in relation to road reclamation make it impossible for AEP to assess risk.

47	Siting	Environmental Eval	33	In order to maximize the wind resource, and access the turbine areas, it is not possible for the Project layout to avoid native grassland areas within the Project area, which is predominantly native vegetation. Therefore, a robust Reclamation Strategy, which adheres to the Principles for Minimizing Surface Disturbance in Native Grassland (Alberta Environment and Parks 2016), has been prepared and will be implemented (Appendix D). The application	The project is preferentially sited on native grassland . This contradicts statement made earlier which say its been avoided to the "extent possible". Inconsistent statements appear in this plan in relation to reclamation. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat or risk to these species will be mitigated through reclamation.
48	Siting	Environmental Eval	37	Designated Area, activity timing restrictions, restrictions on the location, type or scale of development and the implementation of enhanced mitigation measures may be warranted.	This is the third iteration of this plan yet key wildlife habitats or sites have been excluded from the "Designated Areas". Wildlife setbacks and timing restrictions are not referenced in this section.
49	Siting	Environmental Eval	38	Two ESAs from the Fiera (2009) report fall just west and southeast of the Project area (Figure 4-1). Further detail on ESA and the criteria used in each iteration is explained in greater detail below.	While the GOA does not have specific avoidance strategies or mitigation for ESAs these areas do represent important wildlife areas. It should be noted that the purpose of one of the ESAs is to identify important fescue grasslands that support a diverse wildlife community. The other is in regards to the Oldman reservoir and the importance of the general habitat for birds. This designation further supports AEPs recommendations to avoid native grassland habitat as it is an important ecological feature for wildlife. Windy Point has not done this. It is noted the majority of the project area is covered by these ESAs. This will likely impact the mortality rates at the facility as well (Birds and Bats).

50	Siting	Environmental Eval	41	The Project area does overlap with approximately 583 ha of Fiera (2014) identified ESAs and with 802 ha of a Key Wildlife and Biodiversity Zone.	The plan does not include reference to the following sensitivity layers, Sharp-tailed grouse, and Sensitive Raptors. No plan was provided in this section or referenced in this section for these areas. These areas are not included in these measurements but should be. This is misleading.
51	Mitigation-Designated Areas	Environmental Eval	42	Table 4.5-1	No reference to wildlife setbacks or timing restrictions. There is no alternative mitigation identified either. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
52	Siting	Environmental Eval	43	The Project footprint overlaps with seven of the nine quarter sections designated as ESAs within the Project area, however, the Project footprint is only 47.55 ha of the 583 ha in the designated ESAs, and constitutes only 4.4% of the total Project area.	The footprint size is different from earlier in the report. ESA math does not add up either how is only 4.4% of the ESA included with the project area when 47.55 Ha of a 48 Ha project covered by an ESA.

53	Wetland Policy	Environmental Eval	46	Alberta Environment and Parks (AEP) has recommended that to obtain an approval under the Water Act, an applicant should first discuss the Project with a professional wetland practitioner and AEP. A wetland Assessment must be conducted in consideration with Wetland Mitigation in Canada: A Framework for Application (Cox and Grose 2000) and the Alberta Wetland Policy (Government of Alberta 2013a).	Wetland Policy: All review for this section of the report must go through the wetland policy and not wildlife staff. It is the responsibility of the proponent to ensure this has been reviewed by the appropriate people.
54	wetlands	Environmental Eval	46	The goal of the Alberta Wetland Policy (Government of Alberta 2013a) is to conserve, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and the economy. To achieve this, the policy focuses on the following outcomes:	Wetland Policy: The wetland policy only addresses the impacts to the wetland and not the wildlife that use it. The strategies that are outlined in the policy are complimentary to the AEP Directives and guidelines however these process are separate. All AEP comments for the purpose of this review are focused on the impacts to the wildlife and therefore may require additional mitigation or avoidance strategies to be applied.
55	Wetlands	Environmental Eval	48	The July 2017 field study identified three wetlands (Table 5.3-1) using the AWCS: one Class II wetland (temporary) and two Class III wetlands (seasonal ponds and lakes) (Figure 3-1). Collectively, the wetlands cover 0.5 ha of the Project area (less than 1% of total Project area).	AEP expects that the 100 m setback is applied to the two Class III wetlands to protect and conserve wildlife including but not limited to amphibians. Commitment to adhere to this standard mitigation has not been made. Alternative mitigation has not been identified in this plan. Please note that adherence to the Wetland Policy does not equate to mitigation and protection of amphibians or other wildlife directly impacted by the development.

56	Non-commitment to requirements wetland mitigation	Environmental Eval	50	Erosion prevention and sediment control measures will be implemented **as necessary** near wetlands	Use of term "as necessary". AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
57	Wetlands	Environmental Eval	50	A section of the collector line system has been located adjacent to Road 291 to minimize the Project footprint, however, of the three identified wetlands in the Project area, one Class III wetland immediately adjacent to Road 291 may be affected.	At this time all infrastructure has been sited on the maps and figures. Will this wetland and associated setback be infringed upon or not? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
58	Non-commitment to requirements wetland mitigation	Environmental Eval	51	Following construction, temporary work areas and road verges will be revegetated a**s quickly as practical** to minimize the potential for erosion and sedimentation that may enter wetlands or watercourses.	Use of term "as quickly as possible". This provides no clear commitments or time frames. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

59	Wetlands	Environmental Eval	51	The Proponent anticipates that the collector line will be constructed in existing disturbed area adjacent to or within Road 291, avoiding wetland DLK001, and the Wildlife Directive 100.2.7 (2017) requirement for a 100-m buffer around any wetland class will not be applicable.	Why is this not applicable? It is AEP's expectation that the setback will be adhered to or alternative mitigation will be identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
60	Mitigation-Weeds	Environmental Eval	81	The colonization of disturbed areas by noxious weed species is likely if mitigation measures are not implemented. Introduction of these species may affect the overall success of native species, and result in decreases in the native species, or decrease in the success of reclamation efforts.	One of the largest threats to the maintenance of wildlife habitat within the project area is the colonization of weeds. Opening up native grassland areas will allow for the establishment of weed species which will impact the habitat quality for wildlife. Mitigation to limit or prevent the establishment of weeds is needed and currently not clearly defined.
61	Wildlife Surveys-current	Environmental Eval	93	Raptor nest surveys and sharp-tailed grouse surveys conducted at Windy Point are considered current at the time of writing (Table 9.3-1).	The raptor and the grouse surveys are considered current as of the time of submission. However if the AUC approves this project these surveys will need to be repeated in 2018 and every 2 years afterwards until the project is commissioned. Mitigation if wildlife issues are identified, other than the wildlife features identified in this report, must be clearly identified. A commitment to work with AEP and develop alternative mitigation for these sites needs to be included.

62	Valley breaks	Environmental Eval	95	Coulees and coulee breaks can be associated with extensive wildlife use (Government of Alberta 2011). Coulee habitat is present in four locations within the Project area: running west to east within NW and NE 2-8-29-W4M, running southwest to northeast in NW and NE 35-7-29-W4M, running west to east in SE 35-7-29-W4M, and finally running northwest to southeast in NE 26-7-29-W4M.	Is the 100 meter setbacks abided by or not? This is currently unclear. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. Note inconsistent statements are made throughout this plan in regards to valley breaks and coulees.
63	Ferruginous Hawk nest	Environmental Eval	99	Nest documented as inactive during the 2017 breeding season. If this nest is not occupied by a ferruginous hawk before the end of the 2018 breeding season, it is no longer required to be protected by the recommended 1,000 m setback (Alberta Ferruginous Hawk Recovery Team 2009).	There are extenuating circumstances at this specific nest. Due to mitigation efforts that are currently ongoing, AEP considered this nest be active and requiring the full 1000 meter setback. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
64	Sharp-tailed grouse Leks	Environmental Eval	101	Table 9.4-4	Lek 01- where is it? There are two locations given where is the setback measured from (refer to 91). Please note the 4 leks identified are Leks and AEP does not recognize the term "satellite leks". As this is the third iteration of this plan, why are the wildlife locations not clearly identified? AEP needs this information to be consistent in order to conduct our risk assessment.

65	Wildlife Data age	Environmental Eval	101	Migration and general wildlife surveys	As per the Directive 100.2.10. All data must be repeated if the project is not constructed by 2021. This commitment has not been identified by the company.
66	Wildlife surveys	Environmental Eval	102	Two rotor-swept heights were considered: 25 m to 155 m, and 33 m to 155 m.	The maximise height of the RSA for the project is identified as 173 m. This does not correspond to migration surveys conducted. Why not? Why has the data not been corrected based on the change in turbine size? AEP has informed the proponent of this requirement. AEP can not assess risk based on the information given.
67	Wildlife surveys	Environmental Eval	105	Subsequent to the completion of this analysis, the Proponent has revised the turbine rotor swept heights to 37 m to 173 m, with substantially the same rotor swept area.	The maximise height of the RSA for the project is identified as 173 m and a min of 37 m. This does not correspond to migration surveys conducted. AEP does not agree that this is "the same RSA heights" as there is a 20 meter difference between them. Why has the data not been corrected based on the change in turbine size? AEP can not assess risk based on the information given.
68	Wildlife Survey- Bats	Environmental Eval	107	The detector on the meteorological tower was outfitted with both a high and low microphone. Tetratech (2016) indicates that detectors on the meteorological tower did not collect data throughout the entire monitoring window due to technical difficulties.	So there is no data from the 30m acoustic detector. Is this in both seasons (Spring and fall)? The 30m detector is essential in determine risk. Without this information it is assumed that the risk of mortality to bats is significantly higher then predicted. (5.29 bat passes/detector night or 3.32 migratory bat passes/detector night). The bat mortality risk is high even with these technical issues.

69	Construction/ operation- Potential effects	Environmental Eval	109	Interactions between Project activities and wildlife and wildlife habitat may result in the following adverse effects: • Change in habitat – primarily due to site clearing and sensory disturbance; and, • Change in mortality risk – due to site clearing, collisions with vehicles and turbine blades, and electrocution at the Project substation.	The full effects on wildlife are not identified. This may include but is not limited to habitat avoidance, loss of nesting/denning sites, reduction in productivity, fragmentation, avoidance of the site/habitat loss etc.
70	Construction/ operation- Potential effects	Environmental Eval	110	Table 9.5-1	Only risks to wildlife identified are "change in habitat" or " change in mortality risk". This is misleading to the actual risks of this project and how the mitigation or avoidance strategies will reduce (or not reduce) impacts wildlife and wildlife habitat. These generalizations do not provide the necessary details.
71	Siting	Environmental Eval	110	The operations footprint is estimated to be 7.0 ha in size, with 4.0 ha of native pasture, 0.4 ha of dry native prairie slope habitat, 0.1 ha of native shrub complex.	The site is preferentially sited on native grasslands for the operation and construction of the project. Where are these sites and what wildlife features are associated with these sites? This statement is more detailed than the previous statements on the footprint impacted by the operations of the facility (4.5 Ha). However there are no details on the areas impacted during construction. Is the breakdown similar to this or does it differ? The necessary information is not clear and therefore AEP determine if the risks are mitigated or avoided adequately.

72	Construction/ operation- potential effects	Environmental Eval	111	Indirect habitat loss effects from sensory disturbance are anticipated due to increased human activity and the use of equipment and machinery on site throughout the construction period. These effects may be increased during the winter season for ungulates	No mention of the impacts on house/nest/dens or leks. There is no mention of grassland birds in this entire section of the plan. No mitigation is identified in this section and no reference is made to where to find these in other sections. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
73	Grassland Birds	Environmental Eval	112		There is no mitigation identified for grassland birds. There is no commitment to adhere to the grassland bird restricted time period.
74	Wildlife Surveys	Environmental Eval	113	The analyses completed in 2015/2016 estimated a 70 m blade and a hub height of 90 m with 13 turbines for a rotor swept area of 200,199 m2; this assessment assumes 68 m blade and hub height of 105 m with 14 turbines for a rotor swept area of 203,266 m2.	Migration tables: AEP recommended that the data be collected in a way that it could be applied to a variety of turbine types (height and RSAs). The spring and fall bird migration data does not provide an assessment of risk for the proposed project. The proponent has not provided rational or justification for this in the plan for AEP's review. This is unacceptable and does not allow AEP to conduct a risk assessment.
75	Access management plan	Environmental Eval	114	An Access Management Plan will be developed that will include access control and access management measures [Wildlife Directive 100.3.5 and 100.3.9]	This is part of the construction and operation plan and needs to be submitted to AEP prior to issuing a AEP Renewable Referral Letter. Currently this has not been submitted therefore AEP cannot review it. The access management plan is identified as mitigation for wildlife impacts but is not provided. This is unacceptable and does not allow AEP to conduct a risk assessment.

76	Collector Line	Environmental Eval	114	Collector lines throughout the Project area will be constructed underground with minimal disturbance construction methods **where feasible**	Use of the term " where feasible". All infrastructure is sited already, where is it not feasible. What are the alternatives and justifications. Firm commitments are needed. There are general issues as some parts of the plan there is a commitment for all collection lines to be installed underground. But in other parts of the plan there are options to site above ground. Which is it? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
77	Non-commitment to requirements wildlife mitigation	Environmental Eval	114	has been sited to avoid or minimize overlap with important wildlife habitats or areas that attract or funnel birds or bats, **where feasible** [Wildlife Directive 100.1.1].	Use of the term "Where feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? What are the alternatives and justification. Firm commitments are needed.
78	Setbacks	Environmental Eval	114	Does the Project layout avoid locating wind turbines and infrastructure within the high disturbance setbacks, or if not possible to avoid the setback, located to reduce disturbance of the wildlife feature (i.e., as far as possible from the wildlife feature within the setback or out of direct line of sight from the wildlife feature)	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

79	Data-commitment to keep data current	Environmental Eval	115		Keeping sensitive raptor and STGR leks data current. There is no mention of the 5 year rule from standard 100.2.10 of the Directive.
80	Ferruginous Hawk nest	Environmental Eval	115	No construction activities will occur within an active ferruginous hawk nest setback (1000 m) during the nesting season (March 15-July 15). Outside of the nesting season, nest setbacks will be determined by the level of disturbance (Government of Alberta 2011). Low disturbance activities will require a setback of 50 m. Medium disturbance activities will require a nest setback of 100 m. High disturbance activities will require a 1000 m setback.	Note that only collection lines installed through min disturbance techniques would qualify as a low level disturbance however details are unclear in this plan. It is not clear if the 1000m setback is adhere to for all other infrastructure. There is an issue with their measurement of setbacks therefore this may not be consistent. Based on statements made later in the plan these commitments are not clear (wildlife monitor can alter setbacks). The proponent has not provided clear commitments or the necessary details for AEP to conduct our review.
81	Prairie Falcon	Environmental Eval	115	No construction activities will occur within an active prairie falcon nest setback during the nesting season (March 15-July 15). Outside of the nesting season, the nest setback will be determined by the level of disturbance (Government of Alberta 2011). Low disturbance activities will require a setback of 50 m. Medium disturbance activities will require a nest setback of 100 m. High disturbance activities will require a 1000 m setback. **If not possible to meet the setback**, a wildlife monitor who is an Experienced Wildlife Biologist will be in place	Are timing restrictions adhered to or not? There is an issue with their measurement of setbacks therefore this may not be consistent. Note that only collection lines installed through min disturbance techniques would qualify as a low level disturbance. The proponent has not committed to minimal disturbance construction techniques. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

82	Grassland Birds	Environmental Eval	115		There is no proposed mitigation identified in this section of the plan for grassland birds. The project is preferentially sited on native grassland and therefore grassland bird mitigation will be necessary. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
83	KWBZ	Environmental Eval	115	If construction is required in the Key Wildlife and Biodiversity Zone between December 15 and April 30, an Experienced Wildlife Biologist will be on site during construction to stop work if ungulates are within 200 m of construction activity, particularly during adverse weather conditions	Where are "adverse weather conditions" defined? Where is the criteria for a stop work order for ungulates defined? Criteria needs to be defined in order for AEP to complete its risk assessment. The proponent has not provided the necessary details.
84	Prairie Falcon	Environmental Eval	115	The Experienced Wildlife Biologist will monitor for change in behavior of the birds during construction and or encroachment further than necessary into the setback. Construction of the substation will occur within the recommended setback for high disturbance activities (i.e., 1,000 m).	Are timing restrictions adhered to? In what locations is the setback not adhered to (substation, any others)? What is the monitor doing and what is the criteria for a stop work order. Criteria needs to be defined in order for AEP to complete its risk assessment. The proponent has not provided the necessary details.

85	Sharp-tailed grouse Leks	Environmental Eval	115	An Experienced Wildlife Biologist will monitor for encroachment into non-breeding season setback distances (500 m for high disturbance activities throughout the year) (Government of Alberta 2011), removal of shrub habitat within 1,000 m of the lek. An Experienced Wildlife Biologist will confirm that nests or leks are no longer active before construction can occur	Where are setbacks not adhered to? Is this for all leks or just one? Are timing restrictions adhered? What is the monitor doing and what is the criteria for a stop work order. Note setback measurement issue (refer to #91). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
86	Collector Line	Environmental Eval	116	If above ground collector lines must be used due to landscape constraints or in the vicinity of the substation, measures described in Reducing Avian Collisions with Power Lines: The State of the Art (APLIC 2012) will be implemented as follows [Wildlife Directive 100.3.15]:	Where are above ground collector lines required? The commitment is for underground collector lines unless not technically feasible. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

87	Sharp-tailed grouse Leks	Environmental Eval	116	No construction activities will occur within a lek setback (500 m) during the breeding season (March 15 to June 15). Further, no human activity will be allowed within a lek setback from one hour before sunrise to two hours after sunrise during the breeding season. Outside the breeding season, lek setbacks will be determined by the level of disturbance (Government of Alberta 2011). Low and medium disturbance activities will require a setback of 100 m and high disturbance activities will require a setback of 500 m. If **not possible** to meet the setback, a wildlife monitor who is an Experienced Wildlife Biologist will be in place	The plan states there will be no infrastructure sited within the setback unless its "not possible". Where is it not possible, locations need to be clearly identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
88	Non-commitment to requirements wildlife mitigation valley breaks	Environmental Eval	116	features with the potential to be within 100 m of the Project infrastructure [per Wildlife Directive 100.2.6], and i**f not feasible** to avoid the feature	Use of the term "Where feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

89	Other raptors-Mitigation	Environmental Eval	121	For example, the Wildlife Guidelines (2011) indicate that turbine locations are required to be setback from Swainson's hawk and red-tailed hawk nests by 500 m, whereas the Wildlife Directive (2017) indicates that these features should be protected by setbacks of 100 m. The Land Use Guidelines do not include setbacks for Swainson's hawk and red-tailed hawk nests. For these features the Proponent will adhere to setback and timing guidance from the Wildlife Directive (AEP 2017a).	The grandfather process allows for use of the guidelines or the Directives. However the proponent cannot cherry pick the parts that suit their plans or agendas. The proponent is either following the 2011 Guidelines or the 2017 Directives. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
90	Mitigation-setback infringement	Environmental Eval	121	There are three locations where Project infrastructure intersects wildlife feature setbacks. In these locations, where avoidance of the feature setbacks is not possible due to other siting constraints,	Where are these locations identified and what are the alternatives. Note there are likely more then three locations as all setbacks are measured wrong (refer to number 91).AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

91	Mitigation-Setbacks	Environmental Eval	121	The analysis calculated the distance between the closest (centre) point where roads or collector lines occur in relation to the wildlife feature and the centre point of the wildlife feature. The wildlife feature setback was applied to the centre point of the feature to determine where infrastructure footprints intersect wildlife setbacks, and if an intersect occurred, the distance from the infrastructure to the centre point wildlife feature was reported in Table 9.7-1	Setbacks are measured for both the 2011 guidelines and the 2017 Directive For turbines, setbacks are measured from the closest edge of the rotor swept area to the closest edge of the wildlife feature. For all other infrastructure (roads, feeder lines, etc.), setbacks are measured from the nearest edge of the disturbance to the nearest edge of the wildlife feature. For all species not specified with a higher level setback, the setback is 100 m from an active house, nest or den.
92	Ferruginous Hawk nest	Environmental Eval	122	F6). Raptor nest surveys are planned for spring 2018 to determine the status of the nest. A permanent Project road is sited within the setback of this feature, with a closest distance of 680 m from the ferruginous hawk nest location.	There are extenuating circumstances at this specific nest. Due to mitigation efforts that are currently ongoing, AEP considered this nest be active and requiring the full 1000 meter setback. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

93	Prairie Falcon Nest	Environmental Eval	122	A Project collector line and the Project substation will intersect a prairie falcon nest feature setback. The closest point to the nest will be 750 m away from the prairie falcon nest	What is the actual distance based on corrected measurements (refer to number 91)? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
94	Prairie Falcon Nest	Environmental Eval	122	Collector lines will be installed via ploughing **to the extent practicable (**to be determined in the field based on site characteristics) using minimal disturbance techniques during the period when prairie falcons are not present	Use of the term "to the extent possible". Will the line be ploughed in or not. If not what are the alternative mitigation that is being proposed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
95	Prairie Falcon Nest	Environmental Eval	122	After the collector line is in place, it is not anticipated to negatively affect mortality risk to nesting or foraging prairie falcons, as it is buried and will not be visible	Refer to number 94 and 96. Will the line be buried or will it not be buried? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

96	Prairie Falcon Nest	Environmental Eval	122	The substation is a permanent Project component that will remain through operation; however, other permanent structures already exist within 1,000 m of the nest (turbines and substation for existing Old Man 2 Project) and	Which resulted in a compliance file and subsequent fines. There are no alternative mitigations identified and no clear plan for timing or methods of construction. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. It should be noted that AEP has identified that this nest should not be further infringed upon. The compliance file in association with another renewable project is tied to this specific prairie falcon nest.
97	Prairie Falcon	Environmental Eval	122	operation. The collector line and substation have been sited within the setback as this location has been determined in consultation with AESO to be the only technologically feasible location for interconnection.	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
98	Sharp-tailed grouse Leks	Environmental Eval	122	The 500 m setback centred on the sharp-tailed grouse lek (LEK 03) will be intersected by a Project road and collector line. The closest distance of the road and collector line to LEK 03 is 365 m.	What is the actual distance based on corrected measurements (refer to number 91)? The setbacks are not properly identified. As such the proponent has not identified all related setback infringements. What are the alternative mitigations proposed for both the construction and operation of this road. These have not been clearly identified.

99	Sharp-tailed grouse Leks	Environmental Eval	122	Road and buried collector construction will occur outside the breeding period (March 15 to June 15) (see 9M-6), and measures to reduce disturbance to resident birds will be undertaken (see 9-M8), including construction monitoring by an Experienced Wildlife Biologist. Mortality risk is likely to increase for sharp-tailed grouse at this location in association with vehicle use of the road, but will be reduced through access controls, access management, and traffic control measures such as speed limits.	No specifics provided. Curranty missing time periods of construction, type of road, what access controls and when, criteria for stop work order for the Env monitor, commitment for when Env Monitor will be on duty. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
100	Grassland Birds	Environmental Eval	123		Still no mention of the timing restrictions or alternative mitigation for grassland birds. The project is preferentially sited on native grassland therefore there must be a plan to address risks to grassland birds. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

101	Mitigation-setback infringement	Environmental Eval	123	Table 9.7-1	Setbacks are measured for both the 2011 guidelines and the 2017 Directive For turbines, setbacks are measured from the closest edge of the rotor swept area to the closest edge of the wildlife feature. For all other infrastructure (roads, feeder lines, etc.), setbacks are measured from the edge of the disturbance to the edge of the wildlife feature. For all species not specified below, the setback is 100 m from an active house, nest or den. The proponent has measured all setback incorrectly and therefore has not identified proposed infringements of setbacks.
102	Mitigation-Wildlife	Environmental Eval	130	Table 10.1-1	There are a number of issues with the mitigation identified in this table already identified by AEP. In general AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

103	Wildlife Monitor	Environmental Eval	136	Wildlife Monitor	This section includes some details of the Wildlife monitor for the KWKZ but these are not fully defined. Details on stop work criteria for the PRFA, STGR, and FEHA are not included. No mention of grassland birds. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
104	Collector Line	Environmental Eval	138	If above ground collector lines must be used due to landscape constraints or in the vicinity of the substation, measures described in Reducing Avian Collisions with Power Lines: The State of the Art (APLIC 2012) will be implemented as follows [Wildlife Directive 100.3.15]:	Are there any collection lines being proposed above ground? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. Note there are a number of inconsistent statements in regards to collection lines including but not limited to the location (above or below ground), and construction methods.

105	Non-commitment to requirements wildlife mitigation Table 10.1-1	Environmental Eval	130-138	"where feasible" " extent practical" "Where possible" "as necessary" etc.	Use of non-committed terms. As all infrastructure is sited within the maps and figures, where is this not feasible? This entire section is deficient and identifies more questions than answers. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
106	Siting	Environmental Eval	23-24	As indicated in Stantec (2010), for the purposes of this Project, the definition of native prairie is an area of unbroken grassland or parkland dominated by non-introduced species, and an area of previously broken grassland that has reverted back to native vegetation (30 to 60 years).	This definition does not correspond with the AEP definition of Native Grassland. Definition of Native grassland: Public Lands 2005 and repeated in the Wind Directives *an area of prairie in which natural veg consists primarily of perennial grasses. The native species composition must be greater than 30% (adams et. al, 2005)*
107	Summary of concordance with Wildlife Directive	Environmental Eval	Appendix B 1-8		As there are many issues identified within the body of the plan(s) AEP has not fully reviewed this summary table. The statements made through out this plan are either not fully committed to or are inconsistent. The concordance table does not address the inconsistent statements made. Currently this table just creates more confusion and does not allow AEP to conduct a risk assessment.

108	Purpose of the EMP	EMP (Appendix C)	5	this EMP is to provide the Owner and their construction contractor(s) with performance-based environmental objectives, standard protocols, and mitigation measures to ensure that the Project achieves compliance with applicable legislation, conditions of permits and approvals, and engineering specifications during construction and the subsequent operation of the facility.	For AEP an EMP provides the mitigation that will be applied and once approved by the AUC and AEP form the conditions that must be adhered to. If new information or unforeseen circumstances occur, then alternatives must be agreed to with AEP and AUC prior to construction.
109	Purpose of the EMP	EMP (Appendix C)	6	The EMP provided below is a preliminary version and will be finalized prior to the start of construction. It is recognized that as the Project proceeds through detailed design and construction, this EMP may need to be revised in response to such things as, but not limited to, changes to the following:	AEP expects that the EMP will be adhered to and that no future consultation will be required unless some thing new is identified. The over generalization of commitment will need to be corrected to enable the standard AEP process that has been used by all other renewable projects in Alberta. The proponent has not provided a clear commitment to implement the mitigations identified in the EMP. Nor have they committed to following the standard process for proposing alternative mitigation after the AUC review process is complete.

110	Responsibilities	EMP (Appendix C)	9	Ensure the Project is managed in a manner consistent with the Owner's policies and procedures, and ensure the Project execution plan and the EMP has effectively incorporated environmental requirements from permits, approvals, notifications, landowner requests, and all other additional environmental commitments and conditions.	No mention of the AEP policy, standard mitigation or requirements. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. Note there are a number of inconsistent statements in regards to collection lines including but not limited to the location (above or below ground), and construction methods.
111	Wildlife Monitor	EMP (Appendix C)	10	Wildlife Monitor section 2.1.3	Where is the criteria for defining disturbance to a nest, lek or other feature? How will things be monitored? There is no information given. Based on this plan if the wildlife monitor is on site then the company is in compliance with their EMP but there are no protections afforded to the wildlife. This is a poorly defined position. How does it actually meet with the intent of the standard AEP mitigation for the PRFA, STGR, Grassland Birds and other wildlife issues identified? AEP requires that wildlife monitor positions, responsibilities, and operating criteria is clearly defined. The use of a wildlife monitor is alternative mitigation. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

112	Responsibilities- Env monitor	EMP (Appendix C)	10	Identify if permit and condition variances are required and if so, determine site-specific setback and mitigation strategies in consultation with the Project Environmental Manager and regulatory bodies, as delegated.	This should have been completed already in this EMP. However it has not as no solid commitments have been made to adhere to AEP standards or requirements. Everything is to the "extent possible", which is not acceptable. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
113	Non-compliance reporting	EMP (Appendix C)	15	Should an environmental non-compliance event occur, the Construction Manager and Environmental Monitor, or Wildlife Monitor as appropriate, will complete a punch-list, in which the event will be described, including affected environment, root cause, response measures implemented, and actions taken to prevent recurrence. The event punch-list will be submitted to the Project Environmental Manager within 48 hours of the noncompliance.	Punch list: so for example someone parks their truck too close to a STGR lek that would equate to what…? This is not clear. What is the purpose of this process and how will it protect and limit impacts on wildlife and wildlife habitat? The proponent has not provided the necessary detail to determine if adjustments will be made to correct for improper implementation of mitigation. This is unacceptable and does not allow AEP to conduct a risk assessment.
114	Mitigation-training	EMP (Appendix C)	15	Wildlife encounter protocol	Wildlife Training does not include information on standard wildlife mitigation such as setbacks, timing restrictions etc. All staff need to know why these rules exist and why these must be followed. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

115	Mitigation-setbacks	EMP (Appendix C)	15	Identified environmental issues (e.g., wildlife, wetlands, noise, spills, weed transfer, etc.)	There is no mention of setbacks, mitigation or other wildlife general mitigations. Is this covered by the general "wildlife" in this statement. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
116	Setbacks	EMP (Appendix C)	16	status of wildlife buffer zones, if applicable	AEP expects that all setbacks are being adhered to. These non-committal statements are interpreted as high risk to wildlife and wildlife habitat. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
117	Non-compliance reporting	EMP (Appendix C)	16	A non-compliance becomes an incident if, once identified, it is not rectified immediately or as soon as practicable. A	Non-compliance: even if rectified the damage may already be done. Due to the risk of Windy point, AEP expects to be notified for all wildlife acts of non-compliance. The proponent has not committed to or provided a process to meet this requirement. This is unacceptable.

118	Non-commitment to requirements - Non - compliance reporting	EMP (Appendix C)	16	The Project Environmental Manager and Environmental Monitor will be responsible for reporting noncompliance events, **when applicable**, to relevant regulatory agencies	Use of the term "when applicable". All non-compliance in relation to wildlife must be reported immediately.
119	Non-compliance reporting	EMP (Appendix C)	17	Table 5: AEP within 48 hours of non-compliance	Reporting to AEP: Table 5 includes AEP in reporting of non-compliance but this commitment is unclear in the text. The proponent has not identified clear direction for its employee or contractors to adhere to the EMP.
120	mitigation-non-compliance reporting	EMP (Appendix C)	17	What each report should include	Does not include summary of non-compliance action and impacts on wildlife and wildlife habitat. This is not clear.
121	Non-commitment to requirements - wildlife monitor	EMP (Appendix C)	20	Wildlife Monitor • Will be on site **as necessary** to observe for wildlife. • Will be called-in to support the Environmental Specialists and Environmental Manager as needed during the bird and bat breeding season and in the winter.	Use of term " as necessary". But what does this mean? The wildlife monitor is identified as a key alternative mitigation for several issues. Where is the commitment to be present and what they will be doing in relation to these issues (PRFA nest, grassland birds, STGR leks, FEHA nest, etc.). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

122	Valley breaks	EMP (Appendix C)	21	Table 6 Work will not occur within 100 m from the top of a valley break (including coulees) (AEP 2017b). • Avoid dry native prairie slopes land cover classifications and coulee land cover classifications **where possible.**	Inconsistent statements in regards to valley breaks. Some state they will abide by the 100 m setbacks. Other say the project will abide by the 100 m setback where possible. It is unclear to AEP if the setback is being me. Note all setbacks have been miss measured (refer to 91). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
123	Setbacks	EMP (Appendix C)	21	Table 6 Minimize Project footprint	Will setbacks for wildlife setbacks as part of this boundary marking? The proponent has not clearly identified how wildlife setbacks or avoidance areas will be identified to employees or contractors on site. If these sites are not adequately identified the proponent cannot ensure adherence to mitigation (where mitigation is identified).This is unacceptable and does not allow AEP to conduct a risk assessment.

124	Wetlands	EMP (Appendix C)	22	Locate the collector line will be located within or immediately adjacent to the existing disturbance in the right-of-way for Road 291. • Should it not be possible to construct the collector line in this area, complete a Wetland Impact Assessment Form, along with a mitigation plan to submit with an Application for a Licence under the Water Act.	What about wildlife impacts? These are not addressed by current mitigation. In other sections of the plan there are identified areas where collection lines will infringe on setbacks (and likely more , refer to row 91). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
125	Non-commitment to requirements - collection lines	EMP (Appendix C)	22	Construct underground collector lines by ploughing versus trenching to the **extent practicable.** Ploughing will be used whenever soil and topography is suitable. When ploughing is not practicable the collector line will be installed via trenching, with attention to soil and vegetation handling.	Collection Lines: Where will it not be practical to plough in lines? As all collection line locations have been selected this should be known at this time. Firm commitments are needed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

126	Wetlands	EMP (Appendix C)	23	Delineate wetlands and watercourses: • Delineate wetlands and watercourses on Project maps prior to construction. • Flag wetland boundaries and the high-water mark of watercourses intersected by the Project footprint in the field to prevent encroachment. • Orient collector lines and roads to cross perpendicular to the watercourse as much as possible.	What about wetland wildlife setbacks will these be marked and avoided or not? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
127	Mitigation-Wildlife Monitor	EMP (Appendix C)	24	Table 6 Wildlife monitor	Wildlife Monitor: What defines a need for a stop work order for each of these? This needs to be included in this plan. What about grassland birds and the ferruginous hawk nest. No mention of these. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

128	Ferruginous Hawk nest	EMP (Appendix C)	25	Table 6 FEHA nest setbacks and timing restrictions	Earlier in the plan its says that a collection line and road will be within 640 m of the nest. This exception is not mentioned here and there is no alternatives identified. Note ploughed in collection lines can be considered low impact if done outside the breeding season. All other infrastructure is considered high impact. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
129	Sharp-tailed grouse Leks	EMP (Appendix C)	25	Table 6 STGR leks setbacks and timing restrictions **If not possible** to meet the setback, have an Experienced Wildlife Biologist in place (see 9M-2).	Will setbacks be adhere to or not? Use of the term "if not possible". AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
130	Prairie Falcon	EMP (Appendix C)	25	Table 6 PRFA nest setbacks and timing restrictions	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

131	Non-commitment to requirements - collection lines	EMP (Appendix C)	25	Table 6 Site and design Project infrastructure to reduce risk of wildlife mortality: "Implement the following measures if above ground collector lines must be used"	Are collection lines underground or not? Where are above ground collection lines? Are these within any wildlife setbacks? Will they cross valley breaks? Where would spacers not be possible? What is actually being committed to here and where? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
132	Non-commitment to requirements - valley breaks	EMP (Appendix C)	25	Minimize infrastructure footprint if it **is not feasib**le to avoid the feature.	Use of the term "if not feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? What are the alternatives and justification. Firm commitments are needed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

133	Reclamation	EMP (Appendix C)	27	strategy contains a series of pre-construction and construction period actions to gather information, mitigate or avoid effects, and reclaim grasslands. During detailed Project design and based on (I) the outcome of regulatory approvals, (ii) the results of soil and vegetation surveys and, (iii) Project extent, design and staging, the most relevant and effective of the actions will be used to develop a detailed Reclamation Plan that will be appended to the EMP.	How will wildlife impacts be managed, setbacks, timing restrictions other? Do the commitments outlined in this EMP extend to the reclamation period as well. The proponent has not provided details to how wildlife risk will be assessed and mitigated through the reclamation process.
134	Appendix A	EMP (Appendix C)	29	Not included	This section is missing. The proponent did not include this section of the plan and therefore AEP cannot review it.
135	Grassland Birds	EMP (Appendix C)	Appendix B 1	Schedule Table B-1 Refer to Section 3.0 for wildlife timing restrictions.	Where are the grassland bird timing restrictions? How are these addressed? As the project is preferentially sited on native grassland the risks to grassland birds must be addressed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

136	setbacks	EMP (Appendix C)	Appendix B 1	Ensure that all environmental features (wetlands, archaeological, paleontological and historic sites, or other environmental features identified during surveys) are clearly marked using PURPLE paint and flagging. Ensure there is appropriate mitigation in place (e.g., fenced, flagged and staked).	Are setbacks flagged or not? The proponent has not identified if wildlife setbacks or avoidance areas will be clearly marked. Therefore it is not clear how these sites will be identified to employees or contractors. AEP is concerned that mitigations identified will not be implemented.
137	Non-commitment to requirements - wetlands	EMP (Appendix C)	Appendix B 1	Do not place or remove existing fences in wetlands. If it is **absolutely necessary** for a fence to be installed or removed through a wetland,	There should be no exception. This should not be allowed. There is a process for new issues to be dealt with, in consultation with AEP which could be used in this case. Firm commitments are needed at this level of detail. The proponent has not identified this process in the plan nor made any commitment or identification of alternative processes.
138	Mitigation-access roads speed limits	EMP (Appendix C)	Appendix B 3	Speed limits on new access roads will be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions **as necessary** to ensure safe and efficient traffic flow as well as to protect workers on foot and wildlife.	use of non-committed words "as necessary" what does this mean. When will speed limits be applied as mitigation for wildlife? And what will the speed limits be? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

139	wetlands	EMP (Appendix C)	Appendix B 5	Equipment shall not be left parked within 30 m of wetlands and watercourses.	The setback is 100 m not 30m, refer to line 91 for how to measure setbacks. . The proponent has not identified this as alternative mitigation. The proponent has not previously discussed this issue with AEP. Where is this setback infringed upon? This proposal significantly reduces the required setback on native grassland with no alternative mitigations identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
140	Sharp-tailed grouse Leks	EMP (Appendix C)	appendix B 8	Follow the requirements of AUC Rule 12 Noise Control: • Conduct construction activities from 7 am to 10 pm. • Ensure notifications to landowners regarding significant noise activities (e.g., pile driving) and schedule have been completed, as required	Earlier in the plan it explicitly states that no work will be allowed between a half hour before sunrise and 8:30 during the STGR lekking period (Mar 15th - Jun 15th). This differ from the statements made here (in consistent statements).
141	Watercourse crossings	EMP (Appendix C)	appendix B 8		Watercourse crossings: must meet with AEP policy and regulations please refer to the right group within AEP. A wildlife review does not replace the need to complete this with the appropriate authority within AEP.

142	Operation-Wildlife	EMP (Appendix C)	appendix C 1	Prior to commencing scheduled servicing of each turbine, a 360° sweep of the turbine gravel pad, up to 10 to 15 m from the turbine base, should be conducted to look for any dead or injured wildlife. All fatalities should be photographed, left as found, and reported to the Owner.	Need to commit to reporting any and all species of management concern to AEP in a timely manner. All data should be submitted to FWMIS annually (no matter species status).
143	Operation-Wildlife	EMP (Appendix C)	appendix C 1	If work is scheduled to occur within close proximity to any environmental feature, work should be postponed until EHS staff has determined if avoidance or mitigation is necessary.	There is no commitment to abide by setbacks or timing restrictions for wildlife during operations. Maintenance work should be scheduled around these timing restrictions and setbacks. There is no commitment to do this. Due to the siting of the proposed project in an around key features for wildlife, the operation plan must include mitigations to limit impacts on wildlife. The proponent has not identified any mitigations. This is unacceptable and does not allow AEP to conduct a risk assessment.
144	PCMP	EMP (Appendix C)	appendix C 1	A final Post-Construction Monitoring and Mitigation Plan will be developed in accordance with AEP Wildlife Directives Stage 4, and in consultation with AEP; a detailed report of post-construction monitoring will be provided to AEP annually.	Will be developed or has been developed?
145	Wildlife contingency Construction plans	EMP (Appendix C)	appendix D		Wildlife surveys: What happens if updated surveys identify a feature of concern. What alternative mitigation will be applied? This is not identified currently in this table.

146	Grassland Birds	EMP (Appendix C)	Appendix E 1	Timing: although it is preferable to complete surveys during the early morning hours, nest surveys can be conducted throughout the day provided that light conditions permit the location of nests.	Alternatives are identified but it is unclear where they will be applied. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
147	Survey techniques grassland birds	EMP (Appendix C)	Appendix E 1	Table E-1 E10-E13	This is a poor survey method that will not identify the location of grassland bird nests. But aside from that there has been no formal request to not adhere to the grassland bird timing restriction, whereby no activity would occur on native grasslands between April 1st-July 15th. Therefore why are these surveys being conducted, is this an alternative mitigation? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

148	Grassland Birds	EMP (Appendix C)	Appendix E 1	Breeding bird construction timing restrictions: April 1 to July 15 (AEP 2017). Nesting duration is variable and species, habitat, and weather conditions play a role in the duration of nesting. Should pre-construction breeding bird nest surveys identify no nesting birds, AEP will be consulted to discuss if construction may proceed prior to July 15.	Will surveys follow methods outlined in the Sensitive Species Survey protocols? Is work planned within the restricted timing period? Currently this is not clear.
149	Setbacks	EMP (Appendix C)	Appendix E 1	Surveys should be conducted within the clearing limits and up to 30 m beyond the limits.	The minimum setback is 100 m for most wildlife species, unless a higher level setback is identified (FEHA, STGR, PRFA). Why does the plan identify a search area of 30 m? This does not meet with AEP policy. What is the rational for this? Currently there is no reason for this reduction in setbacks. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.

150	Pre-construction amphibians	EMP (Appendix C)	Appendix E 1	If Class III, IV or V wetlands or their buffers (100 m) will be impacted, preconstruction surveys for sensitive amphibians will be conducted prior to construction.	Wetland Amph surveys; What happens if the conditions for amphibians do not exist that year. What is the process for mitigating impacts at the site assuming amphibians are there? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
151	Mitigation-Bat roosts	EMP (Appendix C)	Appendix E 2	If a bat roost is found during pre-construction wildlife clearance surveys, AEP will be contacted to discuss appropriate mitigation.	The proponent has identified very strict protocols for wildlife issues such as a coyote den (stop work and wait for site to vacate). However this is not done for high risk issues such as if a bat roost is found. The discovery of a bat roost would be very important especially as it will impact mortality rates for the project. Due to the risk of bat mortality identified for the project area AEP would recommend that no work proceed until a plan has been approved by AEP. Current commitments in regards to bat roosts are non-committal and non-descriptive. No details are provided by the proponent.

152	Grassland Birds	EMP (Appendix C)	Appendix E 2	E14-E17	This table does not identified a minimum setback for nests. This is 100m. The table states that the size and shape of the buffer will be variable. Again it must be at least 100m. There is commitment to adhere to AEP's Sensitive Species Inventory Guidelines for surveys. This table does not identify the time periods between nest searches. Nests can be established throughout the breeding season therefore this must be identified. There is no reference to this mitigation within either the EMP or Environment Eval plan. The company has not provided a commitment to mitigate for grassland birds or provided details for how this will work
153	Setbacks	EMP (Appendix C)	Appendix E 3	Recommended setbacks are provided in the following table for select species (AEP 2017):	miss use of terms. Recommended vs. Required. It is required.
154	Wildlife Monitor	EMP (Appendix C)	Appendix E 3	The Wildlife Monitor will determine and may modify setbacks based on the following: • Species biology and sensitivity to disturbance. • Existing disturbance and land use in the vicinity of the nest, as some nesters prefer disturbance to avoid predators, proximity to feed (exposed soils), etc. • Topography and other visual screens, as some nests may be “shielded” by hills, vegetation, infrastructure, etc. • The type of construction activity being conducted in the area.	This is not the job of the wildlife monitor. Setbacks can only be altered if AEP agrees to it. This identifies a potential greater issue. As the company is assuming that their monitor can change all setbacks at their discretion they are in fact not fully committed to the setbacks they state they are adhering to. It can be assumed that they are in fact not meeting any setbacks and that all commitments may be thrown out at the time of construction. This is unacceptable and gross miss use of this form of alternative mitigation (wildlife monitor).

155	Wildlife Monitor	EMP (Appendix C)	Appendix E 3	Construction activities may be permitted to occur within a setback under the direction and supervision of the Wildlife Monitor who will observe nesting bird behaviour during construction. Should observed behaviour indicate stress caused by construction disturbance, work in the area must stop and the Environmental Monitor must be contacted immediately.	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. As the company is assuming that their monitor can change all setbacks at their discretion they are in fact not fully committed to the setbacks they state they are adhering to. It can be assumed that they are in fact not meeting any setbacks and that all commitments may be thrown out at the time of construction. This is unacceptable and does not allow AEP to conduct a risk assessment.
156	Reclamation	Reclamation	Appendix D		It is not clear if the reclamation strategy will adhere to all wildlife mitigations including but not limited to setbacks, and timing restrictions. This is unacceptable and does not allow AEP to conduct a risk assessment.
157	Pre-construction bats	STGR Lek and Bats tetra tech Appendix F2	Appendix F2 1	Due to damage caused by cows and battery failure during the spring monitoring event, detectors at BAT2 and MET survey stations had reduced operational nights.	As this malfunction occurred at significant number of nights and included the 30 m acoustic monitoring station, all bat data is considered to be an underestimate.

158	Pre-construction amphibians	Appendix F Windy Point Wind Park 2015 Wildlife surveys	Appendix F 11	a It should be noted that amphibian call surveys were not completed as part of the assessment, and all amphibian locations were picked up incidentally. In addition, amphibian locations indicated on the map do not necessarily indicate the exact location of a breeding pond, as all amphibians heard calling within 200 m of a survey locations were noted.	No amphibian surveys were conducted and therefore there can not be any infringement of setbacks without alternative mitigation being identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.
159	Pre-construction bird migration	Appendix F3	Appendix F3 6	Note: Based on turbines with a hub height of 90 m, and rotor diameter of 130 m, for a total height of 155 m.	This does not match the tower height and RSA selected for the project.
160	Pre-construction bird migration	Appendix F5	Appendix F5 9	Note: Based on turbines with a hub height of 90 m, and rotor diameter of 130 m, for a total height of 155 m.	This does not match the tower height and RSA selected for the project.
161	PCMP-Start Date	Appendix G PCMP	Appendix G 8	Bird and bat mortality monitoring (Directive Standard 100.4.3a) will be directed by experienced wildlife biologists, as defined by the Directive (Standard 100.4.6), during the first three years of Project operation (Directive Standard 100.4.4e). Post-construction wildlife monitoring for the Project will begin in the first spring season after the initiation of commercial operation.	This is not acceptable and does not meet with the requirements outlined in the Directive. PCM monitoring is to start at the same time of commissioning. The high risk of mortality in the fall is a key issue for this proposed wind farm. The current plan allows for the wind farm to cause significant mortality that will not be accounted for.

162	PCMP- Experienced Biologist	Appendix G PCMP	Appendix G 12	Search crews will be directed by an experienced wildlife biologist. Search personnel will be provided with on-the-job training in the various tasks associated with the mortality plot searches including consistent search pacing, GPS and compass use, mortality documentation, and safe work practices. Search dogs may be used if available. Search personnel will be trained to conduct searcher efficiency trials on fellow search personnel. Because the targets are carcasses, search personnel are not required to identify target species by sight or sound and have a knowledge of species biology (as per 100.4.6), but searchers will be directed by a trained and experienced biologist with such knowledge and survey protocol knowledge.	AEP expects that the work will be conducted by experienced biologists as identified in the Directive. The proponent has not committed to this. This is inconsistent with the AEP Directive and unacceptable.
163	PCMP- Report submission	Appendix G PCMP	Appendix G 14	The annual post-construction monitoring report will be submitted for review no later than March 1 of each year (Directive Standard 100.4.8).	AEP is concerned on the expected submission date of the PCMP report. What if mortality is high in the spring, how will the company ensure that mitigation plans can be developed and implemented in time
164	PCMP- Bat Thresholds.	Appendix G PCMP	Appendix G 15	If post-construction monitoring (as above) demonstrates that corrected migratory bat fatalities are between four and eight migratory bats	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.

165	PCMP-Mitigation	Appendix G PCMP	Appendix G 15- 16	Curtailment options and mitigation	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.
166	PCMP-Interim Curtailment	Appendix G PCMP	Appendix G 16	Year 1	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.
167	PCMP-Mitigation	Appendix G PCMP	Appendix G 16	Duration of curtailment, initially August 1 - September 10, increasing to July 1 – September 10 should more mitigation be required to reduce the effects below the threshold of eight bats per turbine per year.	AEP recommends removing dates and wait and see what monitoring finds. The migration plan will have to be based on the results of monitoring. AEP just needs to know that the company is aware that mitigation may be required and what options are available implement the software and technical components of the turbines/software. The proponent is trying to control mitigation without accounting for the results of the post construction monitoring surveys.

168	PCMP-Interim Curtailment	Appendix G PCMP	Appendix G 16-17	Year2	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.
169	PCMP-Interim Curtailment	Appendix G PCMP	Appendix G 17	Year 3	It is AEP expectation that mortality will be less than 4 bats/turbine/year. This entire section is a misinterpretation of the Bat Risk Framework. All options must strive to reduce mortality below 4 bats/turbine/year. Any monitoring year where greater than 4 bats/turbine/year are identified will results in mitigation being required.
170	PCMP-monitor effects on SAR	Appendix G PCMP	Appendix G 2	Table 1-1 Monitor effects of the wind energy project on species at risk, sensitive species, or other wildlife.	AEP expects that the 4 STGR leks, PRFA and FEHA nests will be monitored annually for the 3 years of the PCMP. Additionally AEP recommends that the pre-construction grassland bird breeding surveys and bat acoustic surveys be repeated. The proponent has not identified these surveys.
171	PCMP-Experienced Biologist	Appendix G PCMP	Appendix G 3	Post-construction surveys will be overseen by experienced biologists as follows:	Experienced Biologists: It states here "will be directed by wildlife biologist" however it is not clear whether everyone working on the PCMP will be a biologist. It is AEP's expectation that the work will be conducted by experience biologist(s). This work cannot be completed by non-biologists and this current plan allows the proponent to hire inexperienced, untrained and under educated people. This will have a direct impact on the success of the post-construction monitoring, assessment of mortality risk and determination of mitigation needs.

172	PCMP-Raptor nests	Appendix G PCMP	Appendix G 6	A subset of the pre-construction baseline wildlife surveys will be conducted, which will provide data for comparison between pre- and post-construction wildlife surveys. The repeated pre-construction wildlife surveys will be: • Breeding bird surveys; • Raptor nest surveys; and • Sharp-tailed grouse surveys	AEP recommends adding raptor productivity surveys to the raptor nest surveys.
173	PCMP-Grassland Bird surveys	Appendix G PCMP	Appendix G 7	Post-construction Breeding bird surveys (BBS) will follow the same protocol used for pre-construction surveys. BBS will be conducted using the protocol described in the Sensitive Species Inventory Guidelines (AESRD 2013) and survey windows consistent with the Wildlife Guidelines for Wind Energy Projects (ASRD 2011). During year one and year three of post-construction monitoring, two rounds of BBS will be conducted: one during the window for early species (e.g., May 1 to June 15) (ASRD 2011) and one during the window for late species (e.g., June 16 to July 15) (ASRD 2011).	Why are no surveys planned in Year 2? The proponent has not provided rational or justification for not conducting these important post construction surveys on a project preferentially sited on native grassland.
174	PCMP-Initiation of PCMP	Appendix G PCMP	Appendix G 8	100.4.4e). Post-construction wildlife monitoring for the Project will begin in the first spring season after the initiation of commercial operation.	This is not acceptable. Past studies have created alternative monitoring plans for the partial years . As mortality is expected to be high at this site there must be some commitments on this. A few alternatives partial or subsample monitoring for year 1 followed by 3 years of full monitoring, or delay in commissioning until after October 15th. The current plan is not acceptable.

175	PCMP- Bat acoustic monitoring	Appendix G PCMP			AEP recommends that bat acoustic monitoring is undertaken for all high risk projects. This data will be used primarily if mitigation is required to determine if mortality rates have been lowered due to the mitigation or because bats are no longer using the area.

Appendix A-5: Response to the AEP Detailed Review with Revised Mitigation Measures (and associated tables and figures)

A-5: Response to the AEP Detailed Review with Revised Mitigation Measures

Prepared for:
Windy Point Wind Park Ltd.

Prepared by:
Hemmera Envirochem Inc.
18th Floor, 4730 Kingsway
Burnaby, BC V5H 0C6

File: 1591-006.02
March 1, 2018

Hemmera
An Ausenco Company

Response to the AEP Detailed Review of Windy Point Wind Park September 28th 2017 Submission

RESPONSE TO THE AEP DETAILED REVIEWOF WINDY POINT WIND PARK SEPTEMBER 28, 2017 SUBMISSION

Acronyms:

Acronym	Definition
AEP	Alberta Environment and Parks
AUC	Alberta Utilities Commission
BMP	Best Management Practice
EE	Windy Point Wind Park Environmental Evaluation, September 2017
EMP	Environmental Management Plan, appended to the EE.
EWB	Experienced Wildlife Biologist
FWMIS	Fisheries and Wildlife Management Information System
FEHA	Ferruginous hawk
PCMP	Post Construction Monitoring Plan
PRFA	Prairie falcon
SWHA	Swainson's hawk
STGR	Sharp-tailed grouse

Responses to Alberta Environment and Parks Appendix A comments on September 2017 Windy Point Energy Project. Please refer to the AEP November 30th, 2017 Letter to the AUC for summary of this review.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
1	General	Environmental Eval	4	The assessed Project layout in this document has reduced the Project operation footprint (turbines, roads and substation) from approximately 18 ha for the original project (Stantec 2010) to 7 ha.	Why is the 2010 stuff being referenced here? The purpose of this submission is to address the issues identified in the November 2016 AEP Referral Report. The 2016 project identified 13 turbines and there associated infrastructure on native grassland. This plan identifies 14 turbines, 9 of which are on native grassland (and associated infrastructure). What is the footprint difference between the 2016 and the 2017 submission ? What is the difference in area of native grassland impacted. Currently this is not clear.	The Windy Point Environmental Assessment ("EE") relied on information presented in the 2010 reporting, as well as additional information collected subsequently. A comparison of the 2016 and 2017 Project layouts is provided in appended Table 1 Comparison of Project Infrastructure (note Table 1 also includes a comparison of the 2011 layout and the updated and final layout submitted with the amendment application to AUC (the "2018 layout")). The 2017 layout focused on moving all turbines (including their rotor swept areas) out of the setbacks to sharp-tailed grouse leks, the prairie falcon nest, and the ferruginous hawk nest. Noise constraints, setbacks to municipal rights of way, and historical resources were then included. The turbines were therefore sited to accommodate multiple constraints, and the associated infrastructure has been routed to reach each turbine with the minimal possible distance while respecting constraints. While the 2016 layout had 13 turbines in native grassland, 8 turbines in the lek setbacks, and 2 turbines in the prairie falcon setback, the 2017 layout has reduced the number of turbines in grassland to 8, and has no turbines in the lek and prairie falcon setbacks. The 2018 layout further refined the collector line and road alignments. For the purposes of this Appendix A document only the 2011, 2016, and 2017 layouts will be referenced. An analysis of the footprint differences between the 2011, 2016, 2017 and 2018 layouts is provided in the appended Table 2 Project Land Cover Comparisons 2011, 2016, 2017, 2018. The Proponent recognizes that the Project is in the Foothills Fescue Natural subregion, an area of native grassland; however, professional Project biologists have further categorized the land cover types in the Project area at a more detailed level and these classifications are used for the analyses. There are currently 8 turbines within the native grassland land cover; 3 turbines within the improved pasture (see line 30 for definition); 2 turbines within cultivated field; and 1 turbine within a residence/farmyard land classification. The native grassland footprint of the Project has been substantially reduced since 2011. The construction footprint within native grassland is reduced from 53.2 ha in 2011, to 49.3 ha in 2016 and 25.0 ha in 2017. The operation footprint is reduced from 7.2 ha in 2011, to 5.9 ha in 2016, and 4.1 ha in 2017. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation.
2	Turbine size and wildlife surveys	Environmental Eval	4	The setbacks are based on a turbine that is 105 m at hub height, with 68 m blades, for a total tower height of 173 m (see discussion of turbine in Section 1.1.2.)	The turbines description (height, RSA etc.) does not equate for the areas surveyed for in the fall and spring migration surveys. Please refer to page 345 and page 376 of the pdf provided . Based on the information is provides an inconclusive assessment of risk for bird mortality. In order for AEP to assess the risk the results of the fall and spring migration surveys based on the new turbine size and RSA.	The new turbine size characteristics are: • Hub height: 105 m • Rotor diameter: 136 m • Blade length: 68 m • Therefore the rotor swept height is 37 m to 173 m. McCallum Environmental has re-evaluated their analysis of bird mortality risk based on the new turbine size in the attached memo. The EE characterized the magnitude of the residual effect of change in mortality risk as a medium magnitude effect for birds due to potential turbine collision mortality during the Operations phase of the Project. The information provided in the McCallum Environmental memo did not alter the residual effect characterization.
3	Setbacks	Environmental Eval	5	See Table 1.1-1	Table 1.1-1 indicates that all setbacks will be adhered to. However it is identified that setbacks were measured from the center of the disturbance to the center of the wildlife feature. (refer to #91 of this excel table). This is inconsistent with the AEP Guidelines or the AEP Directive. Setbacks must be measured from the nearest edge of the disturbance to the nearest edge of the wildlife feature. For turbines, setbacks are measured from the closest edge of the rotor swept area to the closest edge of the wildlife feature. Therefore all setbacks are measured wrong. AEP identified the following Turbine sites with potentially infringed upon setbacks VS8, 9, 10, 12, 11, 14 and associated infrastructure.	Wildlife feature setbacks were correctly calculated as were the distances from Project infrastructure. The method used to determine setback distances is as follows: Wildlife features were collected as UTM locations. Setbacks as per the Directive were applied to each feature. Where infrastructure intersections with the wildlife feature setbacks were identified, the distance between the edge of the infrastructure and the edge of wildlife feature were measured. For turbines, blade tip length was calculated from the centrepoint of the turbine. If the bladetip intersected a wildlife feature setback, the closest distance to the edge of the wildlife feature from the edge of the bladetip was provided. Please see the appended Table 3 Wildlife Feature Setback Analysis, which references the closest distances of infrastructure to the wildlife features. Also see the appended, updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the rotor swept area.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
4	Collector Line	Environmental Eval	8	The collector system layout may be adjusted in final design to ensure avoidance of archaeological, environmental, and topographic features.	How will this impact the various wildlife features identified within the project? After reviewing the rest of the plan it is clear that no commitments have been made to adhere to standard mitigation or implement alternative mitigation. Statements like this one allow the proponent to change plans, project layout, or construction methods without accounting for wildlife or wildlife habitat issues. There is no commitment identified to work with AEP to identify and implement alternative mitigation if wildlife mitigation is impacted by these potential changes. This is required by the 2011 Guidelines and the 2017 Directives.	The Proponent confirms that the commitments summarized in the EE Table 10-1 Summary of Project Mitigation Measures, have been revised based on responses in this table, and will be adhered to. An updated Table 10-1 Summary of Project Mitigation Measures is appended. The Proponent does not intend to change plans, Project layout, or construction methods without accounting for wildlife or wildlife habitat issues and has amended all non-committal language accordingly. Furthermore, the Proponent commits to working with AEP to identify and implement alternative mitigations as necessary throughout the life of the Project. Proposed changes to the Project layout or methods would be determined through final input and design from the Project engineers based on detailed geotechnical analyses and site-specific ground truthing. If these types of changes are proposed they will be provided to AEP along with a rationale, for AEP's review and guidance. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation.
5	Non- commitment to requirements	Environmental Eval	8	The Project will require approximately 10 km of access roads that will be approximately 20 m wide during construction and 6 m wide during operation. **Where practical**, routing of the access roads will consider minimizing disturbance to landowners' agricultural practices and interfacing with existing roads,	Use of the term "where practical" . As all infrastructure has been identify all infrastructure that does not conform with the requirement must be identified with alternative mitigation for that specific site.	Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended to this document.
6	Non- commitment to requirements	Environmental Eval	8	Approximately 13 km of cable for each of the two circuits will be installed by direct ploughing **to the extent possible**, or trench excavation, using sand bedding for protection against mechanical damage. **Where possible** and/or practical routing of the cables will follow construction roads and avoid existing infrastructure	Use of the terms "to the extent possible" or " where possible" . AEP expects that all collection lines be placed underground through minimal disturbance techniques, such as ploughing in the line. If site specific conditions prevent this, they must be clearly identified and alternative construction methods and alternative mitigation must be identified. The proponent has not identified clear mitigation plans or provided firm commitments to the limited mitigations identified. Location of alternative mitigations are not provided and no justification/rational is provided. It is not clear to AEP if all collection lines will be installed underground using standard minimal disturbance techniques.	The Proponent confirms that all collector lines will be underground. We anticipate that depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, we will advise AEP of these specific locations and discuss alternative methods such as trench excavation. The collector crossing adjacent to one wetland (Class III) and collector crossings at two watercourses will be completed via trench excavation (see **5-M1, 5-M2**, **5-M3** and **5-M7** in the Summary of Project Mitigation table**)**. Also see the appended, updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the watercourse crossings.
7	Laydown yards	Environmental Eval	9	Temporary laydown yards and work spaces will be constructed on previously disturbed land within the Project area, to provide secure locations for managing and storing materials, tools, and equipment during construction, to mobilize machinery, and to accommodate the contractor site offices. The temporary laydown and storage spaces will be a maximum of 6 ha in size and may be split in to two or more areas.	The Project area and Land Cover Types suggest that there are laydown yards within the native grassland areas. It is not clear if all laydown yards are not within grassland habitat or outside any wildlife feature and associated setbacks. Additionally the proponent has not clearly identified alternative mitigation where this requirement is not met.	The two laydown yards are not located in native pasture or within wildlife setbacks; they are located in the existing farmyard (decommissioned residence/farmyard land cover), and adjacent to Road 291 (improved pasture land cover, see line 30 for definition) (See revised EE Figure 9-2, appended). Additional clarity on mitigation for the existing access within the ferruginous hawk setback, to the farmyard, has been provided in measure 9M-4 of the revised EE Table 10-1 Summary of Project Mitigation, appended to this document.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
8	Prairie Falcon	Environmental Eval	9	Figure Project Area and Land Cover, and If a temporary, on-site, concrete batch plant is necessary it will be located within the 6 ha of temporary laydown/workspace.	It appears as if the Batch Plant is planned adjacent to the prairie falcon setback. Based on the miss-measurement identified in line 91 it is expected that this batch plant will infringe upon the setback. Additionally due to the extreme high level of disturbance associated with this activity AEP recommends that the setback be increased to prevent further impacts to the prairie falcon nest. This site also appears to be native grassland and no mitigation has been identified to limit or prevent impacts on wildlife or wildlife habitat within this area including but not limited to the prairie falcon nest.	If a batch plant is required, it will be located in the laydown area adjacent to Road 191, not adjacent to the prairie falcon setback. The need for a batch plant will be determined by the construction contractor at the time of construction and will be dependent upon local availability of aggregate.
9	Setbacks: Temporary work space	Environmental Eval	9	equipment. Each turbine work area will consist of a crane pad and laydown area and will be approximately 1 ha in size. A temporary workspace will also be required at the substation for temporary equipment and materials storage. The substation temporary workspace will occupy approximately 1 ha.	Has temporary work space been included in setbacks from wildlife features (STGR leks, PRFA nest, FEHA nests, raptor nests, and wetlands)? Currently temp work spaces around each turbine are not clearly identified and commitments to adhere to standard setbacks for these areas are not clear. In addition there is the general issue in relation to setback measurement (refer to number 91). It is not clear if setbacks are adhered to and not clear alternative mitigation has been identified. AEP requires that setbacks be measured from the nearest edge of the temp work space to the edge of the wildlife feature.	The Proponent confirms that the area of turbine locations shown on the map incorporate the 100 m by 100 m temporary work spaces. The temporary work areas for turbine construction will avoid the setbacks for the noted wildlife features. There are no turbines, including their workspaces, within the setback areas for the STGR leks, PRFA nest, FEHA nest, and wetlands. An updated EE Figure 9-2 is appended illustrating the turbine work areas.
10	Siting	Environmental Eval	9	As per the AEP (2017a) Wildlife Directive – Standard 100.1.1, the Proponent will locate temporary workspaces to avoid or minimize their occurrence in important wildlife habitats, by primarily siting them within previously disturbed areas (e.g., cultivated fields).	What does this mean, as 9 of the 14 turbines and associated infrastructure are within native grasslands? Temp workspace will be sited in native grassland areas and/or within species specific setbacks. How have impacts from wildlife and wildlife habitat been addressed (standard mitigation or alternative mitigation)? This plan does not provide the details necessary for AEP to conduct our review.	The quoted text from the EE is referring to the two laydown areas, one of which is sited in the existing farmyard development (house to be decommissioned) and the other is sited in improved pasture. The Proponent recognizes that temporary workspace for turbine construction for eight of the turbines will be located in native grassland, and confirms that all temporary workspace will be reclaimed following completion of construction. Mitigation measures are presented in Section 3.0 Landcover and Land Use, and Section 9.0 Wildlife and Wildlife Habitat, and in the appended EE Table 10-1 Summary of Project Mitigation.
11	Construction: Delivery of equipment	Environmental Eval	10	Equipment will be delivered by truck and trailer as needed throughout the construction phase, and will be stored as necessary at a temporary storage facility at the site, as well as directly on each of the 14 wind turbine pads.	How will deliveries be coordinated with wildlife timing restrictions and setbacks? This is not clear based on schedule provided in Table 1.2-1 and 1.2-2.	Deliveries to turbine site V-12 will respect the STGR timing restriction and occur outside of the restricted activity period. Deliveries to the substation site will respect the PRFA timing restriction and occur outside of the nesting season. Deliveries to the southern laydown will occur year-round, with access through a portion of the setback for the FEHA nest during the wildlife timing restricted activity period. This access is wholly on existing roads (Range Road 291 and an existing access spur to the farmyard/decommissioned residence and is greater than 680 m from the FEHA nest. In addition, use of existing roads and the farmyard decreases disturbance to presently undisturbed land cover. The Proponent has committed to having an EWB on-site during the FEHA nesting season and will monitor for changes in behavior due to delivery activity. The EWB will have stop work authority if changes in behavior are observed (see 9-M3). See appended EE Table 10-1 Summary of Project Mitigation for mitigation measures for wildlife restricted activity periods.
12	Construction: Interim reclamation	Environmental Eval	10	Reclamation of the turbine base and vehicle turn- around area will reduce the turbine sites to an operationally maintained area of approximately 0.10 ha, to include the tower base and adjacent crane pad/workspace (final configuration to be determined in final design).	Will reclamation activities abide by all standard wildlife mitigation (setbacks, timing restrictions)? This is not adequately addressed in the plan.	The Proponent confirms that the reclamation activities will abide by the mitigation measures in the revised appended Table 10-1 Summary of Project Mitigation.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
13	Setbacks	Environmental Eval	10	Prior to construction, the boundaries of the construction areas, including wind turbine sites, substation site, access roads and collector system, and temporary workspaces will be surveyed and staked. All existing buried infrastructure (e.g., pipelines and cables) will be located and marked using the Alberta One-Call system.	Will setbacks be clearly marked or not? How will wildlife sites be identified so that employees/contractors adhere to the required mitigation? Marking is identified in parts of the plan (Appendix C) and not in others. Details are not clear and therefore it is unknown if wildlife features will be marked or not or how workers/contractors will be able to identify and follow identified mitigation.	The boundaries of the Project footprint will be flagged or staked. Environmental features (wetlands, archaeological, paleontological and historic sites, or other environmental features) will be identified and will be clearly marked using flagging. For greater clarity, for those wildlife features with a setback (e.g. leks and nests) the setback will be marked, not the feature. All site staff will be given environmental training prior to starting work, which will include the location of all constraints, the rationale for the constraints, and consequences for not adhering to them.
14	Mitigation- Timing restrictions	Environmental Eval	10	Table 1.2-1	There is no reference to wildlife restricted timing periods except in a few specific instances (substation, laydown yards and PRFA, STGR leks and roads). AEP expects that all setbacks and timing windows will be adhere to unless there is a clear justification not to. In this case alternative mitigation needs to identified. Both the justification and the alternative mitigation must be submitted to AEP for review prior to the issuing of a AEP Referral Report.	Table 1.2-1 provides a description of construction activities that will be undertaken. Mitigation measures are identified in the Mitigation Measures section for each environmental component (i.e., Sections 3.5, 4.5, 5.5, 6.5, 7.5, 8.5, and 9.5) and summarized together in Section 10-1 Summary of Mitigation Measures. Restricted activity periods are included in the table. Mitigation measures have been added and revised to provide detail regarding specific wildlife feature setbacks and restricted activity periods, including proposed alternative mitigation measures. See Mitigation Measures 9M-2, 9M-4, 9M-5, 9M-6, 9M-7, and 9M-11 in the updated EE Table 10-1. Summary of Project Mitigation Measures.
15	Grassland Birds	Environmental Eval	10	Table 1.2-1	There is significant work planned within areas of native grasslands but no time periods for construction identified. There is no reference to mitigation such as abiding by grassland bird timing restrictions (April 1st-July 15th) or alternative mitigations for AEP to review. There is no reference to the EMP or other documents that might contain this information.	Table 1.2-1 provides a description of construction activities that will be undertaken. Mitigation measures are identified in the Mitigation Measures section for each environmental component rather than in this table (i.e., Sections 3.5, 4.5, 5.5, 6.5, 7.5, 8.5, and 9.5) and summarized together in Section 10-1 Summary of Mitigation Measures. Please see 9M-11 Grassland Bird Timing Considerations and Setbacks in the updated EE Table 10-1. Summary of Project Mitigation Measures.
16	Construction: Turbine timeline	Environmental Eval	11	Table 1.2-1 blades. The assembly of all 14 turbines is anticipated to take approximately two to three months.	If the assembly of all 14 turbines will take less than 3 months, why can't timing restrictions for wildlife be adhered to? The currently plan does not provide firm commitments for abiding by timing restrictions for grassland birds, Prairie falcon, ferruginous hawk, other raptors, and sharp-tailed grouse. AEP requires firm commitments within the EMP and associated plans. Currently clear commitments have not been included. Where they have been included there are follow up exceptions or non-committal terms such as "to the extent possible", "where practical" etc. This is unacceptable.	No construction activities will occur within nest or lek setbacks during the restricted activity periods as defined in the *Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat Within Grassland and Parkland Natural Regions of Alberta* (Government of Alberta 2011) (see mitigation 9-M4, 9-M5, and 9-M6 in the revised appended Summary of Mitigation). There are no turbines, including temporary workspace and rotor swept area, located within the setbacks to the PRFA nest, FEHA nest, or STGR leks. For those turbines that can be accessed without crossing or being within close proximity to an STGR, PRFA, or FEHA setback (V-01, V-02, V-03, V-04, V-05, V-06, V-07, and V-13) construction during the second season will occur year-round. For clarity, ground clearing will occur outside of the grassland bird nesting window in year 1, and f subsequent construction or decommissioning activities (including reclamation) in native grassland cannot be scheduled outside the grassland bird breeding season (April 1 to July 15), a pre-construction migratory bird nest search will be conducted by an Experienced Wildlife Biologist (EWB, as defined in the Directive) of the Project footprint plus up to a 100-m setback to identify potential wildlife features that could be impacted by construction activities (see mitigation 9-M11). An EWB will remain onsite to monitor for wildlife presence and disturbance while construction activities are taking place on native grassland during the grassland bird breeding period (see 9-M3). A portion of the Project is located within a Key Wildlife and Biodiversity Zone (KWBZ) that is south of Highway 1 and west of Highway 2 (see Figure 9-2) and, as such, construction activities within this zone are restricted from December 15 to April 30 (ESRD 2015) unless alternative mitigation is in place (see revised 9-M2). If construction activities extend beyond December 15, mitigation to protect overwintering ungulates has been proposed (see mitigation 9-M2). An EWB will be on site during construction to stop work if ungulates are within 200 m of construction activity, during adverse weather conditions (i.e., deep snow (20 cm or greater depth), at the discretion of an Experienced Wildlife Biologist when large groups of ungulates may congregate for shelter and/or grazing purposes.
17	Construction-Parking area	Environmental Eval	11	The primary construction parking areas will be at the temporary laydown yard. During operation parking will be at the substation	This forces all traffic and personal to move through the Prairie Falcon setback on a daily basis. There is no alternative mitigation identified. Due to setback miss-measurement, (refer to number 91 for details) the laydown yard may be within the prairie falcon setback. Currently this is not clear.	The temporary laydown yards are not within the prairie falcon setback (see appended EE Figure 9-2). Setbacks were correctly measured, refer to line 3 regarding setback measurement. See response to line 11 and mitigation 9-M3 for rationale and commitment to EWB.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
18	Non- commitment to requirements- collector lines	Environmental Eval	11	Where ploughing is not feasible due to soil characteristics the cables may be installed in a trench using a wheel-ditch or excavator.	Use of the term "is not feasible" . As all infrastructure has been identify all infrastructure that does not conform with the requirement must be identified with alternative mitigation for that specific site. The proponent has not provided adequate information for AEP to assess this risk.	Mitigation measures have been revised to avoid using this term, and the Proponent is committing to locate all collector lines underground.
19	Prairie Falcon Nest	Environmental Eval	11	Table 1.2-1Depending upon the local conditions at the time of construction, it is anticipated to take approximately six to twelve months to construct the substation.	This substation is within the Prairie Falcon Nest setback. This time line will not adhere to the prairie falcon nest timing restrictions. There is no clear alternative mitigation identified. This nest was impacted previously by a renewable development. This resulted in a compliance file and fines by the AUC. The setback and timing restrictions will not be reduced for the purpose of Windy Point. There is a lack of clear alternative mitigation or undefined mitigation (wildlife monitor/stop work orders). Therefore the development of the Substation is considered a High Risk activity.	The timeline for construction of the substation has been revised to align with the timing restriction for the prairie falcon nest, and the role of the EWB has been clarified in the revised measure 9M-3 and 9M-5. The EWB will have stop work authority and will monitor for presence of prairie falcon within the nest setback during construction and for any unnecessary encroachment into the nest setback. An updated EE Table 10-1 Summary of Project Mitigation Measures is appended. Proposed mitigation to minimize disturbance of the prairie falcon nest at this location are as follows (included in appended EE Table 10-1 Summary of Project Mitigation, 9-M5): Prairie falcon nest setbacks and timing restrictions: <u>General</u>: The substation will be outfitted with deterrents to limit bird use of infrastructure (e.g., greenjacket nest deterrents). Parking at the substation will be limited to the existing parking area at the existing Old Man 2 substation, The required setback (1,000 m) from the identified prairie falcon nest (Figure 9-2) will be flagged in the field prior to construction. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. The construction footprint for the substation and the collector line will be flagged prior to initiation of construction and encroachment into the nest setback beyond the flagged work area will not be permitted. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. Operations staff will be provided with Wildlife Awareness training, which will include, but not be limited to: how to identify wildlife including raptors, how to identify behaviours, and steps to take when wildlife is observed. At the time of Project decommissioning, nest activity will be assessed, and pending the results of the nest assessment, setbacks and timing restrictions will be discussed with the regulator <u>Construction – during the restricted activity period, March 15-July 15 (Government of Alberta 2011):</u> No construction or decommissioning activities, including reclamation, will occur within the prairie falcon nest setback during the restricted activity period, except for small vehicle access to the substation. Access along Highway 785 will not be restricted. Encroachment into the nest setback during the restricted activity period will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. Use of the substation area during the restricted activity period will be monitored by an EWB with stop work authority if prairie falcon are present and are showing signs of agitation above baseline levels. Construction – outside of the restricted activity period: Prior to initiating construction activities within the nest setback, the EWB will confirm the prairie falcon nest is no longer active for the season. Construction activities within the nest setback (outside of the restricted activity period) will be monitored by an EWB with stop work authority if prairie falcons are present and are showing signs of agitation above baseline levels. <u>Operation – during the restricted activity period, March 15-July 15:</u> No major substation maintenance will be scheduled during the PRFA restricted activity period. Regular (i.e., weekly) access to the substation will be limited to pick-up trucks and smaller vehicles, will be necessary throughout the year. In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to the substation within the nest setback during the restricted access period, the Proponent will have an EWB onsite with stop work authority if prairie falcons are present and are showing signs of agitation above baseline levels.

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20	Construction: Time table	Environmental Eval	12	Table 1.2-2	This does not provide details of timelines therefore it is not possible to determine if timelines meet with AEP recommendations or policy.	Table 1.2-2 provides the overall timeframe for the construction of the Project. Mitigation measures, which include the specific timing windows, are identified in the Mitigation Measures section for each environmental component (i.e., Sections 3.5, 4.5, 5.5, 6.5, 7.5, 8.5, and 9.5) and summarized together in Section 10-1 Summary of Mitigation Measures. An updated EE Table 10-1. Summary of Project Mitigation Measures is appended.
21	Operation: Timing	Environmental Eval	12	Preventative maintenance will be conducted regularly throughout the year. Maintenance is typically 30 to 40 hours per turbine per year, on a semi-regular and as-needed basis.	There is no reference to how wildlife timing restrictions or setbacks will influence regular maintenance of the facility. Due to the siting of the project and the number of key wildlife features identified this needs to be included in the plan. The plan is currently lacking.	Maintenance activities are included in the interactions table for the environmental components (i.e., Table X.4-1 in each section). The application of wildlife timing restrictions is specifically discussed in Section 9.0 Wildlife and Wildlife Habitat and mitigation is summarized in the appended in the updated EE Table 10-1. Summary of Project Mitigation Measures. The Proponent has committed to respecting the restricted activity periods associated with the STGR, PRFA, and FEHA setbacks for maintenance activities by scheduling major maintenance outside of these restrictions. During the restricted access period, access to turbine V-11 and V-12 and the substation will be limited to pick-up trucks and smaller vehicles. In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to the substation within the nest setback during the restricted activity period, the Proponent will discuss access options with AEP prior to initiating repairs. Maintenance work will be monitored by an EWB with stop work authority if STGR, PRFA, and FEHA are present and are showing signs of agitation above baseline levels.
22	Decommissioning	Environmental Eval	13	When decommissioning occurs, reclamation standards at the time of decommissioning will be followed, but are generally expected to require the creation of temporary workspaces, use of access roads, and the use of equipment similar to that used for Project construction, as described in Section 1.2.2	There is no reference to how wildlife timing restrictions or setbacks will influence decommissioning of the facility. It is AEP expectations that standard mitigation such as timing restrictions and setbacks will be adhered to. Additionally that pre-decommissioning wildlife surveys will be conducted to ensure that there are no wildlife related issues that need to be mitigated.	Decommissioning activities are included in the interactions table for the environmental components (i.e., Table X.4-1 in each section). The application of wildlife timing restrictions during reclamation are specifically discussed in Section 9.0 Wildlife and Wildlife Habitat. An updated EE Table 10-1. Summary of Project Mitigation Measures is appended. Decommissioning is one of the Project phases considered in this table. The Proponent has committed to completing pre-decommissioning wildlife surveys, and that timing restrictions and setbacks will be adhered to.
23	Regional Land Use Plans	Environmental Eval	14	The Project is within the boundaries of the approved South Saskatchewan Regional Plan (SSRP). SSRP objectives include that "opportunities for the responsible development of the region's renewable energy industry are maintained." (Government of Alberta 2017c p. 47).	please refer to the South Saskatchewan Regional Plan Page 68 Biodiversity and Ecosystem objective "Intact Grassland Habitat is sustained". The SSRP does not provide GOA support of the proposed project as the siting of the project does not support other important goals for the region (social, environmental and economic). Therefore the key term "responsible" is not adhered to.	The Proponent considers that the proposed Project has addressed concerns related to the disturbance of native grassland responsibly and has recognized that components of the Project are located in native grassland (see response to line 3) through the development of mitigation measures. The Proponent has developed a layout within the Project area that utilizes the non-grassland areas as much as possible: the layout considered wildlife features (turbines avoid all nest setbacks), used existing roads, accesses turbines from the periphery of the Project area to minimize fragmentation, locates laydown areas in non-native land cover, and undergrounds the collector lines. The layout was further refined to account for noise, heritage resource, and municipal setbacks and other constraints as required by AUC. Mitigation for the Project has considered best practices for development in native prairie (AEP 2016). For example, the Proponent has committed to a Range Health assessment to support the development of detailed construction alignment sheets, and reclamation plans, minimizing the introduction of invasive species (see 3-M5 Preconstruction Surveys, 3-M4 Prepare a Reclamation Plan, 3-M6 Avoid disturbing native grassland and non-native land cover): The Proponent includes mitigation in terms of the Principles in the Plan as follows: • 1,2: Avoid disturbing native grassland plant communities, and reduce surface land disturbance area if not avoidable (Project design as noted above, 3-M1) • 3: Reduce Cumulative impacts (minimize the disturbance area (3-M1), utilize existing disturbance, align with wetland policy, full development potential considered in EE, align with Regional Plan in terms of these Principles recognizing that avoidance of native prairie is not achieved given the Project area, manage for no net loss by progressive reclamation following construction, reclaiming during decommissioning, and potentially offsetting) • 4: Schedule activities to reduce impacts (mitigation measures for wildlife timing restrictions for grassland birds, and other wildlife features (9-M2, 9-M4, 9-M5, 9-M6, 9-M7, and 9-M11) • 5,6: Incorporate native plant community restoration and monitoring results (3-M4,3-M5) • 7: Retain professional environmental specialists for monitoring (9-M2 (modified from EE based on AEP input herein)) • 8: Convey commitments to staff and contractors (staff training is included in the mitigation)

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24	Wildlife Sensitivity Zones/Layers	Environmental Eval	14	It is not within a recreational area or conservation area, however is located within a Key Wildlife and Biodiversity Zone.	Did not mention Sharp-tailed grouse, or Sensitive Raptor zones. This project has direct impacts on these species/groups of species. Why are they not mentioned here.	Please see Section 9.4.1 (Wildlife and Wildlife Habitat), paragraph four. The wildlife assessment recognizes these zones and provides more detailed information on sharp-tailed grouse and raptors based on site surveys.
25	Environment Evaluation Approach	Environmental Eval	18	potential mitigation options that are technically and economically feasible to avoid or reduce potential Project effects; and,	What about required mitigation outlined in AEP policy, requirements, Directives or guidelines? These must be considered and referenced. Currently they are not. The plan must include clear commitments to adhere to wildlife timing restrictions and setbacks or other standard mitigation or avoidance strategies as outlined in AEP policy.	The Proponent confirms that the commitments summarized in the updated Table 10-1 Summary of Project Mitigation, revised based on responses in this table, will be adhered to.
26	Environment Evaluation Approach-Valued Component	Environmental Eval	19	Table 2.4-1	Why are listed wildlife (Federal or provincial) not included as a value component? The proponent has not Included wildlife, especially the STGR leks, PRFA nest, FEHA nests and grassland birds as valued components. It is not clear how the proponent is considering these significant issues and addressing them throughout the project plan (siting, construction, operation etc.).	Wildlife and Wildlife Habitat is a VC and was inadvertently left out of Table 2.4-1. Wildlife and Wildlife Habitat is assessed in Section 9.0.
27	Environment Evaluation Approach-Temporal boundaries	Environmental Eval	20	Temporal boundaries of the project	There is no reference to AEP wildlife timing restrictions and how these will be assessed or included in the assessment. The plan must include these.	The application of wildlife timing restrictions is specifically included in Section 9.0 Wildlife and Wildlife Habitat, and in the appended Table 10-1 Summary of Project Mitigation.
28	Environment Evaluation Approach-Spatial boundaries	Environmental Eval	21	Spatial boundaries of the project	There is no reference to AEP wildlife setback restrictions and how these will be assessed or included in the assessment.	The application of setback timing restrictions is specifically included in Section 9.0 Wildlife and Wildlife Habitat and in the appended Table 10-1 Summary of Project Mitigation.
29	Environment Evaluation Approach-Wildlife	Environmental Eval	21	Approach and wildlife	There is no reference to wildlife or wildlife habitat and how they will be assessed or included in the assessment.	Wildlife and Wildlife Habitat is a VC and was inadvertently left out of Table 2.4-1. Wildlife and Wildlife Habitat is assessed in Section 9.0.
30	Siting	Environmental Eval	24	Land cover in the Project area includes improved pasture, cultivated fields, improved pasture, residence/farmyard/road, dugouts and reservoirs and native grassland	What is improved pasture? Is it native or is it Tame. Use the definition of native grassland from public lands to provide clarity. (*an area of prairie in which natural veg consists primarily of perennial grasses. The native species composition must be greater than 30% (adams et. al, 2005*)). It is not clear if the proponent has defined the vegetation cover as per AEP policy and avoided those areas defined as native grassland by AEP.	The Proponent relied on the land cover mapping in the 2011 application, with additional ground truthing, prepared by experienced biologists. This mapping includes more detail than that provided in AEP biophysical mapping tool classifications. (https://maps.alberta.ca/Biophys/Viewer/?TermsOfUseRequired=true&Viewer=Biophys). Per the definitions provided on page 23 of the EE, improved pasture is characterized by crested wheatgrass, alfalfa, June grass and crested brome and is not native grassland. The Proponent has committed to additional surveys to assess range health using the Range Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta (Adams et al 2003).
31	Siting	Environmental Eval	24	The land cover classifications that are assumed to be included in the native grassland definition comprise 643 ha (59%) of the Project area, and of this area 225 ha is considered low (less than 40%) fescue. After native prairie, the most common land cover type is improved pasture (22%) (	What are these definitions of low or high fescue grasslands. These are not recognized classifications. All native grassland provides habitat for wildlife and will be evaluated as such by AEP. These different classifications create confusion as to how the project has been sited. For example is the 2.1% of native coulee land cover accounted within the 59% of native grassland land cover or is this in addition to? Additionally Table 3-3.1 land cover of native grasslands does not equate to the statements about native grassland. It is not clear where native grasslands have been avoided or where they have been impacted. The total area of native grassland (wildlife habitat) is not clear to AEP.	Native grassland includes the land cover types of native prairie, dry native prairie slope, native coulee complex, native shrub complex and wetland, which together equal 643 ha (59% of the Project area) and 4.5 ha (less than 1% of the Project area) of the final operation footprint for the Project (see Table 3.4-2 in the EE). The land cover mapping was prepared by experienced biologists, as presented in the 2011 assessment for an earlier layout. The Proponent has committed to additional surveys to assess range health using the Range Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta (Adams et al 2003).

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32	Activities on Native Grassland	Environmental Eval	28	Table 3.4-1 "Effects on Native Grassland"	This table just repeats the effects as "effects on native grassland" for all activities. What effects? The effects are not identified and are not clear. Therefore mitigation cannot be evaluated to determine if it is effective. The proponent has not provided the necessary details to allow AEP to conduct our review.	The intent of Table 3.4-1 in the EE is to identify the Project activities that would potentially cause an effect. The identified effects are then discussed in detail below the table. Section 3.4.1 Effects to Native Grassland provides the details of this effect with respect to the Land Cover VC.
33	Construction- Parking area	Environmental Eval	30	Approximately 150 employee vehicles will be accessing parking in the laydown areas,	The laydown areas appears to partially be within the prairie falcon setback (based on corrected calculations) this is unacceptable. No alternative mitigation or justification for this has been identified.	The laydown areas are not within the prairie falcon nest setback, as shown in Figure 9-2, appended. Employee parking will be located in the laydown areas.
34	Construction- Traffic and equipment/supply deliveries	Environmental Eval	30	Each turbine will require approximately 75 loads of concrete for the foundation delivered from a temporary onsite batch plant or a local supplier. Each turbine will require approximately 50 delivery vehicles for the turbine components. Delivery vehicles for concrete, turbine components and other supplies may affect local traffic through delays.	There is no information on how these will be coordinated to avoid key setbacks or wildlife timing restrictions. Details are not clear to AEP.	Concrete deliveries are considered a construction activity and will adhere to the wildlife timing restrictions and setback mitigations as described in Section 9.6.2 and in the appended EE Table 10-1 Summary of Project Mitigation.
35	Non- commitment to requirements- AEP Policy	Environmental Eval	30	The Proponent has implemented AEP guidance **as feasible** in determining the layout of the Project presented in Section 1.0	Use of term "as feasible". What does this actually mean? Need firm commitments to what mitigation has been or will be implemented. It is not clear if alternative mitigation has been identified for each issues where adherence to AEP policy is not feasible. Or where these issues occur. Additionally no rational or justification is listed in relation to these issues. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this.	The wording in the mitigation measures has been revised to provide certainty, and to clarify alternative mitigation measures, see appended EE Table 10-1 Summary of Project Mitigation and responses to lines 19 (prairie falcon), 38 (coulee break), 55 (wetland), 63 (ferruginous hawk), and 85 (sharp-tailed grouse).
36	Siting	Environmental Eval	30	The Project layout follows guidance in the Wildlife Directives (AEP 2017) to preferentially locate Project components within these areas, rather than in native vegetation areas.	How? As most sites are on native grassland no comparison has been provided to illustrate how this project has been sited to avoid key wildlife habitats such as native grassland. At this time it appears that the project has been preferentially sited on native grassland. This statement is misleading.	The Proponent does not consider that the Project has been preferentially sited on native grassland. As noted in the report, the Project area is 1,078 ha, of which 643 ha is native grassland. Of the 643 ha of native grassland in the Project area, 27.5 ha (4.3% of the Project area) of the construction footprint is within native grassland, and 4.1 ha (less than 1% of the Project area) of the Project operation footprint is within native grassland (Table 3.4-2). Furthermore, the Project components were sited to respect noise, heritage resource, and municipal setback constraints and to avoid or maximize the setbacks to the identified key wildlife features of the 4 STGR leks, the PRFA nest, and the FEHA nest. The 2017 layout reduced infringement in STGR lek setbacks from eight turbines to zero, and reduced infringement in the PRFA setback from two turbines to zero. With respect to native grasslands, the layout has reduced the operation footprint on native grasslands from 7.2 ha in 2011 to 5.9 ha in 2016 and 4.1 ha in 2017. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation.

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37	Siting	Environmental Eval	30	Project layout in this document has reduced the Project operation footprint (turbines, roads and substation) from approximately 18 ha (Stantec 2010) to 7 ha. Of the 14 proposed turbines, 6 are not within native grassland, and only 4.5 ha of the Project operation footprint is located in native grassland.	The project had sited 13 turbines in 2016 not 21. The 13 turbines sited in 2016 were all on native grassland. In the 2017 plan there are 14 turbines, 9 of which are on native grassland. There has been a small reduction however the proponent has not provided alternative mitigation to address the risks to wildlife for the remaining 9 turbines on native grassland. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat on native grassland are to be mitigated.	As noted in the EE, the wind farm is approved for 21 turbine locations under Power Plant Approval U2014-434 but has downsized from 21 to 14 turbines. Potential effects to grassland birds will be mitigated through adherence to grassland bird restricted activity periods and setbacks, please see response to line 19 and measure 9M-3 in the appended Table 10-1 Summary of Project Mitigation table which reads: Initial clearing activities will not occur during the active grassland bird breeding season (April 1 to July 15) within native grassland. If subsequent construction (i.e., during subsequent construction seasons, and not including ground clearing) or decommissioning activities (including reclamation) in native grassland cannot be scheduled outside the grassland bird restricted activity period (April 1 to July 15), a pre-disturbance migratory bird nest search will be conducted by an EWB of the Project footprint plus up to a 100 m setback to identify potential wildlife features that could be impacted by construction activities. Additionally, any wildlife features (e.g., raptor nests) that were identified in the pre-construction wildlife surveys will be checked within 1,000 m of the proposed construction activity (for clarity, this applies to any new wildlife features identified and not the existing PRFA or FEHA nests or STGR leks). If wildlife features with setbacks intersecting Project infrastructure are identified prior to construction (during initial or subsequent activities), species-specific setbacks and restricted activity periods will be applied based on Appendix A of the Wildlife Directive. If setbacks and restricted activity periods cannot be applied, mitigation will be planned and implemented following AEP guidance.
38	Valley breaks	Environmental Eval	30	In addition to the above land covers, valley breaks and coulees may also be disturbed by the Project footprint.	There is a 100 meter setback from all coulee/valley breaks. Where is this infringed upon, why and what is the alternative mitigation proposed? Currently this is not included. Note inconsistent statements are made throughout this plan in regards to valley breaks.	The assessment of the Land Cover VC first identifies the potential effects as noted in the comment (Section 3.4 Potential Effects) and then discusses the mitigation measures in Section 3.5 Mitigation Measures. As per the *Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects* (AEP, 2017; herein the Grandfather Process), the Project may apply the 2011 Guidelines for all pre-construction activities, including siting of components. The 2011 Guidelines do not include a 100 m setback from coulee and valley breaks, and therefore this setback does not apply to the Project. Despite the Grandfather Process status of the Project, all turbines, with the exception of V08, have been sited to avoid the setback for coulees and valleys, and the two incursions into coulees are for the linear disturbance of collector lines, which will be installed underground. Mitigations for the two collector line crossings of coulees are included as Measure 9M-7 in the appended EE Table 10-1 Summary of Project Mitigation, which reads: • Coulee break setbacks in the vicinity of turbine V-08 and the collector line route will be marked in the field prior to construction. • For the two situations where collector lines will traverse a coulee the collector lines will be installed underground via trench excavation. Mitigations to be implemented during trenching of the collector line include but are not limited to: completing the work during the appropriate fish (see 5-M2) and amphibian (see 9-M7) windows, preventing sediments or other materials from entering the streams (see 5-M3), and minimizing the clearing width at the crossing site to that needed for safe equipment operation to retain streamside vegetation. To reduce sensory disturbance effects to wildlife, collector line placement activities within the coulee setback will be scheduled outside the grassland breeding bird restricted activity period (April 1 to July 15) and the Key Wildlife Biodiversity Restricted Activity Period December 15th to April 30th (Wildlife Directive – Standard 100.3.2). If collector line placement activities cannot occur outside the grassland breeding bird and KWBZ restricted activity periods, the Proponent will develop an alternative mitigation strategy for approval by AEP that includes an Environmental Monitor with stop work authority (see 9-M2) and fencing to limit activities to area needed for safe equipment operation. If collector line placement occurs in early to late fall, fencing will be installed, and a pre-construction amphibian / snake survey will be conducted by an EWB. If amphibian species are present work will be halted until a salvage is completed (with a permit) and the area is confirmed be clear of herpetiles by the EWB.

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39	Non- commitment to requirements	Environmental Eval	31	Following completion of construction, areas not containing permanent facilities will be reclaimed (including revegetated) to the **extent possible** to an equivalent land use capability	Use of the term "to the extent possible". As this is identified as a key mitigation for native grassland (wildlife habitat) these areas needs to be clearly defined. What will be reclaimed and what can not be reclaimed. This is required for AEP to determine risk of the project.	Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended to this document. All disturbed areas not required for operation will be reclaimed.
40	Siting	Environmental Eval	31	cannot be avoided, mitigation has been proposed to reduce the effect of Project infrastructure on wildlife habitat, as discussed in Section 9.6, however complete avoidance of grasslands is not feasible.	How has Native grasslands been avoided. 65% + of infrastructure is sited on native grasslands? Mitigation plans are not clearly defined or committed to. In general, the proponent has conditioned all potential mitigation with non-committal terms. It is not clear to AEP what mitigation will be applied to infrastructure sited on native grassland. This is required for AEP to determine risk of the project.	The Proponent does not consider that the Project has been preferentially sited on native grassland. As noted in the report, the Project area is 1,078 ha, of which 643 ha is native grassland. Of the 643 ha of native grassland in the Project area, 27.5 ha (4.3% of the Project area) of the construction footprint is within native grassland, and 4.5 ha (less than 1% of the Project area) of the Project operation footprint is within native grassland (Table 3.4-2). Furthermore, the Project components were sited to respect noise, heritage resource, and municipal setback constraints and to avoid or maximize the setbacks to the identified key wildlife features of the 4 STGR leks, the PRFA nest, and the FEHA nest. The 2017 layout reduced infringement in STGR lek setbacks from eight turbines to zero, and reduced infringement in the PRFA setback from two turbines to zero. With respect to native grasslands, the layout has reduced the operation footprint on native grasslands from 7.2 ha in 2011 to 5.9 ha in 2016 and 4.1 ha in 2017. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation. The Proponent is committed to the mitigation measures summarized together in a revised Table 10-1 Summary of Project.
41	Prairie Falcon	Environmental Eval	31	The Project substation has been located adjacent to an existing substation and turbines. The interconnection point has been determined in consultation with AESO and is considered the most logical and technically feasible location [Wildlife Directive 200.2.5].	The substation is within the Prairie Falcon nest setback. There is no clear mitigation identified to mitigate this risk. AEP recognizes that the AESO has dictated that the substation must be sited within this area, however no clear mitigation has been identified. There is mention of maybe putting collector lines underground (but no commitment), using a wildlife monitor but the role is undefined. These are in the appendices of the appendices (Appendix C appendix B-E). It is not clear to AEP what mitigation will be applied to limit impacts to the prairie falcon nest. This is required for AEP to determine risk of the project.	Please see mitigation 9-M5 in the appended EE Table 10-1 Summary of Project Mitigation Table, which has been revised to provide greater clarity on the measures that the Proponent has committed to with respect to protection of the prairie falcon nest. The Proponent has committed to installing underground collector lines throughout the Project, including within the Prairie Falcon nest setback. The role of the EWB in monitoring the prairie falcon nest during construction has also been clarified. Construction activities within the setback will occur outside of the restricted activity period, and regular maintenance activities at the substation will be scheduled outside of the restricted activity period (see 9-M5).
42	Valley breaks	Environmental Eval	31	The Proponent will confirm the preliminary location of valley breaks (see Figure 9-2) during pre-construction surveys for those features with the potential to be within 100 m of the Project infrastructure [per Wildlife Directive 100.2.6], and if not feasible to avoid the feature, the Proponent will minimize the footprint, for example through perpendicular crossings.	All of the infrastructure has been sited and included on the maps (figures) provided. Where is the 100 m setback infringed upon and what is the justification for this. There is no mitigation identified to address these issues. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat in association with valley breaks will be mitigated. Note inconsistent statements are made throughout this plan in regards to valley breaks.	Please see response to line 38.
43	Non- commitment to requirements	Environmental Eval	32	**Where feasible**, collector lines and other Project infrastructure will be constructed within the road ROW during the same timeframe.	Use of the term "Where feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? What are the alternatives and justification. Firm commitments are needed. Details are lacking or are associated with non-committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat in association with collector lines will be mitigated. Note inconsistent statements are made throughout this plan in regards to collector lines.	This commitment has been removed from the Project mitigation. A revised EE Table 10-1 Summary of Project Mitigation is appended to this document. The Proponent does not intend to change plans, Project layout, or construction methods without accounting for wildlife or wildlife habitat issues and has amended all non-committal language accordingly. Furthermore, the Proponent commits to working with AEP to identify and implement alternative mitigations as necessary throughout the life of the Project. Proposed changes to the Project layout or methods would be determined through final input and design from the Project engineers based on detailed geotechnical analyses and site-specific ground truthing. If these types of changes are proposed they will be provided to AEP along with a rationale, for AEP's review and guidance. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation.

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44	Non- commitment to requirements Collection lines	Environmental Eval	32	Construct underground collector lines by ploughing versus trenching to the **extent practicable**. Ploughing will be used whenever soil and topography is suitable	Collection Lines: Where will it not be practical to plough in lines? As all collection line locations have been selected this should be known at this time. Firm commitments are needed. Details are lacking or are associated with non- committal terms. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat in association with collector lines will be mitigated. Note inconsistent statements are made throughout this plan in regards to collector lines.	The Proponent confirms that all collector lines will be underground. We anticipate that depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, we will advise AEP of these specific locations and discuss alternative methods such as trench excavation. The collector crossing adjacent to one wetland (Class III) and collector crossings at two watercourses will be completed via trench excavation. Also see the appended, updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the watercourse crossings.
45	Non- commitment to requirements wildlife timing conditions.	Environmental Eval	32	Schedule activities to reduce effects as specified in the Reclamation Strategy (Appendix D), and Section 9.0 Wildlife and Wildlife Habitat….	This statement is unclear as it starts with commitment to adhere to timing restriction but is followed up by exceptions without details of these exceptions. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation measures have been revised to specifically provide alternative mitigation for situations in which AEP policy for setbacks are not fully met, as summarized in the appended Table 10-1 Summary of Project Mitigation table (measures 5-M1, 9-M4, 9-M5, 9-M6, 9-M7, and 9M-11). Please also see responses to lines 19 (prairie falcon), 38 (coulee break), 55 (wetlands), 63 (ferruginous hawk), and 85 (sharp-tailed grouse).
46	Reclamation- Native grasslands roads	Environmental Eval	32	replacement may be considered. These methods are unlikely to be practical for long duration ground disturbance (e.g., constructing access roads).	Earlier in the plan it identifies a key mitigation for native grassland is the reclamation of roads on native grasslands (reduction of road from 20m to 6m wide). However this statement makes this commitment unclear as it states that roads cannot be reclaimed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. The inconsistent statements in relation to road reclamation make it impossible for AEP to assess risk.	The Proponent respectfully disagrees with AEP's conclusion. The full context of the sentence is referring to sod salvage and replacement specifically, not reclamation of roads overall (see 3-M6 on page 32 of the EE). For longer disturbances, additional mitigation measures will be required, and will include soil salvage measures, which includes the proper stockpiling of soils that will be used for reclamation. The potential effects to soils, along with the proposed mitigation measures, are included in Section 6.0 Soils and Terrain and in more detail in the appended, revised EE Table 10-1 Summary of Project Mitigation.
47	Siting	Environmental Eval	33	In order to maximize the wind resource, and access the turbine areas, it is not possible for the Project layout to avoid native grassland areas within the Project area, which is predominantly native vegetation. Therefore, a robust Reclamation Strategy, which adheres to the Principles for Minimizing Surface Disturbance in Native Grassland (Alberta Environment and Parks 2016), has been prepared and will be implemented (Appendix D). The application	The project is preferentially sited on native grassland . This contradicts statement made earlier which say its been avoided to the "extent possible". Inconsistent statements appear in this plan in relation to reclamation. Therefore it is not clear to AEP how the impacts to wildlife and wildlife habitat or risk to these species will be mitigated through reclamation.	Please see response to lines 1 and 36 for a summary of grassland area in the construction and operation footprints. In addition, the effects to wildlife and wildlife habitat, along with the proposed mitigation measures are included in Section 9.0 Wildlife and Wildlife Habitat. Specific measures for grassland birds are included in measure 9-M11 (refer to line 37).
48	Siting	Environmental Eval	37	Designated Area, activity timing restrictions, restrictions on the location, type or scale of development and the implementation of enhanced mitigation measures may be warranted.	This is the third iteration of this plan yet key wildlife habitats or sites have been excluded from the "Designated Areas". Wildlife setbacks and timing restrictions are not referenced in this section.	The application of wildlife setbacks and timing restrictions are specifically included in Section 9.0 Wildlife and Wildlife Habitat (to avoid repetition in the Designated Area assessment.)

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49	Siting	Environmental Eval	38	Two ESAs from the Fiera (2009) report fall just west and southeast of the Project area (Figure 4-1). Further detail on ESA and the criteria used in each iteration is explained in greater detail below.	While the GOA does not have specific avoidance strategies or mitigation for ESAs these areas do represent important wildlife areas. It should be noted that the purpose of one of the ESAs is to identify important fescue grasslands that support a diverse wildlife community. The other is in regards to the Oldman reservoir and the importance of the general habitat for birds. This designation further supports AEPs recommendations to avoid native grassland habitat as it is an important ecological feature for wildlife. Windy Point has not done this. It is noted the majority of the project area is covered by these ESAs. This will likely impact the mortality rates at the facility as well (Birds and Bats).	The Proponent would like to clarify that the two ESAs referenced in this comment are not within the Project area. As noted in Section 4.3.3.2, nine of the fifteen full quarter section areas within the Project area are within the 2014 ESAs. The Proponent has committed to measures to reduce potential effects to native grassland and wildlife habitat, as summarized in the appended Table 10-1 Summary of Project Mitigation.
50	Siting	Environmental Eval	41	The Project area does overlap with approximately 583 ha of Fiera (2014) identified ESAs and with 802 ha of a Key Wildlife and Biodiversity Zone.	The plan does not include reference to the following sensitivity layers, Sharp-tailed grouse, and Sensitive Raptors. No plan was provided in this section or referenced in this section for these areas. These areas are not included in these measurements but should be. This is misleading.	Reference to the sensitivity layers is provided in Section 9.4.1 (Wildlife Habitat), paragraph four, and therefore was not repeated in this section of the EE. The Project entirely overlaps with sensitive species ranges for sharp-tailed grouse, prairie falcon, golden eagle, ferruginous hawk, and bald eagle. The Proponent has committed to measures to reduce potential effects to these species in the mitigation measures for wildlife, as summarized in the appended Table 10-1 Summary of Project Mitigation table.
51	Mitigation-Designated Areas	Environmental Eval	42	Table 4.5-1	No reference to wildlife setbacks or timing restrictions. There is no alternative mitigation identified either. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent has committed to the application of wildlife setbacks and timing restrictions, as noted in Section 9.0 Wildlife and Wildlife Habitat and summarized in the appended EE Table 10-1 Summary of Project Mitigation table.
52	Siting	Environmental Eval	43	The Project footprint overlaps with seven of the nine quarter sections designated as ESAs within the Project area, however, the Project footprint is only 47.55 ha of the 583 ha in the designated ESAs, and constitutes only 4.4% of the total Project area.	The footprint size is different from earlier in the report. ESA math does not add up either how is only 4.4% of the ESA included with the project area when 47.55 Ha of a 48 Ha project covered by an ESA.	The Project footprint size in the report is consistent, and any discrepancies are a function of the rounding applied (i.e., 47.55 ha, 47.6 ha, or 48 ha for the construction footprint). Of the Project area of 1,078 ha, 583 ha is within an ESA. The intent of the statement was to advise that only a portion of the 47.5 ha construction footprint is within an ESA. We note that Project infrastructure has been located in undisturbed land cover classifications in approximately 25 ha (54%) of the total construction footprint area of 47.6 ha, although the total Project area is approximately 70% undisturbed.
53	Wetland Policy	Environmental Eval	46	Alberta Environment and Parks (AEP) has recommended that to obtain an approval under the Water Act, an applicant should first discuss the Project with a professional wetland practitioner and AEP. A wetland Assessment must be conducted in consideration with Wetland Mitigation in Canada: A Framework for Application (Cox and Grose 2000) and the Alberta Wetland Policy (Government of Alberta 2013a).	Wetland Policy: All review for this section of the report must go through the wetland policy and not wildlife staff. It is the responsibility of the proponent to ensure this has been reviewed by the appropriate people.	Thank you.
54	wetlands	Environmental Eval	46	The goal of the Alberta Wetland Policy (Government of Alberta 2013a) is to conserve, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and the economy. To achieve this, the policy focuses on the following outcomes:	Wetland Policy: The wetland policy only addresses the impacts to the wetland and not the wildlife that use it. The strategies that are outlined in the policy are complimentary to the AEP Directives and guidelines however these process are separate. All AEP comments for the purpose of this review are focused on the impacts to the wildlife and therefore may require additional mitigation or avoidance strategies to be applied.	The assessment of effects to wildlife is specifically included in Section 9.0 Wildlife and Wildlife Habitat, and mitigation measures are included in the appended Table 10-1 Summary of Project Mitigation (see 9-M3).

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55	Wetlands	Environmental Eval	48	The July 2017 field study identified three wetlands (Table 5.3-1) using the AWCS: one Class II wetland (temporary) and two Class III wetlands (seasonal ponds and lakes) (Figure 3-1). Collectively, the wetlands cover 0.5 ha of the Project area (less than 1% of total Project area).	AEP expects that the 100 m setback is applied to the two Class III wetlands to protect and conserve wildlife including but not limited to amphibians. Commitment to adhere to this standard mitigation has not been made. Alternative mitigation has not been identified in this plan. Please note that adherence to the Wetland Policy does not equate to mitigation and protection of amphibians or other wildlife directly impacted by the development.	The 100 m setback for Class III wetlands will be adhered to by the Proponent, with the exception of one wetland setback(DLK001), which is transected by the buried collector system. The collector line has been sited to parallel the existing Range Road 291, which reduces additional disturbance to native grassland (i.e. if the collector was routed around the wetland). Due to the location of the wetland directly adjacent to the existing road there is not enough space between the road and the wetland to both avoid the wetland setback and align the collector with the existing linear disturbance. An alternative mitigation strategy has been proposed to address encroachment into this setback. Please see mitigation 5-M1 in the appended EE Table 10-1 Summary of Project Mitigation: • Required setbacks (100 m) for wetlands DLK001 and DLK003 will be flagged in the field prior to construction. • Project infrastructure will avoid wetlands DLK002 and DLK003 and Project activities (construction, operation, and decommissioning) will adhere to the required setback (100 m) and timing restrictions (year-round) at DLK003. • The collector line will be located within or immediately adjacent to the existing disturbance in the right-of-way for Road 291 to avoid wetland DLK001. The Proponent will complete a Wetland Impact Assessment Form, along with a mitigation plan to submit with an Application for a Licence under the *Water Act*. Additional field data, notifications and/or compensation may be required pending the wetland impact assessment • Mixing cement must be completed at least 100 m from wetlands and watercourses. The batch plant will be operated in accordance with all regulations. • Excavated waste material shall not be disposed of in an environmentally sensitive area or within the setback of a wetland or watercourse. • During operations, required setbacks at wetlands DLK001 and DLK003 will be adhered to. • At the time of decommissioning, a mitigation strategy will be developed to address decommissioning the collector line that crosses DLK001, for approval by AEP.
56	Non- commitment to requirements wetland mitigation	Environmental Eval	50	Erosion prevention and sediment control measures will be implemented **as necessary** near wetlands	Use of term "as necessary". AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	This phrase has been updated to confirm that erosion and sediment controls will be implemented where required to prevent sedimentation in wetlands (mitigation 5-M3). A revised EE Table 10-1 Summary of Project Mitigation is appended to this document.
57	Wetlands	Environmental Eval	50	A section of the collector line system has been located adjacent to Road 291 to minimize the Project footprint, however, of the three identified wetlands in the Project area, one Class III wetland immediately adjacent to Road 291 may be affected.	At this time all infrastructure has been sited on the maps and figures. Will this wetland and associated setback be infringed upon or not? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Please see response to line 55.
58	Non- commitment to requirements wetland mitigation	Environmental Eval	51	Following construction, temporary work areas and road verges will be revegetated as quickly as practical to minimize the potential for erosion and sedimentation that may enter wetlands or watercourses.	Use of term "as quickly as possible". This provides no clear commitments or time frames. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended to this document. Reclamation will be completed as soon as practical following disturbance, taking in to account the weather, the season, and the input from a reclamation specialist and the landowner to improve the success of the efforts.

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59	Wetlands	Environmental Eval	51	The Proponent anticipates that the collector line will be constructed in existing disturbed area adjacent to or within Road 291, avoiding wetland DLK001, and the Wildlife Directive 100.2.7 (2017) requirement for a 100-m buffer around any wetland class will not be applicable.	Why is this not applicable? It is AEP's expectation that the setback will be adhered to or alternative mitigation will be identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The original statement was not meant to imply that the Directive was not applicable, but that the construction would occur in an already impacted area. See response to line 55 regarding installation of the underground collector line in the wetland setback.
60	Mitigation- Weeds	Environmental Eval	81	The colonization of disturbed areas by noxious weed species is likely if mitigation measures are not implemented. Introduction of these species may affect the overall success of native species, and result in decreases in the native species, or decrease in the success of reclamation efforts.	One of the largest threats to the maintenance of wildlife habitat within the project area is the colonization of weeds. Opening up native grassland areas will allow for the establishment of weed species which will impact the habitat quality for wildlife. Mitigation to limit or prevent the establishment of weeds is needed and currently not clearly defined.	The referenced text is from the Vegetation Resources VC potential effects section (Section 8.4 Potential Effects); mitigation measures are presented in Section 8.5 Mitigation Measures. Measures to minimize the introduction of invasive species and weeds are included in the mitigation measures for vegetation (3-M7 Minimize the introduction of invasive species and weeds) and presented in the appended Table 10-1 Summary of Project Mitigation.
61	Wildlife Surveys-current	Environmental Eval	93	Raptor nest surveys and sharp-tailed grouse surveys conducted at Windy Point are considered current at the time of writing (Table 9.3-1).	The raptor and the grouse surveys are considered current as of the time of submission. However if the AUC approves this project these surveys will need to be repeated in 2018 and every 2 years afterwards until the project is commissioned. Mitigation if wildlife issues are identified, other than the wildlife features identified in this report, must be clearly identified. A commitment to work with AEP and develop alternative mitigation for these sites needs to be included.	Thank you for your comment. The Proponent has committed to keeping wildlife survey data current until the Project is commissioned. If additional wildlife features are identified other than those identified in the EE report, the Proponent is committed to consulting with AEP to develop an alternative mitigation strategy for these sites for approval by AEP. This additional measure has been added to mitigation measure 9-M3 (see appended EE Table 10-1 Summary of Project Mitigation).
62	Valley breaks	Environmental Eval	95	Coulees and coulee breaks can be associated with extensive wildlife use (Government of Alberta 2011). Coulee habitat is present in four locations within the Project area: running west to east within NW and NE 2-8-29-W4M, running southwest to northeast in NW and NE 35-7-29- W4M, running west to east in SE 35-7-29-W4M, and finally running northwest to southeast in NE 26-7-29-W4M.	Is the 100 meter setbacks abided by or not? This is currently unclear. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. Note inconsistent statements are made throughout this plan in regards to valley breaks and coulees.	As per the Grandfather Process, the Project may apply the 2011 Guidelines for all pre-construction activities, including siting of components. The 2011 Guidelines do not include a 100 m setback from coulee and valley breaks, and therefore this setback does not apply to the Project. All turbines, except V08, were sited to avoid coulee setbacks, and the two incursions into coulees are for the linear disturbance of collector lines, which will be installed underground. See response to line 38 regarding mitigations for the infrastructure in the coulees.
63	Ferruginous Hawk nest	Environmental Eval	99	Nest documented as inactive during the 2017 breeding season. If this nest is not occupied by a ferruginous hawk before the end of the 2018 breeding season, it is no longer required to be protected by the recommended 1,000 m setback (Alberta Ferruginous Hawk Recovery Team 2009).	There are extenuating circumstances at this specific nest. Due to mitigation efforts that are currently ongoing, AEP considered this nest be active and requiring the full 1000 meter setback. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	It is the Proponent's understanding that mitigation measures are being undertaken for a ferruginous hawk nest more than 1000 m to the south of the Project area, and not for this nest. The nest within the Project area was vacant in 2015 and occupied by Swainson's hawks in 2017. However, the Proponent will follow AEPs recommendation that the nest be considered active in 2017. In consideration of this nest the Proponent has sited Project infrastructure to minimize encroachment into the nest setback. No turbines, collector lines, or temporary work spaces are located within the nest setback. The FEHA setback is overlapped by the existing Range Road 291 and a portion of the existing access road (to be upgraded) to the decommissioned residence/farmyard to be used as a laydown area. Project infrastructure within the nest setback is limited to a short, upgraded segment of existing spur road on an existing road alignment, from Range Road 291 to turbine V-11 and one of the laydown area, which are located outside the nest setback. Turbine V-11 has been sited on existing decommissioned residence/farmland land cover, to minimize the footprint on native grassland. The spur road is situated on the opposite side of Range Road 291 from the nest and is oriented away from the nest. The closest distance from the spur road to the nest is 680 m. The Proponent considered that use of the existing road would incur less disturbance than building a new road outside of the setback. Proposed mitigation to minimize disturbance of the ferruginous hawk nest at this location are as

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						follows (included in appended EE Table 10-1 Summary of Project Mitigation, 9-M4): Based on the nest's previous use by ferruginous hawks and AEP's assertion that nest is to be considered active, all new Project infrastructure has been sited outside of the 1000 m setback. The FEHA setback is overlapped by the existing Range Road 291 and a portion of the existing access road (to be upgraded) to the decommissioned residence/farmyard to be used as a laydown area. <u>General:</u> No Project personnel will be permitted to enter the improved pasture area to the east of Range Road 291, except for an EWB to ascertain nest status The required setback (1,000 m) for the identified ferruginous hawk nest (Figure 9-2) will be flagged in the field west of Range Road 291 prior to construction. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. The construction footprint for upgrades to the existing spur road will be flagged prior to the initiation of construction and encroachment into the nest setback beyond the flagged work area will not be permitted. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. Operations staff will be provided with Wildlife Awareness training, which will include, but not be limited to: how to identify wildlife including raptors, how to identify behaviours, and steps to take when wildlife is observed. At the time of Project decommissioning, nest activity will be assessed, and pending the results of the nest assessment, setbacks and timing restrictions will be discussed with the regulator. <u>Construction – during the restricted activity period, March 15-July 15 (Government of Alberta 2011:</u> No construction or decommissioning activities, including reclamation, will occur within the ferruginous hawk nest setback during the restricted activity period. The use of the existing and upgraded spur road for access is not considered a construction activity. Encroachment into the nest setback beyond the flagged work area will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. Use of the spur road for access during the restricted activity period will be monitored by an EWB with stop work authority if ferruginous hawks are present, and work will stop if ferruginous hawks are showing signs of agitation above baseline levels <u>Construction – outside of the restricted activity period:</u> Prior to initiating construction activities within the nest setback, the EWB will confirm the ferruginous hawk nest is no longer active for the season. Construction activities within the nest setback (outside of the restricted activity period) will be monitored by an EWB with stop work authority if ferruginous hawks are present and are showing signs of agitation above baseline levels. <u>Operation – during the restricted activity period, March 15-July 15:</u> No major maintenance activities for the spur road and turbine V-11 will be scheduled during the restricted activity period Approximately weekly routine access to Range Road 291 and the spur road to turbine V-11 will be limited to pick-up trucks and smaller vehicles. In the event of a turbine malfunction that requires large vehicle (e.g., larger than a pick-up truck) access to Range Road 291 and the spur road to turbine V-11 through the nest setback during the nesting season, the Proponent will have an EWB onsite with stop work authority if ferruginous hawks are present and are showing signs of agitation above baseline levels.

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64	Sharp-tailed grouse Leks	Environmental Eval	101	Table 9.4-4	Lek 01- where is it? There are two locations given where is the setback measured from (refer to 91). Please note the 4 leks identified are Leks and AEP does not recognize the term "satellite leks". As this is the third iteration of this plan, why are the wildlife locations not clearly identified? AEP needs this information to be consistent in order to conduct our risk assessment.	The UTM locations of LEK01 was recorded over two consecutive years (2015 and 2016) in close proximity (approximately 22 m apart) with similar numbers of birds present (29 and 30, respectively). Both locations are considered to be from the same LEK01, based on professional judgement. The rotor swept areas of turbines V-12 and V-08 are outside of the setback to LEK01 using both of the UTM locations. Both LEK02 and LEK03 were locations where two individual sharp-tailed grouse were observed in 2015 with no individuals observed at those locations in 2016 surveys. No lekking behavior was reported. The Proponent has followed AEP's guidance and considered these leks active and included them used these locations as siting constraints for the Project despite minimal evidence that these areas are used as leks. Please see appended Wildlife Feature Setback Analysis which references the closest distances of infrastructure to the wildlife features including both locations recorded for LEK01. No infrastructure is sited within the setbacks of LEK01 (including the second location within the LEK01B), LEK02 and LEK04. The locations of all leks are listed in Table 9.4-4 (including UTM locations and Legal Subdivision, these locations and their 500 m setbacks are also shown on Figure 9-2. All leks listed in Table 9.4-4 were used as siting constraints in the Project design process.
65	Wildlife Data age	Environmental Eval	101	Migration and general wildlife surveys	As per the Directive 100.2.10. All data must be repeated if the project is not constructed by 2021. This commitment has not been identified by the company.	The Proponent has committed to keeping wildlife survey data current until the Project is commissioned, including the requirement to repeat surveys if the Project has not been commissioned by 2021. If additional wildlife features are identified other than those identified in the Environmental Evaluation report, the Proponent is committed to consulting with AEP to develop an alternative mitigation strategy for these sites for approval by AEP. This additional measure has been added to mitigation measure 9-M3 (see appended EE Table 10-1 Summary of Project Mitigation).
66	Wildlife surveys	Environmental Eval	102	Two rotor-swept heights were considered: 25 m to 155 m, and 33 m to 155 m.	The maximise height of the RSA for the project is identified as 173 m. This does not correspond to migration surveys conducted. Why not? Why has the data not been corrected based on the change in turbine size? AEP has informed the proponent of this requirement. AEP can not assess risk based on the information given.	The new turbine size characteristics are: • Hub height: 105 m • Rotor diameter: 136 m • Blade length: 68 m • Therefore, the rotor swept height is 37 m to 173 m. McCallum Environmental has re-evaluated their analysis of bird mortality risk based on the new turbine size (see appended risk assessment). The EE characterized the magnitude of the residual effect of change in mortality risk as a medium magnitude effect for birds due to potential turbine collision mortality during the Operations phase of the Project. The information provided in the McCallum Environmental memo did not alter the residual effect characterization.
67	Wildlife surveys	Environmental Eval	105	Subsequent to the completion of this analysis, the Proponent has revised the turbine rotor swept heights to 37 m to 173 m, with substantially the same rotor swept area.	The maximise height of the RSA for the project is identified as 173 m and a min of 37 m. This does not correspond to migration surveys conducted. AEP does not agree that this is "the same RSA heights" as there is a 20 meter difference between them. Why has the data not been corrected based on the change in turbine size? AEP can not assess risk based on the information given.	The text differentiates between rotor swept height and rotor swept area, where rotor swept area refers to the combined area of turbine swept space for the entire Project. The rotor swept height of the turbine selected for this Project is 37 m to 173 m. McCallum Environmental has re-evaluated their analysis of bird mortality risk based on the new turbine size (see appended risk assessment, McCallum 2018).
68	Wildlife Survey- Bats	Environmental Eval	107	The detector on the meteorological tower was outfitted with both a high and low microphone. Tetratech (2016) indicates that detectors on the meteorological tower did not collect data throughout the entire monitoring window due to technical difficulties.	So there is no data from the 30m acoustic detector. Is this in both seasons (Spring and fall)? The 30m detector is essential in determine risk. Without this information it is assumed that the risk of mortality to bats is significantly higher then predicted. (5.29 bat passes/detector night or 3.32 migratory bat passes/detector night). The bat mortality risk is high even with these technical issues.	Some detector failure is common in bat monitoring programs. Hence multiple detectors are placed to sample across space and time. Three of the five detectors used in the spring were functional for the entire period. The others experienced failures for 6 and 14 nights. The detector with the most outages was a low elevation (non-paired detector). There were reduced operational nights for the 30 m detectors due to technical difficulties In Spring 2015, the high mic at BAT2 was operational from April 30 to May 6, and the high mic (METHIGH) at the meterological tower was operational from May 7 to May 31. In Fall 2015, the high mic at BAT2 was operating from August 2 to Sept. 16, and the METHIGH detector operated from Aug 1 to Aug 29. Regardless of the outages, the number of bats per night in the key fall period is in the high range, and the Proponent has confirmed an adaptive monitoring and mitigation program based on the site being considered a high risk for bat mortality.

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69	Construction/ operation- Potential effects	Environmental Eval	109	Interactions between Project activities and wildlife and wildlife habitat may result in the following adverse effects: Change in habitat – primarily due to site clearing and sensory disturbance; and, Change in mortality risk – due to site clearing, collisions with vehicles and turbine blades, and electrocution at the Project substation.	The full effects on wildlife are not identified. This may include but is not limited to habitat avoidance, loss of nesting/denning sites, reduction in productivity, fragmentation, avoidance of the site/habitat loss etc.	These are bulleted points introducing the potential effects. Change in habitat and change in mortality risk are described in further detail in Sections 9.5.1 and 9.5.2. In Section 9.5.1, change in habitat is defined as being inclusive of direct habitat loss, alteration, and habitat avoidance due to sensory disturbance. In Section 9.5.2, the potential effect of change in mortality risk accounts for loss or alteration near den and nest sites, as well as collision mortality with turbines, vehicles, and machinery.
70	Construction/ operation- Potential effects	Environmental Eval	110	Table 9.5-1	Only risks to wildlife identified are "change in habitat" or " change in mortality risk". This is misleading to the actual risks of this project and how the mitigation or avoidance strategies will reduce (or not reduce) impacts wildlife and wildlife habitat. These generalizations do not provide the necessary details.	The purpose of Table 9.5-1. is to identify where interactions with VCs are anticipated in order to focus further discussion regarding mitigations. This is a standard approach to environmental effects assessment. See response to line 69 for further explanation of the description of potential effects.
71	Siting	Environmental Eval	110	The operations footprint is estimated to be 7.0 ha in size, with 4.0 ha of native pasture, 0.4 ha of dry native prairie slope habitat, 0.1 ha of native shrub complex.	The site is preferentially sited on native grasslands for the operation and construction of the project. Where are these sites and what wildlife features are associated with these sites? This statement is more detailed than the previous statements on the footprint impacted by the operations of the facility (4.5 Ha). However there are no details on the areas impacted during construction. Is the breakdown similar to this or does it differ? The necessary information is not clear and therefore AEP determine if the risks are mitigated or avoided adequately.	The Proponent does not consider that the Project has been preferentially sited on native grassland. Information on the breakdown of the land cover within the construction and operation footprints is presented in Table 3.4-2. As noted in the report, the Project area is 1,078 ha, of which 643 ha is native grassland. Of the 643 ha of native grassland in the Project area, 27.5 ha (4.3% of the Project area) of the construction footprint is within native grassland, and 4.5 ha (less than 1% of the Project area) of the Project operation footprint is within native grassland (Table 3.4-2) Native grassland and wildlife features are shown on appended, updated EE Figure 9-2.
72	Construction/ operation- potential effects	Environmental Eval	111	Indirect habitat loss effects from sensory disturbance are anticipated due to increased human activity and the use of equipment and machinery on site throughout the construction period. These effects may be increased during the winter season for ungulates	No mention of the impacts on house/nest/dens or leks. There is no mention of grassland birds in this entire section of the plan. No mitigation is identified in this section and no reference is made to where to find these in other sections. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The effects assessment followed standard environmental assessment methodology. The quoted text describes the potential effects. Mitigation is discussed in Section 9.6, and residual effects are discussed in Section 9.7. A characterization of residual effects is presented in the conclusions section and summarized in Table 9.6-1. Mitigation for grassland breeding birds is presented in line 47, and in the appended Table 10-1 Summary of Project Mitigation.
73	Grassland Birds	Environmental Eval	112		There is no mitigation identified for grassland birds. There is no commitment to adhere to the grassland bird restricted time period.	The mitigation measure to specifically address grassland breeding bird timing considerations and setbacks, previously in the EMP, has been revised for clarity (see response to line 47 and mitigation 9-M11) and added to the appended Table 10-1 Summary of Project Mitigation.
74	Wildlife Surveys	Environmental Eval	113	The analyses completed in 2015/2016 estimated a 70 m blade and a hub height of 90 m with 13 turbines for a rotor swept area of 200,199 m2; this assessment assumes 68 m blade and hub height of 105 m with 14 turbines for a rotor swept area of 203,266 m2.	Migration tables: AEP recommended that the data be collected in a way that it could be applied to a variety of turbine types (height and RSAs). The spring and fall bird migration data does not provide an assessment of risk for the proposed project. The proponent has not provided rational or justification for this in the plan for AEP's review. This is unacceptable and does not allow AEP to conduct a risk assessment.	A revised analysis of bird migration data with the revised turbine heights is provided in the appended document by McCallum Environmental (2018).

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75	Access management plan	Environmental Eval	114	An Access Management Plan will be developed that will include access control and access management measures [Wildlife Directive 100.3.5 and 100.3.9]	This is part of the construction and operation plan and needs to be submitted to AEP prior to issuing a AEP Renewable Referral Letter. Currently this has not been submitted therefore AEP cannot review it. The access management plan is identified as mitigation for wildlife impacts but is not provided. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent has provided the traffic management protocols that will guide the Access Management Plan (see mitigation 3-M8 in the revised Table 10-1 Summary of Project Mitigation Measures). The material transport and traffic management guidelines that will be adhered to have been incorporated into the summary table.
76	Collector Line	Environmental Eval	114	Collector lines throughout the Project area will be constructed underground with minimal disturbance construction methods where feasible	Use of the term " where feasible". All infrastructure is sited already, where is it not feasible. What are the alternatives and justifications. Firm commitments are needed. There are general issues as some parts of the plan there is a commitment for all collection lines to be installed underground. But in other parts of the plan there are options to site above ground. Which is it? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that all collector lines will be underground. We anticipate that depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, we will advise AEP of these specific locations and discuss alternative methods such as trench excavation. The collector crossing adjacent to one wetland (Class III) and collector crossings at two watercourses will be completed via trench excavation. Also see the appended, updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the watercourse crossings.
77	Non- commitment to requirements wildlife mitigation	Environmental Eval	114	has been sited to avoid or minimize overlap with important wildlife habitats or areas that attract or funnel birds or bats, where feasible [Wildlife Directive 100.1.1].	Use of the term "Where feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? What are the alternatives and justification. Firm commitments are needed.	The wording in the mitigation measures has been revised to provide certainty, and to clarify alternative mitigation measures, see appended Table 10-1 Summary of Project Mitigation. Project infrastructure siting iterations were conducted to reduce Project infrastructure intersections with wildlife habitats (such as native grassland), and mitigation is provided. In comparison to 2016, the 2017 layout reduced infringement in STGR lek setbacks from eight turbines to zero, and reduced infringement in the PRFA setback from two turbines to zero.
78	Setbacks	Environmental Eval	114	Does the Project layout avoid locating wind turbines and infrastructure within the high disturbance setbacks, or if not possible to avoid the setback, located to reduce disturbance of the wildlife feature (i.e., as far as possible from the wildlife feature within the setback or out of direct line of sight from the wildlife feature)	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Specificity to location is provided after the list of mitigation measures in Section 9.6, and in Section 9.7 where residual effects are discussed. See Table 9.6.1 which describes how the mitigation was applied to reduce potential effects. Additional specificity has been added to the appended Table 10-1 Summary of Project Mitigation.
79	Data- commitment to keep data current	Environmental Eval	115		Keeping sensitive raptor and STGR leks data current. There is no mention of the 5 year rule from standard 100.2.10 of the Directive.	Thank you for your comment. The Proponent has committed to keeping wildlife survey data current until the Project is commissioned. If additional wildlife features are identified other than those identified in the Environmental Evaluation report, the Proponent is committed to consulting with AEP to develop an alternative mitigation strategy for these sites for approval by AEP. This additional measure has been added to mitigation measure 9-M3 (see appended Table 10-1 Summary of Project Mitigation).
80	Ferruginous Hawk nest	Environmental Eval	115	No construction activities will occur within an active ferruginous hawk nest setback (1000 m) during the nesting season (March 15-July 15). Outside of the nesting season, nest setbacks will be determined by the level of disturbance (Government of Alberta 2011). Low disturbance activities will require a setback of 50 m. Medium disturbance activities will require a nest setback of 100 m. High disturbance activities will require a 1000 m setback.	Note that only collection lines installed through min disturbance techniques would qualify as a low level disturbance however details are unclear in this plan. It is not clear if the 1000m setback is adhere to for all other infrastructure. There is an issue with their measurement of setbacks therefore this may not be consistent. Based on statements made later in the plan these commitments are not clear (wildlife monitor can alter setbacks). The proponent has not provided clear commitments or the necessary details for AEP to conduct our review.	Thank you for the information regarding minimum disturbance for collection line installation. Please see line 44 for more information on undergrounding collection lines. Setbacks were correctly calculated (see response to line 2 and appended Wildlife Feature Setback Analysis). Mitigation measures have been modified to directly consider the situations identified in the wildlife section where setbacks will be encroached upon, and are included in the appended EE Table 10-1 Summary of Project Mitigation (see measure 9M-4 for FEHA) The review of setbacks by the wildlife monitor as noted in the comment was intended as a contingency measure during construction only, for previously unidentified or recent features. The measure has been modified to advise that, should new features be identified during construction, the Proponent will discuss potential mitigation measures with AEP.

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81	Prairie Falcon	Environmental Eval	115	No construction activities will occur within an active prairie falcon nest setback during the nesting season (March 15-July 15). Outside of the nesting season, the nest setback will be determined by the level of disturbance (Government of Alberta 2011). Low disturbance activities will require a setback of 50 m. Medium disturbance activities will require a nest setback of 100 m. High disturbance activities will require a 1000 m setback. If not possible to meet the setback, a wildlife monitor who is an Experienced Wildlife Biologist will be in place	Are timing restrictions adhered to or not? There is an issue with their measurement of setbacks therefore this may not be consistent. Note that only collection lines installed through min disturbance techniques would qualify as a low level disturbance. The proponent has not committed to minimal disturbance construction techniques. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	No construction activities will be conducted within the prairie falcon setback during the restricted activity period except for small vehicle access to the substation. Access along Highway 785 will not be restricted (see 9-M5). Setbacks were correctly calculated, (see response to line 3 and appended Wildlife Feature Setback Analysis). Mitigation measures have been modified to directly consider the situations identified in the wildlife section where setbacks are encroached upon and are included in the appended EE Table 10-1 Summary of Project Mitigation. The revised mitigation to address the encroachment into the prairie falcon nest setback is provided in line 19.
82	Grassland Birds	Environmental Eval	115		There is no proposed mitigation identified in this section of the plan for grassland birds. The project is preferentially sited on native grassland and therefore grassland bird mitigation will be necessary. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The mitigation measure to specifically address grassland breeding bird restricted activity periods and setbacks, previously in the EMP (Appendix C), has been revised for clarity (see response to line 47) and added to the appended EE Table 10-1 Summary of Project Mitigation (9M-11). 9-M11 Grassland Bird Restricted Activity Period and Setbacks <u>Construction – during restricted activity period, April 1 to July 15:</u> Initial clearing activities will not occur within the grassland bird restricted activity period within native grassland land cover types (see 3-M5). If subsequent construction or decommissioning activities (including reclamation) in native grassland cannot be scheduled outside the grassland bird restricted activity period, a pre-construction migratory bird nest search of the Project footprint plus up to a 100-m setback to identify potential wildlife features that could be impacted by construction activities will be conducted by an EWB If a wildlife feature (e.g. migratory bird nest) is identified, the EWB will apply and flag the appropriate setback as defined by Environment Canada and Climate change (ECCC 2017) and by AEP (Alberta Environment and Parks (AEP) 2017) and communicate the setback to the construction contractor and the client. Construction activities will not be able to occur within the setback without regulator approval. Encroachment into a setback during the restricted activity period will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. Pre-construction migratory bird nest methods will follow industry practices such as: Surveys will not be conducted during inclement weather such as heavy rain, snow, fog, high wind, or cold temperatures as bird detectability during these conditions may be limited. Surveys will not be conducted when ambient temperatures are ≤ 5°C or ≥ 30°C as survivability of eggs or nestlings is diminished. Surveys will be conducted within the clearing limits for the Project footprint and up to 30 m beyond the limits. Survey personnel will walk transects through the area to be cleared, passively searching for nests and nesting activity. For crews of two or more, individuals will be spaced within 5 m distance and walk parallel to one another along the transect. In addition to visually searching for nest structures, surveyors will also employ additional techniques to increase the likelihood of finding nests, such as observing bird song or behaviour as cues to locate nests. These behaviours may include adults flying with food, nesting material, and/or fecal sacks, young begging for food, adults exhibiting agitated behaviour. Nest location, species attributable to the nest (if possible), general nest characteristics (tree/shrub species, nest height, ground / above ground), nest contents if possible (eggs, young), and nest status (active/inactive) will be recorded with care taken not to unnecessarily prolong the disturbance of an active nest.

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						Operation – during the restricted activity period, April 1 to July 15: No major maintenance activities for the access routes and collector lines will be scheduled during the restricted activity period. Approximately weekly routine access will be limited to pick-up trucks and smaller vehicle. In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to a turbine within the restricted access period, the Proponent will have an EWB onsite with stop work authority if grassland birds are present and are showing signs of agitation above baseline levels
83	KWBZ	Environmental Eval	115	If construction is required in the Key Wildlife and Biodiversity Zone between December 15 and April 30, an Experienced Wildlife Biologist will be on site during construction to stop work if ungulates are within 200 m of construction activity, particularly during adverse weather conditions	Where are "adverse weather conditions" defined? Where is the criteria for a stop work order for ungulates defined? Criteria needs to be defined in order for AEP to complete its risk assessment. The proponent has not provided the necessary details.	Adverse weather conditions are defined as snow depths of 20 cm or greater (mitigation measure 9-M2). In winter, deep snow restricts access to ground vegetation and browse. Southerly slopes and areas free of snow are important to deer survival (Nietfeld et al. 1985). Snow depth is the main limiting factor for deer. Snow depth < 25 cm does not inhibit movement, from 25 to 50 cm, it is considered inhibiting, and > 50 cm is considered “critical,” severely restricting movements (Ungulate Winter Range Technical Advisory Team 2005). Snow depth is a primary limiting factor for deer and is easily measurable, therefore this metric is used to define adverse weather conditions. Criteria for stop work within the KWBZ during the period from December 15 to April 30 is ungulate presence within 200 m of construction activity, or snow depth exceeding 20 cm in the KWBZ combined with ungulate presence.
84	Prairie Falcon	Environmental Eval	115	The Experienced Wildlife Biologist will monitor for change in behavior of the birds during construction and or encroachment further than necessary into the setback. Construction of the substation will occur within the recommended setback for high disturbance activities (i.e., 1,000 m).	Are timing restrictions adhered to? In what locations is the setback not adhered to (substation, any others)? What is the monitor doing and what is the criteria for a stop work order. Criteria needs to be defined in order for AEP to complete its risk assessment. The proponent has not provided the necessary details.	Mitigation measures have been modified to directly consider the situations identified in the wildlife section where setbacks were not met, including the substation, and are included in the appended Table 10-1 Summary of Project Mitigation No construction activities will be conducted within the 1,000 m prairie falcon setback during the restricted activity period (April 1- July 15), except for small vehicle access to the substation. Access along Highway 785 will not be restricted. See the response to line 19 and the revised measure 9M-5 in the appended Table 10-1 Summary of Project Mitigation. Setbacks were correctly calculated, (see response to line 3, appended Wildlife Feature Setback Analysis and appended EE Figure 9-2 for clarity).
85	Sharp-tailed grouse Leks	Environmental Eval	115	An Experienced Wildlife Biologist will monitor for encroachment into non-breeding season setback distances (500 m for high disturbance activities throughout the year) (Government of Alberta 2011), removal of shrub habitat within 1,000 m of the lek. An Experienced Wildlife Biologist will confirm that nests or leks are no longer active before construction can occur	Where are setbacks not adhered to? Is this for all leks or just one? Are timing restrictions adhered? What is the monitor doing and what is the criteria for a stop work order. Note setback measurement issue (refer to #91). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent has sited all turbines outside of the 500 m setbacks to the four sharp-tailed grouse leks in the Project area. One lek setback (STGR03) will be intersected by the Project road and buried collector (in the road right of way). The closest distance from the road (the disturbance) to the lek is 365m (see response to line 3, appended Wildlife Feature Setback Analysis and appended, revised EE Figure 9-2 for clarity). Proposed mitigation to reduce disturbance to the lek at this location (LEK03) is as follows: General: Collector line will be installed at the same time road construction occurs within the sharp-tailed grouse lek setback for STGR03, to extent practicable. Situations that may limit adherence to this mitigation include encountering weather events during construction that significantly alter the schedule (e.g., if construction of the road is underway before the restricted activity period, and excessive precipitation events limit execution of the collector line work, then it may be necessary to construct the components at different times for erosion and sedimentation or wildlife safety reasons). The required setbacks (500 m) for each of the identified sharp-tailed grouse leks (STGR01, STGR02, STGR03, STGR04 as per Figure 9-2) will be marked in the field prior to construction with flagging (see 3-M10). Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. The construction footprint for the collector line/access road will be flagged prior to initiation of construction and encroachment into the nest setback beyond the flagged work area will not be permitted. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011.

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						Operations staff will be provided with Wildlife Awareness training, which will include, but not be limited to: how to identify wildlife including sharp-tailed grouse, how to identify behaviours, and steps to take when wildlife is observed. At the time of Project decommissioning, lek activity will be assessed, and pending the results of the lek assessment, setbacks and timing restrictions will discussed with the regulator. <u>Construction – during the restricted activity period, March 15-June 15 (Government of Alberta 2011)</u>: No construction or decommissioning activities, including reclamation will occur within a sharp-tailed grouse setback during the restricted activity period, including installation of underground collector line and construction of the road Encroachment into the lek setback during the restricted activity period will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. Use of the access road (constructed outside of the restricted activity period) during the restricted activity period will be monitored by an EWB with stop work authority if sharp tailed grouse are present and are showing signs of agitation above baseline levels. <u>Construction – outside of the restricted activity period</u>: Prior to initiating construction activities within the lek setback, the EWB will confirm the leks are no longer active for the season. Construction activities within the lek setback (outside of the restricted activity period) are limited to the installation of underground collector line and construction of the road. These activities will be monitored by an EWB (as defined in the Wildlife Directive) with stop work authority if sharp tailed grouse are present and are showing signs of agitation above baseline levels. <u>Operation – during the restricted activity period, March 15-June 15 (Government of Alberta 2011):</u> No major maintenance activities for the access route and turbine V-12 will be scheduled during the restricted activity period. Approximately weekly routine access to turbine V12 will be limited to pick-up trucks and smaller vehicles. In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to turbine V-12 during the restricted access period, the Proponent will have an EWB onsite with stop work authority if sharp tailed grouse are present and are showing signs of agitation above baseline levels.
86	Collector Line	Environmental Eval	116	If above ground collector lines must be used due to landscape constraints or in the vicinity of the substation, measures described in Reducing Avian Collisions with Power Lines: The State of the Art (APLIC 2012) will be implemented as follows [Wildlife Directive 100.3.15]:	Where are above ground collector lines required? The commitment is for underground collector lines unless not technically feasible. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that all collector lines will be underground (see response to line 44.) This text has been removed from the mitigation measure, as there are no above ground lines it is no longer applicable. Please see the revised EE Table 10-1 Summary of Project Mitigation appended to this document.

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87	Sharp-tailed grouse Leks	Environmental Eval	116	No construction activities will occur within a lek setback (500 m) during the breeding season (March 15 to June 15). Further, no human activity will be allowed within a lek setback from one hour before sunrise to two hours after sunrise during the breeding season. Outside the breeding season, lek setbacks will be determined by the level of disturbance (Government of Alberta 2011). Low and medium disturbance activities will require a setback of 100 m and high disturbance activities will require a setback of 500 m. If not possible to meet the setback, a wildlife monitor who is an Experienced Wildlife Biologist will be in place	The plan states there will be no infrastructure sited within the setback unless its "not possible". Where is it not possible, locations need to be clearly identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	“Not possible” in this context refers to where Project infrastructure within a lek setback could not be avoided due to other siting constraints (See Table 1.1-1) The road and buried collector were routed to avoid the PRFA 1000 m setback, the STGR04 500 m setback. Based on terrain and these other wildlife feature setbacks this was the best possible route to V-12. Please see response to line 85 for mitigation for STGR03.
88	Non- commitment to requirements wildlife mitigation valley breaks	Environmental Eval	116	features with the potential to be within 100 m of the Project infrastructure [per Wildlife Directive 100.2.6], and if not feasible to avoid the feature	Use of the term "Where feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	See response to line 38 for mitigation for coulee breaks. Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended to this document The Proponent does not intend to change plans, Project layout, or construction methods without accounting for wildlife or wildlife habitat issues and has amended all non-committal language accordingly. Furthermore, the Proponent commits to working with AEP to identify and implement alternative mitigations as necessary throughout the life of the Project. Proposed changes to the Project layout or methods would be determined through final input and design from the Project engineers based on detailed geotechnical analyses and site-specific ground truthing. If these types of changes are proposed they will be provided to AEP along with a rationale, for AEP’s review and guidance. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation.
89	Other raptors- Mitigation	Environmental Eval	121	For example, the Wildlife Guidelines (2011) indicate that turbine locations are required to be setback from Swainson’s hawk and red-tailed hawk nests by 500 m, whereas the Wildlife Directive (2017) indicates that these features should be protected by setbacks of 100 m. The Land Use Guidelines do not include setbacks for Swainson’s hawk and red-tailed hawk nests. For these features the Proponent will adhere to setback and timing guidance from the Wildlife Directive (AEP 2017a).	The grandfather process allows for use of the guidelines or the Directives. However the proponent cannot cherry pick the parts that suit their plans or agendas. The proponent is either following the 2011 Guidelines or the 2017 Directives. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent was attempting in good faith to address the Directives where they could, and has committed to the proposed mitigation regardless of its source. We note that Exception 3 of the Grandfather Process (which applies to the Project) states (emphasis added): “[…] the 2011 Policy **may** be applied for all pre-construction activities”, which we interpret to mean that the Project does not have to choose either the Guidelines or the Directive in its entirety.
90	Mitigation- setback infringement	Environmental Eval	121	There are three locations where Project infrastructure intersects wildlife feature setbacks. In these locations, where avoidance of the feature setbacks is not possible due to other siting constraints,	Where are these locations identified and what are the alternatives. Note there are likely more then three locations as all setbacks are measured wrong (refer to number 91).AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Setbacks were correctly calculated, (see response to line 3, appended Wildlife Feature Setback Analyses, and updated EE Figure 9-2 for clarity).

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91	Mitigation- Setbacks	Environmental Eval	121	The analysis calculated the distance between the closest (centre) point where roads or collector lines occur in relation to the wildlife feature and the centre point of the wildlife feature. The wildlife feature setback was applied to the centre point of the feature to determine where infrastructure footprints intersect wildlife setbacks, and if an intersect occurred, the distance from the infrastructure to the centre point wildlife feature was reported in Table 9.7-1	Setbacks are measured for both the 2011 guidelines and the 2017 Directive For turbines, setbacks are measured from the closest edge of the rotor swept area to the closest edge of the wildlife feature. For all other infrastructure (roads, feeder lines, etc.), setbacks are measured from the nearest edge of the disturbance to the nearest edge of the wildlife feature. For all species not specified with a higher level setback, the setback is 100 m from an active house, nest or den.	Setbacks were correctly calculated, from the nearest edge of the disturbance to the nearest edge of the wildlife feature – the quoted text describes only the first step in the calculation (see response to line 3, appended Wildlife Feature Setback Analyses and updated EE Figure 9-2 for clarity).
92	Ferruginous Hawk nest	Environmental Eval	122	F6). Raptor nest surveys are planned for spring 2018 to determine the status of the nest. A permanent Project road is sited within the setback of this feature, with a closest distance of 680 m from the ferruginous hawk nest location.	There are extenuating circumstances at this specific nest. Due to mitigation efforts that are currently ongoing, AEP considered this nest be active and requiring the full 1000 meter setback. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	It is the Proponent's understanding that mitigation measures are being undertaken for a ferruginous hawk nest more than 1000 m to the south of the Project area, and not for this nest. The nest within the Project area was vacant in 2015 and occupied by Swainson's hawks in 2017. However, the Proponent will follow AEPs recommendation that the nest be considered active in 2017. In consideration of this nest the Proponent has sited Project infrastructure to minimize encroachment into the nest setback. Please see response to line 63.
93	Prairie Falcon Nest	Environmental Eval	122	A Project collector line and the Project substation will intersect a prairie falcon nest feature setback. The closest point to the nest will be 750 m away from the prairie falcon nest	What is the actual distance based on corrected measurements (refer to number 91)? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Setbacks were correctly calculated (see response to line 3, appended Wildlife Feature Setback Analysis and appended revised EE Figure 9-2 in the EE for clarity).
94	Prairie Falcon Nest	Environmental Eval	122	Collector lines will be installed via ploughing to the extent practicable (to be determined in the field based on site characteristics) using minimal disturbance techniques during the period when prairie falcons are not present	Use of the term "to the extent possible". Will the line be ploughed in or not. If not what are the alternative mitigation that is being proposed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that all collector lines will be underground. Please see response to line 44 for revised mitigation for undergrounding collector lines.
95	Prairie Falcon Nest	Environmental Eval	122	After the collector line is in place, it is not anticipated to negatively affect mortality risk to nesting or foraging prairie falcons, as it is buried and will not be visible	Refer to number 94 and 96. Will the line be buried or will it not be buried? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that all collector lines will be underground. Please see response to line 44 for revised mitigation for undergrounding collector lines

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96	Prairie Falcon Nest	Environmental Eval	122	The substation is a permanent Project component that will remain through operation; however, other permanent structures already exist within 1,000 m of the nest (turbines and substation for existing Old Man 2 Project) and	Which resulted in a compliance file and subsequent fines. There are no alternative mitigations identified and no clear plan for timing or methods of construction. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. It should be noted that AEP has identified that this nest should not be further infringed upon. The compliance file in association with another renewable project is tied to this specific prairie falcon nest.	Note that the Proponent is not involved with the adjacent project nor any activities associated with that project. Mitigation 9-M5 has been revised to detail timing restrictions and alternative mitigations for work within the wildlife feature setback that apply to both construction and operation, including undergrounding of the collector line. Please see the response provided in line 19.
97	Prairie Falcon	Environmental Eval	122	operation. The collector line and substation have been sited within the setback as this location has been determined in consultation with AESO to be the only technologically feasible location for interconnection.	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	See line 19 for mitigation measures for the Prairie falcon nest (measure 9-M5), which details timing restrictions and alternative mitigations for work within the wildlife feature setbacks. See revised EE Table 10-1 Summary of Project Mitigation for the updated mitigation, which aims to clarify the mitigation measures that will be adhered to, based on AEP comments.
98	Sharp-tailed grouse Leks	Environmental Eval	122	The 500 m setback centred on the sharp-tailed grouse lek (LEK 03) will be intersected by a Project road and collector line. The closest distance of the road and collector line to LEK 03 is 365 m.	What is the actual distance based on corrected measurements (refer to number 91)? The setbacks are not properly identified. As such the proponent has not identified all related setback infringements. What are the alternative mitigations proposed for both the construction and operation of this road. These have not been clearly identified.	Setbacks were correctly calculated, and the distance of 365 m is correct (see response to line 3, appended Wildlife Feature Setback Analysis and appended updated EE Figure 9-2 for clarity).
99	Sharp-tailed grouse Leks	Environmental Eval	122	Road and buried collector construction will occur outside the breeding period (March 15 to June 15) (see 9M- 6), and measures to reduce disturbance to resident birds will be undertaken (see 9-M8), including construction monitoring by an Experienced Wildlife Biologist. Mortality risk is likely to increase for sharp-tailed grouse at this location in association with vehicle use of the road, but will be reduced through access controls, access management, and traffic control measures such as speed limits.	No specifics provided. Curranty missing time periods of construction, type of road, what access controls and when, criteria for stop work order for the Env monitor, commitment for when Env Monitor will be on duty. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Please see response to line 85 for mitigation for STGR 03. Please see mitigation measures 9-M2 and 9-M6 for specific information regarding the role of the EWB and mitigation measures related to the STGR lek setback and timing restrictions in the appended, revised EE Table 10-1 Summary of Project Mitigation. As no activity is permitted within the setback during the restricted activity period during construction, no access controls are proposed for this mitigation.

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100	Grassland Birds	Environmental Eval	123		Still no mention of the timing restrictions or alternative mitigation for grassland birds. The project is preferentially sited on native grassland therefore there must be a plan to address risks to grassland birds. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The mitigation measure to specifically address the grassland breeding bird restricted activity period, previously in the EMP, has been revised for clarity and added to the appended, revised EE Table 10-1 Summary of Project Mitigation.
101	Mitigation- setback infringement	Environmental Eval	123	Table 9.7-1	Setbacks are measured for both the 2011 guidelines and the 2017 Directive For turbines, setbacks are measured from the closest edge of the rotor swept area to the closest edge of the wildlife feature. For all other infrastructure (roads, feeder lines, etc.), setbacks are measured from the edge of the disturbance to the edge of the wildlife feature. For all species not specified below, the setback is 100 m from an active house, nest or den. The proponent has measured all setback incorrectly and therefore has not identified proposed infringements of setbacks.	Setbacks were correctly calculated (see response to line 3, appended Wildlife Feature Setback Analysis and appended updated EE Figure 9-2 in the EE for clarity).
102	Mitigation- Wildlife	Environmental Eval	130	Table 10-1-1	There are a number of issues with the mitigation identified in this table already identified by AEP. In general AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended, including identification of specific measures for those situations in which policy is not completely met.
103	Wildlife Monitor	Environmental Eval	136	Wildlife Monitor	This section includes some details of the Wildlife monitor for the KWKZ but these are not fully defined. Details on stop work criteria for the PRFA, STGR, and FEHA are not included. No mention of grassland birds. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. T he proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Please see response to line 83 regarding specifics for stop work criteria within the KWBZ during the winter period from December 15 to April 30, and also revised mitigation measure 9-M2 in the appended EE Table 10-1 Summary of Project Mitigation. Specific mitigation regarding the role of the EWB and stop work criteria for PFRA (9M-5), STGR (9M-6), and FEHA (9-M4) are also revised in the appended EE Table 10-1 Summary of Project Mitigation. Please see response in line 73 for mitigation for grassland breeding birds.

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104	Collector Line	Environmental Eval	138	If above ground collector lines must be used due to landscape constraints or in the vicinity of the substation, measures described in Reducing Avian Collisions with Power Lines: The State of the Art (APLIC 2012) will be implemented as follows [Wildlife Directive 100.3.15]:	Are there any collection lines being proposed above ground? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. Note there are a number of inconsistent statements in regards to collection lines including but not limited to the location (above or below ground), and construction methods.	The Proponent confirms that all collector lines will be underground (see response to line 44). This text has been removed from the mitigation measure, as it is no longer applicable. Please see the revised EE Table 10-1 Summary of Project Mitigation appended to this document.
105	Non- commitment to requirements wildlife mitigation Table 10-1-1	Environmental Eval	130-138	"where feasible" " extent practical" "Where possible" "as necessary" etc.	Use of non-committed terms. As all infrastructure is sited within the maps and figures, where is this not feasible? This entire section is deficient and identifies more questions than answers. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended.
106	Siting	Environmental Eval	23-24	As indicated in Stantec (2010), for the purposes of this Project, the definition of native prairie is an area of unbroken grassland or parkland dominated by non-introduced species, and an area of previously broken grassland that has reverted back to native vegetation (30 to 60 years).	This definition does not correspond with the AEP definition of Native Grassland. Definition of Native grassland: Public Lands 2005 and repeated in the Wind Directives *an area of prairie in which natural veg consists primarily of perennial grasses. The native species composition must be greater than 30% (adams et. al, 2005)*	The Proponent relied on land cover mapping in the 2010 application, with additional ground truthing, prepared by experienced biologists. The Proponent has committed to additional surveys to assess range health using the Range Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta (Adams et al 2003) (see mitigation 3-M5).
107	Summary of concordance with Wildlife Directive	Environmental Eval	Appendix B 1-8		As there are many issues identified within the body of the plan(s) AEP has not fully reviewed this summary table. The statements made through out this plan are either not fully committed to or are inconsistent. The concordance table does not address the inconsistent statements made. Currently this table just creates more confusion and does not allow AEP to conduct a risk assessment.	The Proponent has revised mitigation in response to the comments provided in this document and considers that the responses fully address the comments and are consistent. Please see the revised EE Table 10-1 Summary of Project Mitigation appended to this document.
108	Purpose of the EMP	EMP (Appendix C)	5	this EMP is to provide the Owner and their construction contractor(s) with performance-based environmental objectives, standard protocols, and mitigation measures to ensure that the Project achieves compliance with applicable legislation, conditions of permits and approvals, and engineering specifications during construction and the subsequent operation of the facility.	For AEP an EMP provides the mitigation that will be applied and once approved by the AUC and AEP form the conditions that must be adhered to. If new information or unforeseen circumstances occur, then alternatives must be agreed to with AEP and AUC prior to construction.	Thank you for your comment. If new information or unforeseen circumstances occur, the Proponent will seek agreement with AEP and AUC on alternatives prior to construction.

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109	Purpose of the EMP	EMP (Appendix C)	6	The EMP provided below is a preliminary version and will be finalized prior to the start of construction. It is recognized that as the Project proceeds through detailed design and construction, this EMP may need to be revised in response to such things as, but not limited to, changes to the following:	AEP expects that the EMP will be adhered to and that no future consultation will be required unless some thing new is identified. The over generalization of commitment will need to be corrected to enable the standard AEP process that has been used by all other renewable projects in Alberta. The proponent has not provided a clear commitment to implement the mitigations identified in the EMP. Nor have they committed to following the standard process for proposing alternative mitigation after the AUC review process is complete.	Thank you for your comment. The Proponent is committed to the measures outlined in the EMP and has provided additional clarity in the appended revised mitigation summary table. The statement referred to was intended for transparency, to indicate the status of the Project design. Regardless, the Proponent is committed to following the standard process for proposing alternative mitigation in the event that a new feature is identified and to engaging with AEP if changes to the EMP are required.
110	Responsibilitie s	EMP (Appendix C)	9	Ensure the Project is managed in a manner consistent with the Owner's policies and procedures, and ensure the Project execution plan and the EMP has effectively incorporated environmental requirements from permits, approvals, notifications, landowner requests, and all other additional environmental commitments and conditions.	No mention of the AEP policy, standard mitigation or requirements. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment. Note there are a number of inconsistent statements in regards to collection lines including but not limited to the location (above or below ground), and construction methods.	AEP policy, standard mitigation and requirements have been incorporated into mitigation measures throughout the EE and the Proponent is committed to implementing all mitigation in the EE. A revised Table 10-1 Summary of Project Mitigation has been appended to provide greater clarity on the measures that will be implemented by the Proponent. The revised Table 10-1 Summary of Project Mitigation includes a commitment to bury all collector lines underground.
111	Wildlife Monitor	EMP (Appendix C)	10	Wildlife Monitor section 2.1.3	Where is the criteria for defining disturbance to a nest, lek or other feature? How will things be monitored? There is no information given. Based on this plan if the wildlife monitor is on site then the company is in compliance with their EMP but there are no protections afforded to the wildlife. This is a poorly defined position. How does it actually meet with the intent of the standard AEP mitigation for the PRFA, STGR, Grassland Birds and other wildlife issues identified? AEP requires that wildlife monitor positions, responsibilities, and operating criteria is clearly defined. The use of a wildlife monitor is alternative mitigation. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The role of the EWB has been provided as part of mitigation measures 9M-2, 9M-4, 9M-5, 9M-6, and 9M-11, which address wildlife feature setbacks and restricted activity periods for the KWBZ, PRFA, FEHA, STGR, and Grassland Birds. The EWB will be responsible for monitoring the mitigation in the EE to ensure it is implemented appropriately and is functioning to protect wildlife. Please refer to line 16 (KWBZ), line19 (prairie falcon), line 37 (grassland birds), line 38 (coulee break), line 55 (wetland), line 63 (ferruginous hawk), and line 85 (sharp-tailed grouse).
112	Responsibilitie s- Env monitor	EMP (Appendix C)	10	Identify if permit and condition variances are required and if so, determine site-specific setback and mitigation strategies in consultation with the Project Environmental Manager and regulatory bodies, as delegated.	This should have been completed already in this EMP. However it has not as no solid commitments have been made to adhere to AEP standards or requirements. Everything is to the "extent possible", which is not acceptable. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	A revised EE Table 10-1 Summary of Project Mitigation has been provided to outline more clearly the measures that have been committed to by the Proponent. Phrases such as "to the extent possible" and "where feasible" have been removed. The Proponent does not intend to change plans, Project layout, or construction methods without accounting for wildlife or wildlife habitat issues and has amended all non-committal language accordingly. Furthermore, the Proponent commits to working with AEP to identify and implement alternative mitigations as necessary throughout the life of the Project. Proposed changes to the Project layout or methods would be determined through final input and design from the Project engineers based on detailed geotechnical analyses and site-specific ground truthing. If these types of changes are proposed they will be provided to AEP along with a rationale, for AEP's review and guidance. The 2018 layout, as submitted to the AUC in the amendment application and included in Tables 1, 2, and 3 appended to this document, includes minor changes to the collector line and road alignments that further reduce fragmentation.

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113	Non- compliance reporting	EMP (Appendix C)	15	Should an environmental non-compliance event occur, the Construction Manager and Environmental Monitor, or Wildlife Monitor as appropriate, will complete a punch-list, in which the event will be described, including affected environment, root cause, response measures implemented, and actions taken to prevent recurrence. The event punch-list will be submitted to the Project Environmental Manager within 48 hours of the noncompliance.	Punch list: so for example someone parks their truck too close to a STGR lek that would equate to what…? This is not clear. What is the purpose of this process and how will it protect and limit impacts on wildlife and wildlife habitat? The proponent has not provided the necessary detail to determine if adjustments will be made to correct for improper implementation of mitigation. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent and Project personnel will adhere to the mitigations described in the EE and in the revised EE Table 10-1 Summary of Project Mitigation. Every effort will be made to avoid environmental non-compliance; however, the EMP outlines a process for documenting and communicating corrective actions taken in the event that an environmental non-compliance issue occurs. The process is intended to minimize the risk of recurrence by communicating non-compliance issues and corrective actions amongst the Project team. The process includes implementing response measures and corrective actions. Those measures and actions will be dependent on the nature of the environmental non-compliance. Environmental non-compliance events will be reported to AEP within 48 hours. With respect to the example given by AEP, in a situation like this the EM would notify the person that had parked too close to the wildlife feature and have them move their truck. The EM would then notify the Construction Site Manager so that the incident was related to all crews during the daily meetings and described as a non-compliance. The EM would complete all reporting, as necessary and based on the specific infraction.
114	Mitigation- training	EMP (Appendix C)	15	Wildlife encounter protocol	Wildlife Training does not include information on standard wildlife mitigation such as setbacks, timing restrictions etc. All staff need to know why these rules exist and why these must be followed. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent is responsible for implementing and adhering to all mitigation described in the EE and revised in the appended EE Table 10-1 Summary of Project Mitigation. Project personnel will receive environmental training prior to starting work at the site that will include, but not be limited to: location of wildlife features and setbacks; colour coding of flagging on the site; mitigations and their rationale, including setback and timing restrictions, reporting procedures for wildlife observations, and environmental non-compliances; and consequences for non-compliances. Daily on-site meetings with crew leaders and staff will include environmental topics such as current setbacks based on season, recent wildlife observations, etc.
115	Mitigation- setbacks	EMP (Appendix C)	15	Identified environmental issues (e.g., wildlife, wetlands, noise, spills, weed transfer, etc.)	There is no mention of setbacks, mitigation or other wildlife general mitigations. Is this covered by the general "wildlife" in this statement. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The referenced text is included in a bulleted list of items to be discussed at an initial kick-off meeting prior to starting construction. The “wildlife” in the statement is intended to address wildlife mitigation, as noted in the comment, including adherence to setbacks and timing restrictions, as well as implementation of alternative mitigation strategies to address identified setback encroachments.
116	Setbacks	EMP (Appendix C)	16	status of wildlife buffer zones, if applicable	AEP expects that all setbacks are being adhered to. These non-committal statements are interpreted as high risk to wildlife and wildlife habitat. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent is committed to implementing the mitigation as described in the revised EE Table 10-1 Summary of Project Mitigation. The text referenced has been provided as a cross check for information for key personnel during regular meetings during construction. The status of wildlife feature setbacks will be determined by timing restrictions and input from the EWB. This is not intended as an alternative mitigation but a description of how the information on the setback will be communicated. Mitigation wording has been revised for greater clarity in the EE Table 10-1 Summary of Project Mitigation (appended).
117	Non- compliance reporting	EMP (Appendix C)	16	A non-compliance becomes an incident if, once identified, it is not rectified immediately or as soon as practicable. A	Non-compliance: even if rectified the damage may already be done. Due to the risk of Windy point, AEP expects to be notified for all wildlife acts of non-compliance. The proponent has not committed to or provided a process to meet this requirement. This is unacceptable.	The mitigation has been revised in the appended EE Table 10-1 Summary of Project Mitigation to reflect the notification requirement. The Proponent will report all environmental non-compliance events to AEP within 48 hours and will submit an Environmental Report summarizing key environmental concerns, inspection notes, non-compliance events, follow-up/action items, and issues to AEP at the end of each year (for example see 9-M4).
118	Non- commitment to requirements - Non – compliance reporting	EMP (Appendix C)	16	The Project Environmental Manager and Environmental Monitor will be responsible for reporting noncompliance events, when applicable, to relevant regulatory agencies	Use of the term "when applicable". All non-compliance in relation to wildlife must be reported immediately.	The Proponent will report all environmental non-compliance events to AEP within 48 hours and will submit an Environmental Report summarizing key environmental concerns, inspection notes, non-compliance events, follow-up/action items, and issues to AEP at the end of each year.

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119	Non- compliance reporting	EMP (Appendix C)	17	Table 5: AEP within 48 hours of non-compliance	Reporting to AEP: Table 5 includes AEP in reporting of non- compliance but this commitment is unclear in the text. The proponent has not identified clear direction for its employee or contractors to adhere to the EMP.	The Proponent has clarified the reporting commitment and will report all environmental non-compliance events to AEP within 48 hours and will submit an Environmental Report summarizing key environmental concerns, inspection notes, non-compliance events, follow-up/action items, and issues to AEP at the end of each year.
120	mitigation- non-compliance reporting	EMP (Appendix C)	17	What each report should include	Does not include summary of non-compliance action and impacts on wildlife and wildlife habitat. This is not clear.	The following measure has been added to the appended, revised EE Table 10-1 Summary of Project Mitigation: “Environmental non-compliance reporting to AEP will include a summary of the non-compliance action and a description of the effect of the non-compliance action on wildlife and wildlife habitat.”
121	Non-commitment to requirements -wildlife monitor	EMP (Appendix C)	20	Wildlife Monitor • Will be on site as necessary to observe for wildlife. • Will be called-in to support the Environmental Specialists and Environmental Manager as needed during the bird and bat breeding season and in the winter.	Use of term " as necessary". But what does this mean? The wildlife monitor is identified as a key alternative mitigationfor several issues. Where is the commitment to be present and what they will be doing in relation to these issues (PRFA nest, grassland birds, STGR leks, FEHA nest, etc.). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	In this statement, “as necessary” refers to the specific circumstances under which the Proponent has committed to having a wildlife monitor on site. The mitigation requiring an Experienced Wildlife Biologist has been compiled and revised for greater clarity in the appended EE Table 10-1 Summary of Project Mitigation. Please refer to mitigations 9-M2, 9-M4, 9-M5, 9-M6, new grassland breeding bird mitigation (9-M11), and general wildlife mitigations (9-M12).
122	Valley breaks	EMP (Appendix C)	21	Table 6 Work will not occur within 100 m from the top of a valley break (including coulees) (AEP 2017b). • Avoid dry native prairie slopes land over classifications and coulee land cover classifications where possible.	Inconsistent statements in regards to valley breaks. Some state they will abide by the 100 m setbacks. Other say the project will abide by the 100 m setback where possible. It is unclear to AEP if the setback is being me. Note all setbacks have been miss measured (refer to 91). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The 100 m coulee break setback is met with the exception of one turbine, V-08, which is located outside of the coulee but within the setback (100 m). Note that based on the grandfathering process the 100 m coulee setback does not apply to the layout. The collector lines will transverse a coulee in two places (on the north-south collector line that runs between V-04 and V-14). The collector line will be installed via trench excavation. Please see response to line 38 for mitigation measures. Setbacks for coulee breaks have been correctly measured.
123	Setbacks	EMP (Appendix C)	21	Table 6 Minimize Project footprint	Will setbacks for wildlife setbacks as part of this boundary marking? The proponent has not clearly identified how wildlife setbacks or avoidance areas will be identified to employees or contractors on site. If these sites are not adequately identified the proponent cannot ensure adherence to mitigation (where mitigation is identified).This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent will mark wildlife feature setbacks prior to construction with flagging. The mitigation has been updated to reflect this commitment in the appended EE Table 10-1 Summary of Project Mitigation. Please see mitigations 5-M1, 9-M4, 9-M5, 9-M6, and 9-M7.
124	Wetlands	EMP (Appendix C)	22	Locate the collector line will be located within or immediately adjacent to the existing disturbance in the right-of-way for Road 291. Should it not be possible to construct the collector line in this area, complete a Wetland Impact Assessment Form, along with a mitigation plan to submit with an Application for a Licence under the Water Act.	What about wildlife impacts? These are not addressed by current mitigation. In other sections of the plan there are identified areas where collection lines will infringe on setbacks (and likely more , refer to row 91). AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation for the encroachment into the setback for wetland DLK001 has been revised for greater clarity. Please refer to the response to line 55 for mitigation for the wetland, mitigation 5-M1 for wetlands and watercourses, and 9-M7 for potential wildlife effects, in the appended EE Table 10-1 Summary of Project Mitigation. Note that the collector line within the wetland setback was sited to parallel the existing linear disturbance for Range Road 291, thereby reducing fragmentation.

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125	Non- commitment to requirements – collection lines	EMP (Appendix C)	22	Construct underground collector lines by ploughing versus trenching to the extent practicable. Ploughing will be used whenever soil and topography is suitable. When ploughing is not practicable the collector line will be installed via trenching, with attention to soil and vegetation handling.	Collection Lines: Where will it not be practical to plough in lines? As all collection line locations have been selected this should be known at this time. Firm commitments are needed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that all collector lines will be underground. We anticipate that depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, we will advise AEP of these specific locations and discuss alternative methods such as trench excavation. The collector crossing adjacent to one wetland (Class III) and collector crossings at two watercourses will be completed via trench excavation. Also see the appended, updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the watercourse crossings.
126	Wetlands	EMP (Appendix C)	23	Delineate wetlands and watercourses: • Delineate wetlands and watercourses on Project maps prior to construction. • Flag wetland boundaries and the high-water mark of watercourses intersected by the Project footprint in the field to prevent encroachment. • Orient collector lines and roads to cross perpendicular to the watercourse as much as possible.	What about wetland wildlife setbacks will these be marked and avoided or not? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that wetland setbacks of 100 m will be marked for wetlands DLK001 and DLK003. Wetlands and their setbacks are avoided, with the exception of the setback to wetland DLK001 traversed by a collector line adjacent to Range Road 291. Mitigation for trenching in the wetland setback is provided in the response to line 55 and mitigation 5-M1 in the revised EE Table 10-1 Summary of Project Mitigation).
127	Mitigation- Wildlife Monitor	EMP (Appendix C)	24	Table 6 Wildlife monitor	Wildlife Monitor: What defines a need for a stop work order for each of these? This needs to be included in this plan. What about grassland birds and the ferruginous hawk nest. No mention of these. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigations requiring a wildlife monitor have been revised to provide greater clarity on the circumstances that would trigger a stop work order within wildlife feature setbacks and other circumstances. Please see the appended EE Table 10-1 Summary of Project Mitigation, and responses to line 16 (KWBZ, 9-M2), line 19 (prairie falcon, 9-M5), line 37 (grassland birds, 9-M11), line 63 (ferruginous hawk,9-M4), and line 85 (sharp-tailed grouse9-M6) as well as 9-M3 for EWB responsibilities.
128	Ferruginous Hawk nest	EMP (Appendix C)	25	Table 6 FEHA nest setbacks and timing restrictions	Earlier in the plan its says that a collection line and road will be within 640 m of the nest. This exception is not mentioned here and there is no alternatives identified. Note ploughed in collection lines can be considered low impact if done outside the breeding season. All other infrastructure is considered high impact. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	There is no new infrastructure proposed within the 1000 m setback to the FEHA nest. An upgrade to the spur road from Range Road 291 is the only change to existing infrastructure. See response to line 63 for proposed mitigations to minimize disturbance of the ferruginous hawk nest.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
129	Sharp-tailed grouse Leks	EMP (Appendix C)	25	Table 6 STGR leks setbacks and timing restrictions If not possible to meet the setback, have an Experienced Wildlife Biologist in place (see 9M-2).	Will setbacks be adhere to or not? Use of the term "if not possible". AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	STGR setbacks are adhered to with the exception of the 500 m setback for STGR03 (see appended Wildlife Feature Setback Analyses, and revised EE Figure 9-2), which is encroached upon by a project road and buried collector line. The road and buried collector were routed to avoid the PRFA 1000 m setback and the STGR04 500 m setback. Based on terrain and these other wildlife feature setbacks this was the best possible rout to V-12. Please see line 85 for proposed mitigation to reduce disturbance to the lek at this location.
130	Prairie Falcon	EMP (Appendix C)	25	Table 6 PRFA nest setbacks and timing restrictions	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Please see response to line 3, and appended Wildlife Feature Setback Analysis. Please see line 19 for proposed mitigation to reduce effects to the PRFA nest.
131	Non-commitment to requirements - Collection lines	EMP (Appendix C)	25	Table 6 Site and design Project infrastructure to reduce risk of wildlife mortality: "Implement the following measures if above ground collector lines must be used"	Are collection lines underground or not? Where are above ground collection lines? Are these within any wildlife setbacks? Will they cross valley breaks? Where would spacers not be possible? What is actually being committed to here and where? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent confirms that all collector lines will be underground. We anticipate that depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, we will advise AEP of these specific locations and discuss alternative methods such as trench excavation. The collector crossing adjacent to one wetland (Class III) and collector crossings at two watercourses will be completed via trench excavation. Also see the appended, updated EE Figure 9-2, which shows the Project infrastructure and environmental constraints, including the watercourse crossings.
132	Non-commitment to requirements - valley breaks	EMP (Appendix C)	25	Minimize infrastructure footprint if it is not feasible to avoid the feature.	Use of the term "if not feasible". As all infrastructure is sited within the maps and figures, where is this not feasible? What are the alternatives and justification. Firm commitments are needed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation measures have been revised to avoid non-committal terms. A revised EE Table 10-1 Summary of Project Mitigation is appended.
133	Reclamation	EMP (Appendix C)	27	strategy contains a series of pre-construction and construction period actions to gather information, mitigate or avoid effects, and reclaim grasslands. During detailed Project design and based on (I) the outcome of regulatory approvals, (ii) the results of soil and vegetation surveys and, (iii) Project extent, design and staging, the most relevant and effective of the actions will be used to develop a detailed Reclamation Plan that will be appended to the EMP.	How will wildlife impacts be managed, setbacks, timing restrictions other? Do the commitments outlined in this EMP extend to the reclamation period as well. The proponent has not provided details to how wildlife risk will be assessed and mitigated through the reclamation process.	Measures to manage impacts to wildlife during reclamation (including setbacks and restricted activity periods), are included in appended, revised EE Table 10-1 Summary of Project Mitigation. Please refer to line 16 (KWBZ), line 19 (prairie falcon), line 37 (grassland birds), line 38 (coulee break), line 55 (wetlands), line 63 (ferruginous hawk), and line 85 (sharp-tailed grouse).
134	Appendix A	EMP (Appendix C)	29	Not included	This section is missing. The proponent did not include this section of the plan and therefore AEP cannot review it.	As the Project is still in development, ‘issued for construction’ drawings are not yet available. They will be provided in the final draft of the EMP and will conform to the layout in the EE.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
135	Grassland Birds	EMP (Appendix C)	Appendix B 1	Schedule Table B-1 Refer to Section 3.0 for wildlife timing restrictions.	Where are the grassland bird timing restrictions? How are these addressed? As the project is preferentially sited on native grassland the risks to grassland birds must be addressed. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The mitigation measure to specifically address grassland breeding bird restricted activity period, previously in the EMP, has been revised for clarity and added to the appended EE Table 10-1 Summary of Project Mitigation. Please see response to line 73 for mitigation measures.
136	setbacks	EMP (Appendix C)	Appendix B 1	Ensure that all environmental features (wetlands, archaeological, paleontological and historic sites, or other environmental features identified during surveys) are clearly marked using PURPLE paint and flagging. Ensure there is appropriate mitigation in place (e.g., fenced, flagged and staked).	Are setbacks flagged or not? The proponent has not identified if wildlife setbacks or avoidance areas will be clearly marked. Therefore it is not clear how these sites will be identified to employees or contractors. AEP is concerned that mitigations identified will not be implemented.	The mitigation has been revised to include a clear commitment to mark (flag) required wildlife feature setbacks in the field prior to construction. Please see the appended EE Table 10-1 Summary of Project Mitigation, measures 5-M1, 9-M4, 9-M5, 9-M6, and 9-M7. Flagging will be completed outside of the restricted activity periods.
137	Non- commitment to requirements - wetlands	EMP (Appendix C)	Appendix B 1	Do not place or remove existing fences in wetlands. If it is absolutely necessary for a fence to be installed or removed through a wetland,	There should be no exception. This should not be allowed. There is a process for new issues to be dealt with, in consultation with AEP which could be used in this case. Firm commitments are needed at this level of detail. The proponent has not identified this process in the plan nor made any commitment or identification of alternative processes.	The Proponent will not deviate from the mitigation measures in the revised EE Table 10-1 Summary of Project Mitigation (appended) without obtaining prior approval from AEP. Consideration of fences will be included in the wetland impact assessment (see 5-M1).
138	Mitigation- access roads speed limits	EMP (Appendix C)	Appendix B 3	Speed limits on new access roads will be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions as necessary to ensure safe and efficient traffic flow as well as to protect workers on foot and wildlife.	use of non-committed words "as necessary" what does this mean. When will speed limits be applied as mitigation for wildlife? And what will the speed limits be? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	Mitigation measures have been revised for greater clarity. A revised EE Table 10-1 Summary of Project Mitigation is appended. The Proponent has provided the traffic management protocols, including speed limits, that will guide the Access Management Plan (see mitigation 3-M8 in appended Summary of Commitments).
139	wetlands	EMP (Appendix C)	Appendix B 5	Equipment shall not be left parked within 30 m of wetlands and watercourses.	The setback is 100 m not 30m, refer to line 91 for how to measure setbacks. . The proponent has not identified this as alternative mitigation. The proponent has not previously discussed this issue with AEP. Where is this setback infringed upon? This proposal significantly reduces the required setback on native grassland with no alternative mitigations identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The setback for wetland classes that are not temporary is 100 m per the Directive, and the Project adheres to this setback, with the exception of DLK001, for which alternative mitigation has been provided (noting that Range Road 291 is within this setback for DLK001).

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
140	Sharp-tailed grouse Leks	EMP (Appendix C)	appendix B 8	Follow the requirements of AUC Rule 12 Noise Control: • Conduct construction activities from 7 am to 10 pm. • Ensure notifications to landowners regarding significant noise activities (e.g., pile driving) and schedule have been completed, as required	Earlier in the plan it explicitly states that no work will be allowed between a half hour before sunrise and 8:30 during the STGR lekking period (Mar 15th - Jun 15th). This differ from the statements made here (in consistent statements).	Please see revised mitigation measure 9M-6 in the EE Table 10-1 Summary of Project Mitigation. No construction activities are scheduled during the STGR restricted activity period (March 15-June 15) within the setback on STGR03.
141	Watercourse crossings	EMP (Appendix C)	appendix B 8		Watercourse crossings: must meet with AEP policy and regulations please refer to the right group within AEP. A wildlife review does not replace the need to complete this with the appropriate authority within AEP.	Thank you for the information.
142	Operation- Wildlife	EMP (Appendix C)	appendix C 1	Prior to commencing scheduled servicing of each turbine, a 360° sweep of the turbine gravel pad, up to 10 to 15 m from the turbine base, should be conducted to look for any dead or injured wildlife. All fatalities should be photographed, left as found, and reported to the Owner.	Need to commit to reporting any and all species of management concern to AEP in a timely manner. All data should be submitted to FWMIS annually (no matter species status).	All fatalities encountered during routine maintenance in Project operation will be reported to AEP and FWMIS annually. Fatalities of species of management concern (i.e., general status categories of at risk, may be at risk, and sensitive as per the Definitions of General Status Categories, Government of Alberta 2011) will be reported to AEP within 48 hours.
143	Operation- Wildlife	EMP (Appendix C)	appendix C 1	If work is scheduled to occur within close proximity to any environmental feature, work should be postponed until EHS staff has determined if avoidance or mitigation is necessary.	There is no commitment to abide by setbacks or timing restrictions for wildlife during operations. Maintenance work should be scheduled around these timing restrictions and setbacks. There is no commitment to do this. Due to the siting of the proposed project in an around key features for wildlife, the operation plan must include mitigations to limit impacts on wildlife. The proponent has not identified any mitigations. This is unacceptable and does not allow AEP to conduct a risk assessment.	Thank you for your comment. Mitigation measures 5-M1, 9-M4, 9-M5, 9-M6 and 9-M7 have been revised to provide greater clarity on expectation for abiding by setback and timing restrictions during Project operation. Please see the appended, revised EE Table 10-1 Summary of Project Mitigation and responses in line 19 (prairie falcon), line 38 (coulee break), line 55 (wetlands), line 63 (ferruginous hawk), and line 85 (sharp-tailed grouse).
144	PCMP	EMP (Appendix C)	appendix C 1	A final Post-Construction Monitoring and Mitigation Plan will be developed in accordance with AEP Wildlife Directives Stage 4, and in consultation with AEP; a detailed report of post-construction monitoring will be provided to AEP annually.	Will be developed or has been developed?	A Post-Construction Monitoring and Mitigation Plan has been developed and was included as an appendix to the EE. The Proponent was anticipating consultation on the PCMP with AEP during review and planned to finalize the document once feedback from AEP had been incorporated.
145	Wildlife contingency Construction plans	EMP (Appendix C)	appendix D		Wildlife surveys: What happens if updated surveys identify a feature of concern. What alternative mitigation will be applied? This is not identified currently in this table.	If updated surveys identify a feature of concern, the Proponent will halt work within the required setback distance (as defined in the Directive), notify AEP, and develop an alternative mitigation strategy for AEP approval prior to resuming work within the setback. This revised mitigation has been updated in the EE Table 10-1 Summary of Project Mitigation (appended) (9-M13).
146	Grassland Birds	EMP (Appendix C)	Appendix E 1	Timing: although it is preferable to complete surveys during the early morning hours, nest surveys can be conducted throughout the day provided that light conditions permit the location of nests.	Alternatives are identified but it is unclear where they will be applied. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent will adhere to the grassland bird restricted activity period. This mitigation has been added to the appended, revised EE Table 10-1 Summary of Project Mitigation. Please see line 37, and mitigation 9-M11.

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147	Survey techniques grassland birds	EMP (Appendix C)	Appendix E 1	Table E-1 E10-E13	This is a poor survey method that will not identify the location of grassland bird nests. But aside from that there has been no formal request to not adhere to the grassland bird timing restriction, whereby no activity would occur on native grasslands between April 1st-July 15th. Therefore why are these surveys being conducted, is this an alternative mitigation? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The mitigation measure to specifically address the grassland breeding bird restricted activity period and setbacks, previously in the EMP, has been revised for clarity (see response to line 47) and added to the appended EE Table 10-1 Summary of Project Mitigation (9-M11).
148	Grassland Birds	EMP (Appendix C)	Appendix E 1	Breeding bird construction timing restrictions: April 1 to July 15 (AEP 2017). Nesting duration is variable and species, habitat, and weather conditions play a role in the duration of nesting. Should pre- construction breeding bird nest surveys identify no nesting birds, AEP will be consulted to discuss if construction may proceed prior to July 15.	Will surveys follow methods outlined in the Sensitive Species Survey protocols? Is work planned within the restricted timing period? Currently this is not clear.	The mitigation measure to specifically address grassland breeding bird timing considerations and setbacks, previously in the EMP, has been revised (see response to line 47) and added to the appended EE Table 10-1 Summary of Project Mitigation (9- M11).
149	Setbacks	EMP (Appendix C)	Appendix E 1	Surveys should be conducted within the clearing limits and up to 30 m beyond the limits.	The minimum setback is 100 m for most wildlife species, unless a higher level setback is identified (FEHA, STGR, PRFA). Why does the plan identify a search area of 30 m? This does not meet with AEP policy. What is the rational for this? Currently there is no reason for this reduction in setbacks. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The mitigation measure to specifically address grassland breeding bird timing considerations and setbacks, previously in the EMP, has been revised for clarity (see response to line 47) and added to the appended EE Table 10-1 Summary of Project Mitigation (9-M11).
150	Pre- construction amphibians	EMP (Appendix C)	Appendix E 1	If Class III, IV or V wetlands or their buffers (100 m) will be impacted, preconstruction surveys for sensitive amphibians will be conducted prior to construction.	Wetland Amph surveys; What happens if the conditions for amphibians do not exist that year. What is the process for mitigating impacts at the site assuming amphibians are there? AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	The 100 m setback for the one Class III wetland (DLK001) in the Project footprint will be adhered to by the Proponent. There are no Class IV or V wetlands. For mitigation, please see the response in line 55 and mitigation 5-M1 in the appended, revised EE Table 10-1 Summary of Project Mitigation. In the event that listed amphibians are encountered during construction within the construction footprint, work in the area will stop and a site-specific alternative mitigation strategy will be developed for approval by AEP (see 9-M13, and appended EE Table 10-1 Summary of Project Mitigation).

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151	Mitigation- Bat roosts	EMP (Appendix C)	Appendix E 2	If a bat roost is found during pre-construction wildlife clearance surveys, AEP will be contacted to discuss appropriate mitigation.	The proponent has identified very strict protocols for wildlife issues such as a coyote den (stop work and wait for site to vacate). However this is not done for high risk issues such as if a bat roost is found. The discovery of a bat roost would be very important especially as it will impact mortality rates for the project. Due to the risk of bat mortality identified for the project area AEP would recommend that no work proceed until a plan has been approved by AEP. Current commitments in regards to bat roosts are non-committal and non-descriptive. No details are provided by the proponent.	More detail has been added to the mitigation measure in the appended EE Table 10-1 Summary of Project Mitigation to address identification of a bat roost during construction. The mitigation measure is now as follows (9-M13): If a bat roost is found during Project activities, work will be halted within 100 m (per Appendix A requirements for the nest/house/den of species not listed in the table) and AEP will be informed immediately. Work will not resume within 100 m of the bat roost until a mitigation strategy has been approved by AEP.
152	Grassland Birds	EMP (Appendix C)	Appendix E 2	E14-E17	This table does not identified a minimum setback for nests. This is 100m. The table states that the size and shape of the buffer will be variable. Again it must be at least 100m. There is commitment to adhere to AEP's Sensitive Species Inventory Guidelines for surveys. This table does not identify the time periods between nest searches. Nests can be established throughout the breeding season therefore this must be identified. There is no reference to this mitigation within either the EMP or Environment Eval plan. The company has not provided a commitment to mitigate for grassland birds or provided details for how this will work	The mitigation measure to specifically address grassland breeding bird timing considerations and setbacks, previously in the EMP, has been revised (see response to line 37) for clarity and added to the appended EE Table 10-1 Summary of Project Mitigation (9M-11).
153	Setbacks	EMP (Appendix C)	Appendix E 3	Recommended setbacks are provided in the following table for select species (AEP 2017):	miss use of terms. Recommended vs. Required. It is required.	The Proponent notes the requirement for setbacks and alternative mitigation to be approved by AEP if not met. This language is not used in the revised EE Table 10-1 Summary of Project Mitigation (appended).
154	Wildlife Monitor	EMP (Appendix C)	Appendix E 3	The Wildlife Monitor will determine and may modify setbacks based on the following: • Species biology and sensitivity to disturbance. • Existing disturbance and land use in the vicinity of the nest, as some nesters prefer disturbance to avoid predators, proximity to feed (exposed soils), etc. • Topography and other visual screens, as some nests may be “shielded” by hills, vegetation, infrastructure, etc. • The type of construction activity being conducted in the area.	This is not the job of the wildlife monitor. Setbacks can only be altered if AEP agrees to it. This identifies a potential greater issue. As the company is assuming that their monitor can change all setbacks at their discretion they are in fact not fully committed to the setbacks they state they are adhering to. It can be assumed that they are in fact not meeting any setbacks and that all commitments may be thrown out at the time of construction. This is unacceptable and gross miss use of this form of alternative mitigation (wildlife monitor).	The Proponent is committed to the setbacks previously presented in the EE and the EMP and has no intent to change the identified setbacks and mitigation. All measures presented in Appendix E, including the quoted text, were intended only for contingency measures, should new features be identified by the Environmental Monitor or the Experienced Wildlife Biologist during the course of construction. The Proponent acknowledges that AEP has responsibility for approval of alterations to setbacks, and has altered text in the revised EE Table 10-1 Summary of Project Mitigation as follows (see 9-M3): “If wildlife features with setbacks not previously identified (nests, dens) are encountered during Project activities, species-specific setbacks and restricted activity periods will be applied based on Appendix A of the Wildlife Directive and consultation with AEP. If setbacks and restricted activity periods cannot be applied, mitigation will be planned and implemented pending AEP approval.”
155	Wildlife Monitor	EMP (Appendix C)	Appendix E 3	Construction activities may be permitted to occur within a setback under the direction and supervision of the Wildlife Monitor who will observe nesting bird behaviour during construction. Should observed behaviour indicate stress caused by construction disturbance, work in the area must stop and the Environmental Monitor must be contacted immediately.	AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. As the company is assuming that their monitor can change all setbacks at their discretion they are in fact not fully committed to the setbacks they state they are adhering to. It can be assumed that they are in fact not meeting any setbacks and that all commitments may be thrown out at the time of construction. This is unacceptable and does not allow AEP to conduct a risk assessment.	The text has been removed from the revised EE Table 10-1 Summary of Project Mitigation. In the event that a previously unidentified wildlife features is detected or an unforeseen circumstance arises requiring work within a wildlife feature setback, the Proponent will consult with AEP prior to initiating any work within the setback.

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156	Reclamation	Reclamation	Appendix D		It is not clear if the reclamation strategy will adhere to all wildlife mitigations including but not limited to setbacks, and timing restrictions. This is unacceptable and does not allow AEP to conduct a risk assessment.	The Proponent is committed to implementing all mitigation in the EE. A revised EE Table 10-1 Summary of Project Mitigation has been appended to provide greater clarity on the measures that will be implemented by the Proponent, including during reclamation.
157	Pre- construction bats	STGR Lek and Bats tetra tech Appendix F2	Appendix F2 1	Due to damage caused by cows and battery failure during the spring monitoring event, detectors at BAT2 and MET survey stations had reduced operational nights.	As this malfunction occurred at significant number of nights and included the 30 m acoustic monitoring station, all bat data is considered to be an underestimate.	Some detector failure is common in bat monitoring programs. Hence multiple detectors are placed to sample across space and time. Three of the five detectors used in the spring were functional for the entire period. The others experienced failures for 6 and 14 nights. The detector with the most outages was a low elevation (non-paired detector). Regardless of the outages, the number of bats per night in the key fall period is in the high range, and the Proponent has agreed to follow the consultation threshold levels and recommended mitigation measures outlined in the Bat Mitigation Framework in place at the time, and consulting with AEP prior to implementing any adaptive management strategies. Post-construction operational mitigation that could be implemented includes but is not limited to: altering cut-in speeds; feathering turbine blades; periodic turbine shut-down (i.e., at night during bat migration periods); and alternative acceptable mitigation that is deemed appropriate based upon the site-specific circumstances following consultation with AEP.
158	Pre- construction amphibians	Appendix F Windy Point Wind Park 2015 Wildlife surveys	Appendix F 11	a It should be noted that amphibian call surveys were not completed as part of the assessment, and all amphibian locations were picked up incidentally. In addition, amphibian locations indicated on the map do not necessarily indicate the exact location of a breeding pond, as all amphibians heard calling within 200 m of a survey locations were noted.	No amphibian surveys were conducted and therefore there can not be any infringement of setbacks without alternative mitigation being identified. AEP requires proponents to clearly commit to abiding by standards or mitigation identified in AEP policy. Where alternative mitigations are proposed they are to be specific to a locations, provide the details of the mitigation, commit to implementing this mitigation and have clear rational/justification. The proponent has not provided this. This is unacceptable and does not allow AEP to conduct a risk assessment.	See response to line 150.
159	Pre- construction bird migration	Appendix F3	Appendix F3 6	Note: Based on turbines with a hub height of 90 m, and rotor diameter of 130 m, for a total height of 155 m.	This does not match the tower height and RSA selected for the project.	See response to line 2.
160	Pre- construction bird migration	Appendix F5	Appendix F5 9	Note: Based on turbines with a hub height of 90 m, and rotor diameter of 130 m, for a total height of 155 m.	This does not match the tower height and RSA selected for the project.	See response to line 2.
161	PCMP-Start Date	Appendix G PCMP	Appendix G 8	Bird and bat mortality monitoring (Directive Standard 100.4.3a) will be directed by experienced wildlife biologists, as defined by the Directive (Standard 100.4.6), during the first three years of Project operation (Directive Standard 100.4.4e). Post-construction wildlife monitoring for the Project will begin in the first spring season after the initiation of commercial operation.	This is not acceptable and does not meet with the requirements outlined in the Directive. PCM monitoring is to start at the same time of commissioning. The high risk of mortality in the fall is a key issue for this proposed wind farm. The current plan allows for the wind farm to cause significant mortality that will not be accounted for.	The preliminary construction schedule identifies commercial operation beginning in the late fall / winter, and as such starting in the first spring after commissioning captures the high-risk periods. If the project is commissioned before the onset or completion of fall migration (July to October), monitoring will begin in the first fall. The revised commitment with bold addition, reads “wildlife monitoring for the Project will begin in the first spring **or fall** season after the initiation of commercial operation.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
162	PCMP-Experienced Biologist	Appendix G PCMP	Appendix G 12	Search crews will be directed by an experienced wildlife biologist. Search personnel will be provided with on-the-job training in the various tasks associated with the mortality plot searches including consistent search pacing, GPS and compass use, mortality documentation, and safe work practices. Search dogs may be used if available. Search personnel will be trained to conduct searcher efficiency trials on fellow search personnel. Because the targets are carcasses, search personnel are not required to identify target species by sight or sound and have a knowledge of species biology (as per 100.4.6), but searchers will be directed by a trained and experienced biologist with such knowledge and survey protocol knowledge.	AEP expects that the work will be conducted by experienced biologists as identified in the Directive. The proponent has not committed to this. This is inconsistent with the AEP Directive and unacceptable.	The Proponent recognizes AEP's concern with having unqualified personnel complete the post construction wildlife monitoring, and confirms that searchers with the level of education and experience outlined in the Directive will be used for the surveys.
163	PCMP- Report submission	Appendix G PCMP	Appendix G 14	The annual post-construction monitoring report will be submitted for review no later than March 1 of each year (Directive Standard 100.4.8).	AEP is concerned on the expected submission date of the PCMP report. What if mortality is high in the spring, how will the company ensure that mitigation plans can be developed and implemented in time	The Proponent will provide the annual post-construction monitoring reports to AEP by the first week of January in the following year.
164	PCMP- Bat Thresholds.	Appendix G PCMP	Appendix G 15	If post-construction monitoring (as above) demonstrates that corrected migratory bat fatalities are between four and eight migratory bats	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.	Thank you for providing a revision to the actions required if between 4 and 8 migratory bat fatalities per turbine are found. The Proponent accepts the AEP Bat Risk Framework and understands via this and similar comments that a revision to the framework clarifying the position of AEP may be forthcoming and it will dictate the requirements of the Project's PCMP.
165	PCMP-Mitigation	Appendix G PCMP	Appendix G 15- 16	Curtailment options and mitigation	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.	We presume the "Bat Risk Framework" is the 2013 Bat Mitigation Framework for Wind Power (ESRD 2013). If correct, thank you for providing a revision to the actions required if between 4 and 8 migratory bat fatalities per turbine are found. Currently the document provides different advice noting that such a result "will lead to consultation with ESRD Wildlife Branch about possible mitigation and further monitoring" and that operational mitigation will be "likely" at this level of effect. The Proponent accepts the AEP Bat Risk Framework and understands via this and similar comments that a revision to the framework clarifying the position of AEP may be forthcoming and it will dictate the requirements of the Project's PCMP.
166	PCMP-Interim Curtailment	Appendix G PCMP	Appendix G 16	Year 1	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.	The Proponent accepts the AEP Bat Risk Framework and understands via this and similar comments that a revision to the framework clarifying the position of AEP may be forthcoming and it will dictate the requirements of the Project's PCMP.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
167	PCMP-Mitigation	Appendix G PCMP	Appendix G 16	Duration of curtailment, initially August 1 - September 10, increasing to July 1 – September 10 should more mitigation be required to reduce the effects below the threshold of eight bats per turbine per year.	AEP recommends removing dates and wait and see what monitoring finds. The migration plan will have to be based on the results of monitoring. AEP just needs to know that the company is aware that mitigation may be required and what options are available implement the software and technical components of the turbines/software. The proponent is trying to control mitigation without accounting for the results of the post construction monitoring surveys.	The Proponent is aware that mitigation may be required (as per the 2013 ESRD Bat Mitigation Framework for Wind Power and the Directive). The Proponent provided the mitigation plan to show the intent for adaptive decision making and recognizes that mitigation needs to be strongly tied to the results of monitoring. The Proponent is committed to following the consultation threshold levels and recommended mitigation measures outlined in the Bat Mitigation Framework in place at the time, and consulting with AEP prior to implementing any adaptive management strategies. Post-construction operational mitigation that could be implemented includes but is not limited to: altering cut-in speeds; feathering turbine blades; periodic turbine shut-down (i.e., at night during bat migration periods); and alternative acceptable mitigation that is deemed appropriate based upon the site-specific circumstances following consultation with AEP.
168	PCMP-Interim Curtailment	Appendix G PCMP	Appendix G 16-17	Year2	This is a misinterpretation of the Bat Risk Framework. Bat mortality over 4 bats/turbine/year is considered high and will be required to mitigate. AEP recommends not using the number for high risk but referencing what is defined as high risk in the AEP Bat Risk Framework. The proponent will be held accountable to the definition of high risk within the AEP Bat Risk Framework at the time of the PCM surveys.	The Proponent accepts the AEP Bat Risk Framework and understands via this and similar comments that a revision to the framework clarifying the position of AEP may be forthcoming and it will dictate the requirements of the Project's PCMP.
169	PCMP-Interim Curtailment	Appendix G PCMP	Appendix G 17	Year 3	It is AEP expectation that mortality will be less than 4 bats/turbine/year. This entire section is a misinterpretation of the Bat Risk Framework. All options must strive to reduce mortality below 4 bats/turbine/year. Any monitoring year where greater than 4 bats/turbine/year are identified will results in mitigation being required.	The Proponent accepts the AEP Bat Risk Framework and understands via this and similar comments that a revision to the framework clarifying the position of AEP may be forthcoming and it will dictate the requirements of the Project's PCMP.
170	PCMP-monitor effects on SAR	Appendix G PCMP	Appendix G 2	Table 1-1 Monitor effects of the wind energy project on species at risk, sensitive species, or other wildlife.	AEP expects that the 4 STGR leks, PRFA and FEHA nests will be monitored annually for the 3 years of the PCMP. Additionally AEP recommends that the pre-construction grassland bird breeding surveys and bat acoustic surveys be repeated. The proponent has not identified these surveys.	The Proponent has committed to the conduct of these surveys as per requests in the AEP referral letter Nov 2016. The methods are listed in the PCMP: 2.1.1 Breeding bird surveys 2.1.2 Raptor nest surveys 2.1.3 Sharp-tailed grouse lek surveys The Proponent will commit to acoustic monitoring surveys concurrent with post-construction monitoring, the conduct of which might offer value to refining post-construction monitoring. We are open to such discussions with AEP.
171	PCMP-Experienced Biologist	Appendix G PCMP	Appendix G 3	Post-construction surveys will be overseen by experienced biologists as follows:	Experienced Biologists: It states here "will be directed by wildlife biologist" however it is not clear whether everyone working on the PCMP will be a biologist. It is AEP's expectation that the work will be conducted by experience biologist(s). This work cannot be completed by non- biologists and this current plan allows the proponent to hire inexperienced, untrained and under educated people. This will have a direct impact on the success of the post- construction monitoring, assessment of mortality risk and determination of mitigation needs.	See also response to comment 162. The Proponent recognizes AEP's concern with having unqualified personnel complete the post construction wildlife monitoring and confirms that searchers with the level of education and experience outlined in the Directive will be used for the surveys.
172	PCMP-Raptor nests	Appendix G PCMP	Appendix G 6	A subset of the pre-construction baseline wildlife surveys will be conducted, which will provide data for comparison between pre- and post-construction wildlife surveys. The repeated pre-construction wildlife surveys will be: Breeding bird surveys; • Raptor nest surveys; and Sharp-tailed grouse surveys	AEP recommends adding raptor productivity surveys to the raptor nest surveys.	Raptor productivity from select nests (PRFA and FEHA) will be added as metrics to the raptor nest monitoring.

Number	General Issue	Plan	Page	Statement from the report	AEP Comment/concern	Windy Point Response
173	PCMP-Grassland Bird surveys	Appendix G PCMP	Appendix G 7	Post-construction Breeding bird surveys (BBS) will follow the same protocol used for pre- construction surveys. BBS will be conducted using the protocol described in the Sensitive Species Inventory Guidelines (AESRD 2013) and survey windows consistent with the Wildlife Guidelines for Wind Energy Projects (ASRD 2011). During year one and year three of post-construction monitoring, two rounds of BBS will be conducted: one during the window for early species (e.g., May 1 to June 15) (ASRD 2011) and one during the window for late species (e.g., June 16 to July 15) (ASRD 2011).	Why are no surveys planned in Year 2? The proponent has not provided rational or justification for not conducting these important post construction surveys on a project preferentially sited on native grassland.	The Proponent will conduct these surveys in year 2 in addition to years one and three (see 9-M10).
174	PCMP-Initiation of PCMP	Appendix G PCMP	Appendix G 8	100.4.4e). Post-construction wildlife monitoring for the Project will begin in the first spring season after the initiation of commercial operation.	This is not acceptable. Past studies have created alternative monitoring plans for the partial years . As mortality is expected to be high at this site there must be some commitments on this. A few alternatives partial or subsample monitoring for year 1 followed by 3 years of full monitoring, or delay in commissioning until after October 15th. The current plan is not acceptable.	See also response to comment 161. The preliminary construction schedule identifies commercial operation beginning in the late fall / winter, and as such starting in the first spring after commissioning captures the high-risk periods. If the project is commissioned before the onset or completion of fall migration (July to October), monitoring will begin in the first fall. The revised commitment with bold addition, reads “wildlife monitoring for the Project will begin in the first spring **or fall** season after the initiation of commercial operation.
175	PCMP- Bat acoustic monitoring	Appendix G PCMP			AEP recommends that bat acoustic monitoring is undertaken for all high risk projects. This data will be used primarily if mitigation is required to determine if mortality rates have been lowered due to the mitigation or because bats are no longer using the area.	Please see response to comment 170. Note, to achieve such an outcome (the objective of such surveys) sampling of a control area will be necessary. The Proponent will commit to acoustic monitoring surveys concurrent with post-construction monitoring, the conduct of which might offer value to refining post-construction monitoring.

References:

Adams, B. W., D. Moisey, and R. L. McNeil. 2003. Rangeland Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta. Rangeland Management Branch, Public Lands Division, Alberta Sustainable Resource Development, Lethbridge, AB. <http://esrd.alberta.ca/lands-forests/grazing-range-management/documents/FoothillsFescue-NaturalSubregionGuide.pdf>. Accessed 8 Oct 2015.

AEP. 2017. Wildlife Directive for Alberta Wind Energy Projects. Fish and Wildlife Policy, Alberta Environment and Parks.

AEP. 2016. Principles for Minimizing Surface Disturbance in Native Grassland- Principles, Guidelines, and Tools for all Industrial Activity in Native Grassland in the Prairie and Parkland Landscapes of Alberta. Alberta Government.

Alberta Ferruginous Hawk Recovery Team. 2009. Alberta Ferruginous Hawk Recovery Plan 2009-2014. Alberta Sustainable Resource Development, Fish and Wildlife Division, Edmonton, AB.

ASRD. 2011. Wildlife Guidelines for Alberta Wind Energy Projects. Wildlife Land Use Guidelines. Fish and Wildlife Division, Sustainable Resource Development. <http://aep.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/WildlifeGuidelines-AlbertaWindEnergyProjects-Sep19-2011.pdf>.

ECCC. 2017. Nesting calendars in Zone B, technical information for planning purposes covering Prairie (BCR11), Boreal Taiga Plains (BCR6) and Northwestern Interior Forest (BCR4). <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html#_05>. Accessed February 2018.

ESRD. 2013. Bat Mitigation Framework for Wind Power Development. Wildlife Land Use Guidelines, Government of Albert Environment and Sustainable Resource Development, Wildlife Branch, Calgary, AB. <http://srd.alberta.ca/FishWildlife/WildlifeLandUseGuidelines/documents/WildlifeGuidelines-BatMitigationFramework-Jun19-2013.pdf>.

ESRD. 2015. Recommended Land Use Guidelines: Key Wildlife and Biodiversity Zones. Government of Alberta, Edmonton, AB. <http://aep.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/KeyWildlifeBiodiversityZones-Apr08-2015.pdf>.

Government of Alberta. 2011. Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta. <http://esrd.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/WildlifeLandUse-SpeciesHabitatGrasslandParkland-Apr28-2011.pdf>. Accessed 16 Dec 2015.

McCallum Environmental (2018). Windy Point Wind Park 2018 Risk Assessment Update: Revised Turbine Characteristics (appended).

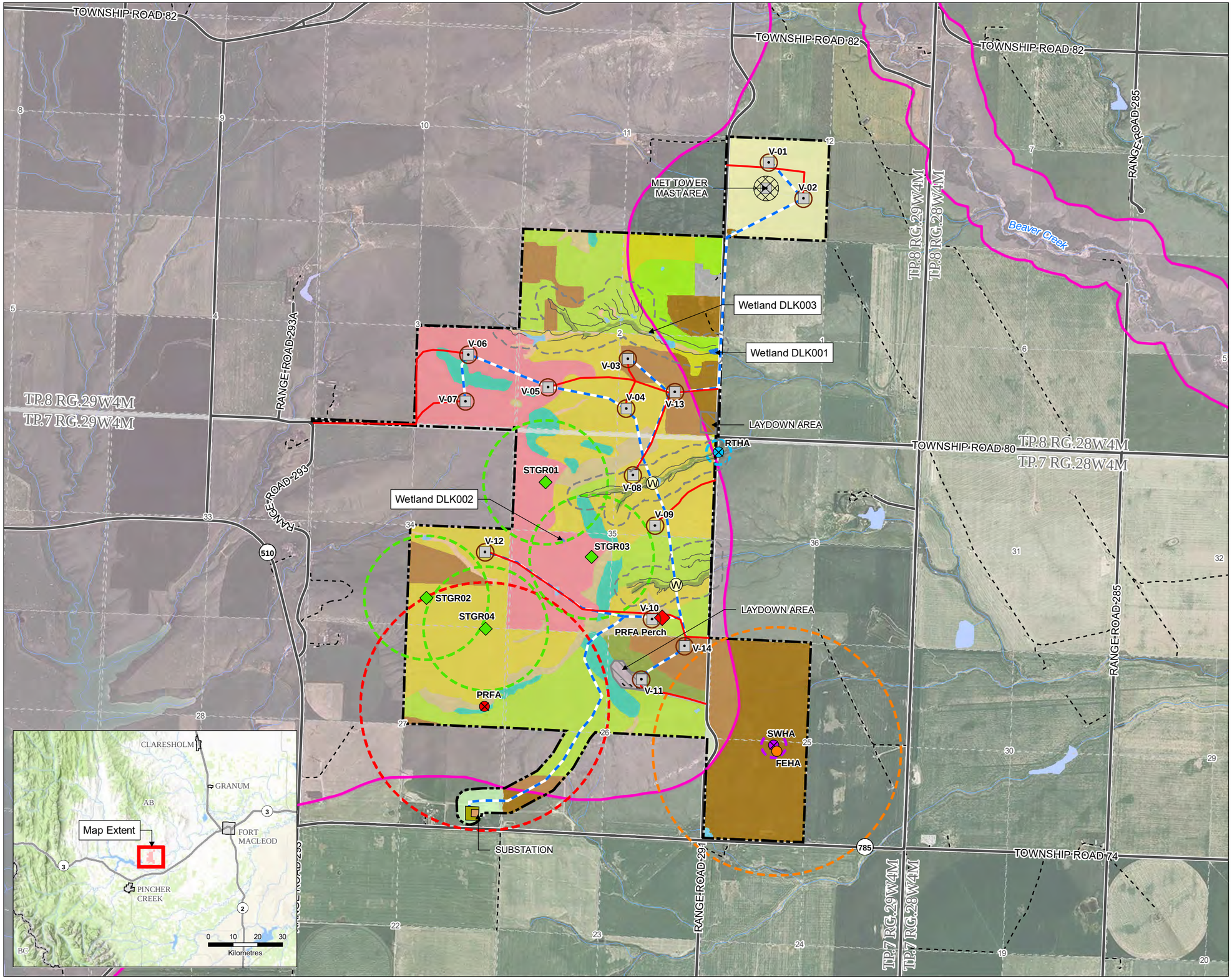
Nietfeld, M., J. Wilk, K. Woolnough, and B. Hoskin. 1985. Wildlife habitat requirements summaries for selected wildlife species in Alberta. Alberta Energy and Natural Resources, Fish and Wildlife Division, Wildlife Resource Inventory Unit, Edmonton, AB. <https://era.library.ualberta.ca/files/xg94hq18r/ENR%20T-73%20-%20Nietfeld%20-%20Wildlife%20Habitat.pdf>.

Ungulate Winter Range Technical Advisory Team. 2005. Desired conditions for mule deer, elk, and moose winter range in the Southern Interior of British Columbia. Wildlife Bulletin No. B-120, BC Ministry of Water, Land and Air Protection, Biodiversity Branch, Victoria, BC. <http://www.env.gov.bc.ca/wld/documents/techpub/b120.pdf>.

Figure 9-2 Updated Wildlife Features

Windy Point Wind Park

Wildlife Features (2017 Layout)



Legend

- Sharp-tailed Grouse (STGR) Lek Location
- Inactive Ferruginous Hawk (FEHA) Nest (obs. 2015)
- Active Prairie Falcon (PRFA) Nest
- Prairie Falcon (PRFA) Perch
- Active Red-tailed Hawk (RTHA) Nest
- Active Swainson's Hawk (SWHA) Nest
- Ferruginous Hawk (FEHA) Nest 1,000 m Setback
- Prairie Falcon (PRFA) Nest 1,000 m Setback
- Red-tailed Hawk (RTHA) Nest 100 m Setback
- Swainson's Hawk (SWHA) Nest 100 m Setback
- Sharp-tailed Grouse (STGR) Lek Location 500 m Setback
- Key Wildlife and Biodiversity Zone
- Road
- Existing Rough Road or Trail
- Coulee Break
- 100m Coulee Break Buffer
- Watercourse
- Waterbody
- Watercourse Crossing
- Wind Turbine Generator Location
- Rotor Swept Area
- Collector Line
- Project Road
- Laydown Area
- MET Tower Mast Area
- Substation - Operation
- Substation - Construction
- Project Area

Land Cover Types

- Cultivated Field
- Improved Pasture
- Lotic Vegetation
- Farmyard
- Dugout or Reservoir

Land Cover considered Native Grassland

- Native Coulee Complex
- Native Prairie
- Native Prairie (Moderate Fesue - 40% to 60%)
- Native Prairie (No Fescue Rating Data)
- Native Prairie (High Fescue Rating - 70% to 80%)
- Native Prairie (Low Fescue Rating - <40%)
- Native Shrub Complex
- Dry Native Prairie Slope
- Wetland

Notes

1. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Basedata: Government of Alberta
- Raptor Survey Data: Bear Tracks Environmental Services Ltd., 2017
- Rare Plant Locations, Raptor Survey Data, & Sharp-tailed Grouse (STGR) Locations: McCallum Environmental Ltd., 2015
- Project Data: Boralex
- Basemap: ESRI World Imagery
- Inset Map: ESRI World Topographic Map

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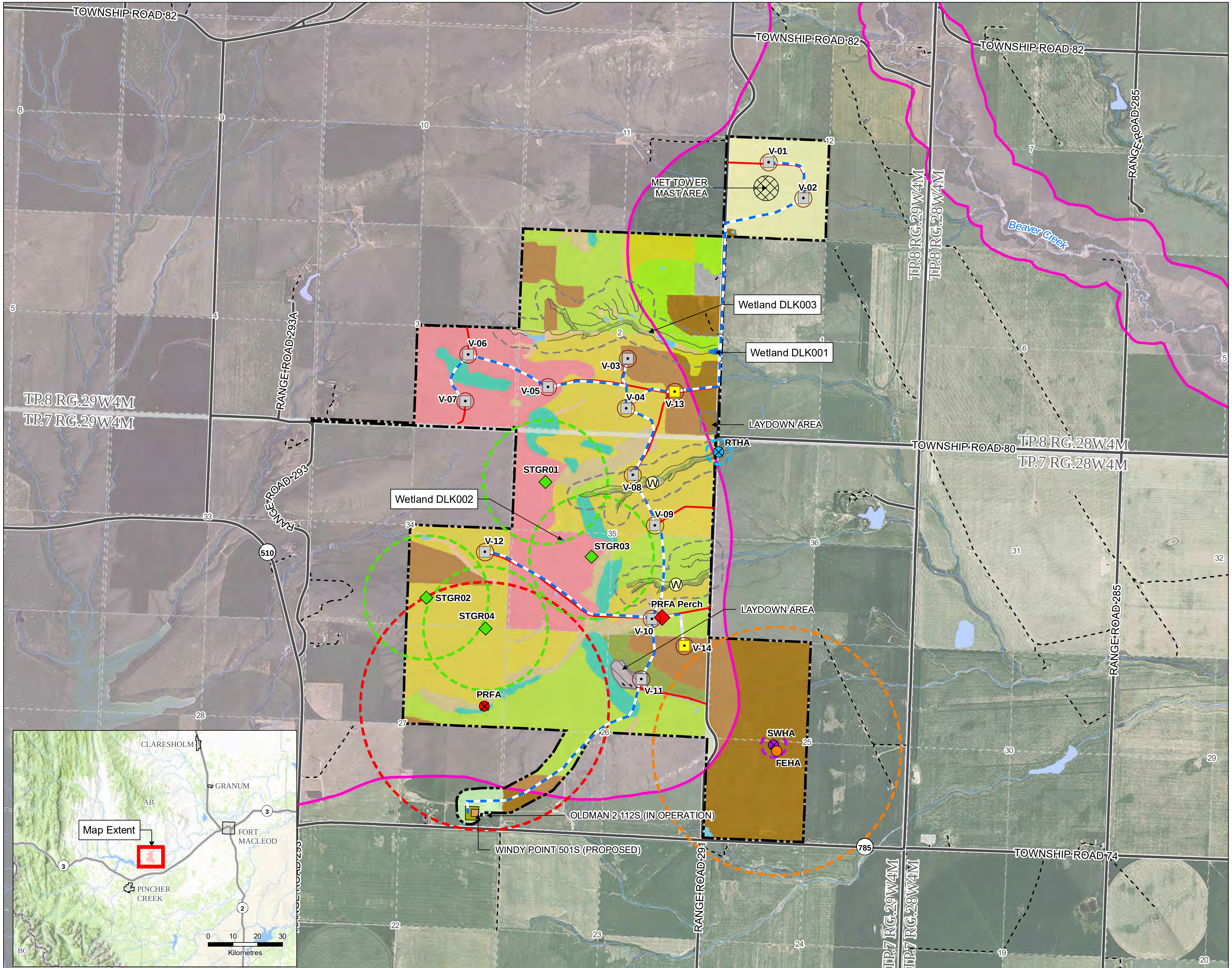

Windy Point Wind Park

Wildlife Features

Legend

- Sharp-tailed Grouse (STGR) Lek Location
- Inactive Ferruginous Hawk (FEHA) Nest (obs. 2015)
- Active Prairie Falcon (PRFA) Nest
- Prairie Falcon (PRFA) Perch
- Active Red-tailed Hawk (RTHA) Nest
- Active Swainson's Hawk (SWHA) Nest
- Ferruginous Hawk (FEHA) Nest 1,000 m Setback
- Prairie Falcon (PRFA) Nest 1,000 m Setback
- Red-tailed Hawk (RTHA) Nest 100 m Setback
- Swainson's Hawk (SWHA) Nest 100 m Setback
- Sharp-tailed Grouse (STGR) Lek Location 500 m Setback
- Key Wildlife and Biodiversity Zone
- Road
- Existing Rough Road or Trail
- Coulee Break
- 100m Coulee Break Buffer
- Watercourse
- Waterbody
- Watercourse Crossing
- Wind Turbine Generator Location
- Alternate Wind Turbine Generator Location
- Rotor Swept Area
- Underground Collector Line
- Underground Collector Line (alternate)
- Project Road
- Project Road (Alternate)
- Laydown Area
- MET Tower Mast Area
- Substation - Operation
- Substation - Construction
- Project Area

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- Native Prairie (Low Fescue Rating - <40%)
- Native Shrub Complex
- Dry Native Prairie Slope
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- Rare Plant Locations, Raptor Survey Data, & Sharp-tailed Grouse (STGR) Locations: McCallum Environmental Ltd., 2015
- Project Data: Boralex
- Basemap: ESRI World Imagery
- Inset Map: ESRI World Topographic Map

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1591-006.01	Production Date: Mar 2, 2018	Figure 9-2

Hemmera An Ausenco Company

BORALEX

Table 1 Comparison of Project Infrastructure 2011, 2016, 2017, 2018

Table 1 Comparison of Project Infrastructure 2011, 2016, 2017, 2018

2011 Layout					2016 Layout				2017 Layout						2018 Layout[1]				
Component	Infringement on 2017 Environmental Features (Y=Yes)				Component	Infringement on 2017 Environmental Features (Y=Yes)			Component	Infringement on 2017 Environmental Features (Y=Yes)				Rationale for 2017 Siting Amendment	Component	Infringement on 2017 Environmental Features (Y=Yes)			
	Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	FEHA Setback[2]		Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback		Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	Other			Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	Other
T-1	-	-	-	-	T-1	-	-	-	V-01	-	-	-	-	On cultivated land	V-01	-	-	-	-
T-2	Y	-	-	-	T-2	-	-	-	V-02	-	-	-	-	On cultivated land	V-02	-	-	-	-
T-3	-	-	-	-	T-3	Y	-	-	V-03	-	-	-	-	On improved pasture	V-03	-	-	-	-
T-4	-	-	-	-	T-4	Y	-	-	V-04	Y	-	-	-	Setbacks for noise, STGR01	V-04	Y	-	-	-
T-5	-	-	-	-	T-5	Y	-	-	V-05	Y	-	-	-	Setbacks for noise	V-05	Y	-	-	-
T-6	-	-	-	-	T-6	Y	-	-	V-06	Y	-	-	-	Setbacks for noise	V-06	Y	-	-	-
T-7	-	Y (1)	-	-	T-7	Y	Y (1)	-	V-07	Y	-	-	-	Setbacks for noise	V-07	Y	-	-	-
T-8	-	Y (2)	Y (1)	-	T-8	Y	Y (2)	-	V-08	Y	-	-	Coulee setback	Setbacks for noise, municipal right of way, STGR01/03, relocated from PRFA setback	V-08	Y	-	-	-
T-9	-	-	-	-	T-9	Y	-	-	V-09	Y	-	-	-	Setbacks for noise, municipal right of way, STGR03	V-09	Y	-	-	-
T-10	-	Y (1)	-	-	T-10	Y	Y (1)	-	V-10	Y	-	-	-	Setbacks for noise, municipal right of way, relocated from STGR01 and 03 setbacks	V-10	Y	-	-	-

1 All alternate locations are included in the calculations
2 Only the 2011 layout included turbines and collector lines within the FEHA setback. The other layouts make use of an existing road located within the FEHA setback, that would be upgraded outside of the restricted activity period.

2011 Layout					2016 Layout				2017 Layout						2018 Layout[1]				
Component	Infringement on 2017 Environmental Features (Y=Yes)				Component	Infringement on 2017 Environmental Features (Y=Yes)			Component	Infringement on 2017 Environmental Features (Y=Yes)				Rationale for 2017 Siting Amendment	Component	Infringement on 2017 Environmental Features (Y=Yes)			
	Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	FEHA[2] Setback		Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback		Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	Other			Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	Other
T-11	-	Y (2)	-	-	T-11	Y	Y (2)	-	V-11	-	-	-	-	On decommissioned residence/farmyard, relocated from STGR01 setback	V-11	-	-	-	-
T-12	-		-	-	T-12	Y	Y (1)	-	V-12	Y	-	-	-	Setbacks for noise, municipal right of way, STGR01/02/03/04	V-12	Y	-	-	-
T-13	-	Y (2)	Y (1)	-	T-13	Y	Y (1)	Y	V-13	-	-	-	-	Setbacks for noise, municipal right of way, relocated from PRFA and STGR04 setbacks	V-13 (alternate)	-	-	-	-
T-14	-	Y (1)	Y (1)	-	T-14	Y	-	Y	V-14	-	-	-	-	Setbacks for noise, municipal right of way, relocated from Native PRFA and STGR04 setbacks	V-14 (alternate)	-	-	-	-
T-15	Y	-	-	-	T-15	-	-	-											
T-16	Y	-	-	-	T-16	Y	-	-											
T-17	Y	Y (1)	-	-															
T-18	Y	-	-	-															
T-19	-	-	-	Y (1)															
T-20	-	-	-	Y (1)															
T-21	-	-	-	-															

2011 Layout					2016 Layout				2017 Layout						2018 Layout[1]				
Component	Infringement on 2017 Environmental Features (Y=Yes)				Component	Infringement on 2017 Environmental Features (Y=Yes)			Component	Infringement on 2017 Environmental Features (Y=Yes)				Rationale for 2017 Siting Amendment	Component	Infringement on 2017 Environmental Features (Y=Yes)			
	Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	FEHA[2] Setback		Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback		Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	Other			Native Grassland	500m Lek Setback	1000m Prairie Falcon Setback	Other
Substation	Y	-	Y	-	Substation	Y	-	Y	Substation	Y	-	Y	-	Directly adjacent to existing substation, only feasible interconnection point on T-line	Substation	Y	-	Y	-
Project Road	-	-	-	-	Project Road	Y	Y (4)	Y	Project Road	Y	Y (1)	Y	-	-	Project Road	Y	Y (1)	Y	-
Collector	-	-	-	-	Collector	Y	Y (4)	Y	Collector	Y	Y (1)	Y	Wetland, Coulee	-	Collector	Y	Y (1)	Y	Wetland, Coulee
Total	5 turbines Substation Roads, collector	7 turbines Roads, collector	3 turbines Substation Road, collector	2 turbines Roads collector	Total	Total 5.91ha (o) 49.29ha (c) ********* 13 turbines 1.05 (o) 11.09(c) Substation 0.34 ha (o) 1.17 (c) Roads - 4.51ha (o), 34.38ha (c) Collector 2.65ha (c)	6 turbines Roads, collector lines	2 turbines Substation Road, collector line	Total	Total 4.08ha (o) 25.04ha (c) ****** 8 turbines 0.77ha (o) 7.94ha (c) Substation 0.34ha (o) 1.17ha(o) Roads 2.98ha (o) 10.66ha (c) Collector - 5.27 ha (c)	Collector lines	Substation Road, collector line	1 turbine Wetlands and coulees are included in the Native Grassland land cover category	-	Total	Total 4.01ha (o) 25.46ha (c) ******* 8 turbines 0.72ha (o) 7.97ha (c) Substation 0.34ha (o) 1.17ha (c) Roads 2.95 ha (o) 12.56ha (c) Collector 3.76ha (c)	Roads, collector lines	Substation Road, collector line	1 turbine Wetlands and coulees are included in the Native Grassland land cover category

Notes: (#) denotes how many of that type of wildlife feature is infringed upon by the component
(o) = operation, (c) = construction

Table 2 Land Cover Comparison 2011, 2016, 2017 and 2018 Layouts

Table 2 Land Cover Comparison 2011, 2016, 2017 and 2018 Layouts (Native Grassland Categories are Shaded)

Land Cover	2011 Turbine Layout[1]		2016 Turbine Layout[2]		2017 Turbine Layout[3]		2018 Turbine Layout[4]	
	Construction (ha)	Operation (ha)	Construction (ha)	Operation (ha)	Construction (ha)	Operation (ha)	Construction (ha)	Operation (ha)
Cultivated Field	4.08	0.53	0.001	0.0007	4.18	0.70	4.34	0.66
Dry Native Prairie Slope	2.47	0.29	0.84	0.10	2.83	0.43	2.73	0.45
Dugout or Reservoir	0.10	-	-	-	0.22	0.03	0.14	0.03
Improved Pasture	10.78	1.23	8.44	0.83	9.69	1.27	5.28	0.65
Lotic Vegetation	0.23	0.003	0.23	0.003	2.52	0.45	0.004	-
Native Coulee Complex	0.42	0.03	0.16	-	0.41	-	0.47	-
Native Prairie	47.63	6.73	46.22	5.68	20.96	3.55	21.75	3.53
Native Shrub Complex	2.68	0.13	2.07	0.13	0.82	0.10	0.51	0.03
Farmyard / Decommissioned Residence	4.21	0.02	4.31	0.02	5.90	0.46	6.52	0.47
Wetland	-	-	-	-	0.02	-	-	-
Unclassified	0.91	-	0.61	-	-	-	0.08	-
Total	**73.51**	**8.96**	**62.88**	**6.76**	**47.55**	**6.99**	**41.82**	**5.82**
Total Project Infrastructure in Native Grassland (ha)	**53.20**	**7.18**	**49.29**	**5.91**	**25.04**	**4.08**	**25.46**	**4.01**

1 Turbine layout as per Approval No. U2014-434
2 Turbine layout as presented to AEP in 2016
3 Revised turbine layout for AEP submission
4 Revised layout for Amendment Application to AUC; calculations include alternate turbine locations V-13 and V-14

Table 3 Wildlife Feature Setback Analysis

Table 3 Wildlife Feature Setback Analysis

Feature	Status	Setback	Nearest Collector (m)	Nearest Collector Type	Nearest Road (m)	Nearest Road Type	Nearest Feature (m)	Nearest Feature Type	Nearest Turbine (m)	Distance to Nearest Turbine Blade Radius Tip (m)	Turbine ID
FEHA	Inactive	1000	1123.0	Collector	680.3	Construction Road	680.3	Construction Road	1127.4	1059.4	V-14 (alternate)
PRFA	Active	1000	750.7	Collector	1085.3	Road w/ Collector	750.7	Cross Country Collector	1243.0	1175.0	V-12
RTHA	Active	100	494.8	Road w/ Collector	217.2	Construction Road	217.2	Construction Road	599.3	531.3	V-13* (alternate)
STGR01	Active	500	674.9	Road w/ Collector	674.9	Road w/ Collector	639.4	Turbine Construction	707.2	639.2	V-08
STGR01B	Active	500	661.6	Road w/ Collector	661.6	Road w/ Collector	660.7	Turbine Construction	726.4	658.4	V-12
STGR02	Active	500	624.1	Road w/ Collector	606.4	Permanent Roads	531.6	Turbine Construction	598.9	530.9	V-12
STGR03	Active	500	364.9	Road w/ Collector	364.9	Road w/ Collector	364.9	Road w/ Collector	570.7	502.7	V-09
STGR04	Active	500	564.1	Road w/ Collector	564.1	Road w/ Collector	549.3	Turbine Construction	615.0	547.0	V-12
SWHA	Active	100	1071.5	Collector	633.4	Construction Road	633.4	Construction Road	1074.9	1006.9	V-14 (alternate)

Notes:
Distances in red indicate a Project component that is located within a setback
FEHA = ferruginous hawk; PRFA = prairie falcon; RTHA = red-tailed hawk; STGR = sharp-tailed grouse; SWHA = Swainson's hawk

Summary of Project Mitigation Measures

SUMMARY OF PROJECT MITIGATION MEASURES

March 2018

Acronym	Definition
AEP	Alberta Environment and Parks
AUC	Alberta Utilities Commission
ACIMS	Alberta Conservation Information Management System
BMP	best management practice
EE	Environmental Evaluation
EMP	Environmental Management Plan
EWB	Experienced Wildlife Biologist
FWMIS	Fisheries and Wildlife Management Information System
KWBZ	Key Wildlife Biodiversity Zone
MSDS	material safety data sheet
ppm	parts per million
TDG	transportation of dangerous goods
WHMIS	Workplace Hazardous Materials Information System

Table 10-1 Summary of Project Mitigation, originally included in the September 2017 Environmental Evaluation (EE) for the Windy Point Wind Project (Project), is presented below and includes the measures proposed to avoid and minimize potential effects identified for each of the Valued Components. The table has been updated for clarity based on Alberta Environment and Parks (AEP) comments (AEP 2017a), and inclusion of the detailed measures previously included in Appendix C Environmental Management Plan (EMP) of the 2017 EE. The EMP submitted to meet the AEP Wildlife Directive (2017) for a Construction and Operation Mitigation Plan included the mitigation measures developed in the EE as well as detailed measures designed to operationalize the mitigation for implementation by Project contractors. The mitigation measures presented below supersede those in the EE and in its appended EMP.

10.1 UPDATED SUMMARY OF PROJECT MITIGATION MEASURES

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
General		
Environmental Management Plan	C, O, D	The Proponent will develop a construction and operation mitigation plan that adheres to the AEP Wildlife Directive (2017) and includes all operational activities [Wildlife Directive 100.3.1]. The primary purpose of this EMP is to provide the Owner and their construction contractor(s) with performance-based environmental objectives, standard protocols, and mitigation measures to ensure that the Project achieves compliance with applicable legislation and conditions of permits and approvals during construction. The EMP provides detailed procedures on how to avoid or mitigate environmental effects while accomplishing the works proposed for the construction and operation phases of the Project. These procedures are derived from standard and best industry practices, coupled with Project-specific documents and provincial regulatory approval requirements (e.g., AUC, AEP) The EMP will: • Include the mitigations contained in this Summary Table, and any commitments made in subsequent submissions to regulators. • Identify and describe any elements of Project construction that could present a risk to the environment. • Present clear and concise information regarding procedures for protecting the environment while avoiding and mitigating adverse environmental effects. • Summarize key terms, conditions, and requirements of Project approvals related to construction and reclamation. • Integrate all commitments made by the Owner – throughout Project planning, consultation and assessment – related to environmental protection, mitigation, and reclamation. • Clearly set out the environmental management structure for the Project, and the roles/responsibilities of all onsite personnel. • Describe the specific reporting requirements for the construction of the Project, including documentation of environmental non-compliance events/incidents, effects of the non-compliance on wildlife and wildlife habitat, and the subsequent deployment of appropriate mitigation measures. • Provide “Issued For Construction” drawings that include environmental protections and constraints. • Include a Reclamation Plan for post-construction. A decommissioning Reclamation Plan, which will comply with AEP requirements, will be prepared at an appropriate time prior to decommissioning activities and in consultation with AEP. • Include waste management measures, emergency response measures, and spill prevention and spill response measures (see further details below). • Include an Erosion and Sediment and Control Plan (see **6-M2**). • Include a Post-Construction Monitoring Plan (see **9-M10**) • Include reporting requirements as follows: ▫ A report outlining the results of surveys and proposed mitigation will be provided to AEP, as required. ▫ Reporting requirements associated with applicable permits will be submitted as required. ▫ Environmental non-compliance events will be reported to AEP within 48 hours of a non-compliance event and at the end of each year.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		▫ Environmental non-compliance reporting to AEP will include a summary of the non-compliance action and a description of the effect of the non-compliance action on wildlife and wildlife habitat. ▫ All wildlife fatalities encountered during construction and routine maintenance in Project operation will be reported to AEP and FWMIS annually. Fatalities of species of management concern (i.e., general status categories of at risk, may be at risk, and sensitive as per the Definitions of General Status Categories, Government of Alberta 2011) will be reported to AEP within 48 hours. ▫ Spills will be reported to the Environmental Monitor immediately, and the Environmental Monitor will report any reportable spill to the Alberta Environmental hotline 1-800-222-6514 (24-hour emergency line) or 1-877-944-0313 (Non-emergency inquiries) to self-report a spill, release, or environmental emergency at the first available opportunity for any reportable spill or release that may cause, is causing, or has caused adverse effects on the environment, human health, or property.
Waste Management Measures	C, O, D	The EMP will: • Require compliance with all federal, provincial, and municipal regulations and industry standards regarding waste management. • Store all waste materials, including food waste, in a secure designated area, away from environmentally sensitive features. • All hazardous materials shall be stored and secured in approved containers and labeled according to WHMIS and TDG regulations, and MSDS will be available for each product stored onsite. Personnel will have appropriate level of Health Safety and Environment training for their role if handling or storing these materials. All hazardous materials will be stored at least 100 m from any environmentally sensitive feature. • Dispose all hazardous and waste materials regularly, in approved containers or waste facility. This may include: regional landfills, recycling centres, construction/demolition disposal or recovery sites, product suppliers, and/or hazardous waste management facilities. • Contain, cleanup, remediate, dispose and report all spills of waste/hazardous waste materials as promptly as possible. In the event of an accidental spill, implement spill response measures (see below). • No fuel, lubricating fluids, hydraulic fluids, antifreeze, herbicides, biocides or other chemicals are released on the ground or into any wetland. • The disposal of sewage from portable toilets (if any) shall comply with applicable regulations and be disposed of in an approved manner. • Smoking will be limited to designated areas with appropriate waste containers. All vehicles and heavy equipment shall contain smoke butt disposal to ensure smoke butts are not discarded on the ground. • All personnel shall be made aware of proper disposal methods for welding rods, cigarette butts and other hot or burning material. • All oils, grease, gasoline, and diesel shall be stored at least 100 m away from any wetland, drainage, or other waterbody. • No person shall deposit oil, oil wastes or any other substances harmful to migratory birds. • Hydrovac fluid shall be disposed of in an area approved by the Environmental Monitor and Contractor. • Hydrovac holes will be fenced with snow fence to ensure the holes are not accessed by wildlife.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
Emergency Response Measures	C, O, D	The EMP will include the following emergency response measures: Communication and Emergency Contacts: • All crews must have a means of communication, such as a radio or cell phone. • A list of emergency contacts will be provided in the final EMP and must be carried by all personnel when on site. Fire management will include the following: • There will be no smoking on site apart from designated areas with appropriate butt disposal methods to ensure butts are not thrown on the ground. • All equipment will contain fire extinguishers and will be maintained as per manufacturer's recommendations. • A Fire Marshal will be designated. • Fire suppression measures will commence immediately upon detection of fire. • The location and size of the fire as well as wind direction will be reported to the Fire Marshal. • The Fire Marshal will report all fires to the Construction Lead(s) and Construction Manager. • The Fire Marshal will deploy fire-fighting equipment, as required, including heavy equipment. • All personnel and equipment will be made available for fighting fires. • The Fire Marshal will deploy crew and equipment to support local fire departments if Contractor suppressants are not adequate. • Fire suppression services in the Municipality of Pincher Creek are provided by Pincher Creek Emergency Services. Administration office - 403.627.5333. Emergency number – 911. Welding and grinding activities will adhere to the following measures: • If winds are high, and fire hazard exists, implement protection measures such as wetting surrounding areas, having water trucks on standby and using fire resistant mats, or restrict work. • All vehicles will carry fire-fighting equipment required by the *Forest and Prairie Protection Act* and Regulations. All personnel shall be made aware of proper disposal methods for welding rods, cigarette butts and other hot or burning material.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
Spill Prevention and Spill Response	C, O, D	The EMP will contain the following spill prevention and spill response measures: Best Management Practices (BMPs) for spill prevention and spill response will be implemented to prevent or mitigate for release of deleterious substances from construction machinery and equipment. Spill prevention measures will include: • Bulk fuel, fuel transfer vehicles, servicing vehicles, vehicles with box-mounted fuel tanks will carry spill prevention, containment and spill cleanup materials (i.e., spill kits) appropriate to clean-up a spill to the volume of fuels or hazardous materials they contain. • Heavy equipment and light vehicles will carry appropriate spill kits and additional spill kits will be located at designated centralized areas. • All fuel tanks will comply with environmental standards. Installing and maintaining fuel tanks will occur in an approved manner under appropriate regulation with all necessary containment, drip collection, nozzle requirements and spill kits. • All hazardous materials will be stored and secured in approved containers and labeled according to WHMIS TDG regulations. All MSDS will be available for each product stored onsite, and all oils, grease, gasoline, diesel, and other hazardous materials will be stored at least 100 m away from any wetland, drainage, or other waterbody. All hazardous waste and waste materials will be stored in a secure designated area (laydown yard), away from environmentally sensitive features. Personnel handling fuels will have at minimum TDG and any others appropriate level of HSE training for their role handling or storing fuels. • All hazardous and waste materials will be disposed of regularly, in approved containers or waste facility. This may include regional landfills, recycling centres, construction/demolition disposal or recovery sites, product suppliers, and/or hazardous waste management facilities. During construction, fuel, lubricating fluids, hydraulic fluids, antifreeze, herbicides, biocides or other chemicals will not be released on the ground or into any wetland. All garbage will be collected and dispose of it in an appropriate manner. Equipment refueling will adhere to the following guidelines: • Utilize an impervious barrier underneath equipment and vehicles when servicing and refueling. • Ensure all fuel tanks comply with environmental standards. • Do not refuel or perform maintenance on equipment within 100 m of a wetland or watercourse. • Fuel storage areas and non-portable transfer fuel lines will be clearly marked and barricaded to ensure they are not damaged by moving vehicles. • Appropriate firefighting equipment will be available near any flammable storage sites. • Smoking shall not be permitted within 10 m of a fuel storage area. • All personnel shall be made aware of proper disposal methods for cigarette butts and other hot or burning material. Regulatory reporting of a spill will include the following: • Report the spill to the Environmental Monitor immediately, and the Environmental Monitor will report all reportable spills to the Alberta Environmental hotline 1-800-222-6514 (24 hour emergency line) or 1-877-944-0313 (Non emergency inquiries) to self report a spill, release, or environmental emergency at the first available opportunity for any reportable spill or release that may cause, is causing, or has cause adverse effects on the environment, human health, or property. • AEP will be notified of all spills if there is a potential for impact on wildlife or wildlife habitat. Substances that require reporting include those that may cause, are causing, or have caused an adverse effect on the environment. Spills must be reported at the first available opportunity.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		The Environmental Monitor will contact the appropriate regulatory agency to report spills as listed below. • The amount exceeds the quantities or emission levels set out for the substance(s) (see MSDS sheet). • A substance was released into a watercourse, wetland, or into the groundwater or surface water in any quantity. • Flammable or combustible liquids not separately specified - 200 litres or more • Polychlorinated biphenyl oils – any amount where the concentration is >50 ppm or if, in a raw case, the oil is suspected to contain PCB but the concentration is unknown. • Oils (hydraulic, used, transformer, etc.) >5 litres. • Gasoline, diesel, glycols >50 litres. • Ozone depleting substances (such as CF4 and refrigerants) and SF6 >10 kg or any quantity that could pose a danger to public safety. • A written report of the spill is required to AEP within 7 days from the day of the release, unless it was waived by AEP during the initial verbal report. In the event of a spill, the first on scene must complete the following: • Access for safety, control danger to human life (including sources of ignition) and identify the composition of the spilled material. • Immediately contact the Construction Lead and Environmental Monitor. • Control - stop any sources of the spill. • Contain – identify the material and then utilize the best measure to contain – spill pads, excavation berms, booms etc. • Cleanup – Employ appropriate cleanup practices, remediate the area as required, and dispose of spill material in an approved manner. The target timeframe to have all spills cleaned up is within 24 hours of the incident. • The Project Environmental Manager, Construction Manager, Construction Lead(s), and Environmental Monitor will be provided with all information in the Spill form within 24 hours of the spill. The Construction Manager may implement the Project's Emergency Response Plan. • Post-construction monitoring may be required. • Fuel truck spills will require the following actions: • Suspend activity immediately in the vicinity of the spill. • Contain spilled petroleum product. • Pump materials out of tanker if the tank is compromised. • Remove truck from site. • Recover spilled product. • Clean-up containment site. • Dispose of spill pads, heavily contaminated soil and vegetation in an approved manner. Soil sampling may be required. • Remediate and flag the area, as required.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		Spills adjacent to or in a wetland or watercourse will require the following actions: • Construct a berm and/or trenches to contain spilled product prior to entry into the wetland. • Deploy booms, skimmers, sorbents, if possible. • Recover spilled product. • Clean up contaminated area including downstream, as applicable. • Dispose of material in an approved manner. Water and soil sampling may be required. • Remediate and flag the area, as required. • Post-construction monitoring may be required. Sampling and analysis of a spill will include the following: • Soil and water sampling will be completed on a case by case basis considering the following: • Quantity of material released; • Type of material released; • Level of difficulty controlling the release and the spilled material; • Level of difficulty recovering contaminated soils, vegetation and water; • Site-specific conditions. • Sampling will be determined by the Environmental Monitor and by regulation. • Sampling will confirm if remediation is effective. • Sampling analysis will be based on the spilled material and site-specific conditions and will follow the Alberta Tier 1 Soil and Groundwater Remediation Guidelines or the Alberta Tier 2 Soil and Groundwater Remediation Guidelines.
Land Cover		
	C, O	**3-M1 Minimize Project footprint during Project design, construction and operation:** • Restrict activity to designated areas, identified in the final EMP, necessary for safe operation. The construction footprint, confirmed during final design, will be marked in the field prior to starting the work. Environmental management during construction will include monitoring of the work area to ensure no work occurs outside of the work boundary. • Restrict grading to the area required for the access and safe operation of equipment and vehicles. • Confine equipment hauling to safe access, allotted workspace and temporary workspace. • Follow all traffic laws and road bans. • If the travel area has not been stripped, the Environmental Monitor and construction personnel will monitor the soil to ensure rutting, compaction, and degradation does not occur and the Environmental Monitor will implement mitigation, such as stripping, geotextile, rig matting and gravel to repair such damage. • Use and mobilize crane and erecting equipment when ground surface is dry to avoid rutting, compacting, or pulverizing soil and/or causing damage to soil or vegetation. • Confine structure assembly, erection and setting work to the designated workspace. • Restrict the use of cranes or booms to designated workspaces, which have been prepared and are safe for the loads.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C	**3-M2 (and 9-M7) Avoid valley breaks and coulees:** As per the Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects (AEP, 2017; herein the Grandfather Process), the Project may apply the 2011 Guidelines for all pre-construction activities, including siting of components. The 2011 Guidelines include avoidance of the tops of steep river valleys and does not include the 100 m setback from coulee and valley breaks included in the Directives, therefore the 100 m setback does not apply to the Project. Despite the Grandfather Process status of the Project, all turbines, with the exception of V-08, have been sited to avoid the setback for coulees and valleys, and the two incursions into coulees are for the linear disturbance of collector lines, which will be installed underground. • Coulee break setbacks in the vicinity of turbine V-08 and the collector line route will be marked in the field prior to construction. • To reduce sensory disturbance effects to wildlife, collector line placement activities within the coulee setbacks will be scheduled outside of the grassland breeding bird restricted activity period (April 1 to July 15) and the Key Wildlife Biodiversity Zone (KWBZ) Restricted Activity Period December 15th to April 30th (Wildlife Directive – Standard 100.3.2). If collector line placement activities cannot occur outside the grassland breeding bird and KWBZ restricted activity periods, the Proponent will develop an alternative mitigation strategy for approval by AEP that includes an Environmental monitor with stop work authority (see **9-M2**) and fencing to limit activities to those that are needed for safe equipment operation. • If collector line placement occurs in early to late fall, fencing will be installed, and a pre-construction amphibian / snake survey will be conducted by an Experienced Wildlife Biologist (EWB, as defined in the Directive). If amphibian species are present work will be halted until a salvage is completed (with a permit) and the area is confirmed clear of herpetiles by the EWB.
	C, O, D	**3-M3 Consult with landowners:** • Consultation with landowners will be ongoing to avoid damage to crops, haylands, and pasture. • If access through existing fencing is required, the Proponent will: ▫ Brace fences prior to cutting. ▫ Install gates in fences crossed by Project workspace. ▫ Close gates after use.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C, O, D	**3-M4 Implement the Reclamation Plan:** • Following completion of construction, areas not containing permanent facilities will be reclaimed (including revegetated) to an equivalent land use capability following guidance in the Reclamation Strategy (Appendix D), and landowner consultation. Adaptive management supported by monitoring will be implemented as a component of the Reclamation Plan. A separate Reclamation Plan will be developed prior to decommissioning activities. Scheduling: • Complete clean-up immediately after construction has completed. • Postpone work on excessively wet soils and wait until soils are dry. • Reclamation will be completed as soon as practical following disturbance, taking in to account the weather, the season, and the input from a reclamation specialist and the landowner. • Time seeding and/or revegetation to take advantage of soil conditions and temperature. Backfilling: • Backfill each lift in the correct sequence, including where three lift soils handling was implemented. • Backfill to surface and mound no greater than 30 cm to allow for settling and drainage. • Do not use topsoil or organics for backfilling. • Do not backfill clods. Break up clods with appropriate equipment. • Dispose of excess spoil material at approved facilities or as approved in consultation with applicable authorities, the landowner and the Project Regulatory Lead. Temporary Infrastructure: • Dismantle and remove construction materials and temporary buildings, storage sites, equipment, etc. not required during reclamation. • Remove temporary sediment and erosion control measures not required for reclamation. • Remove geotextiles, rig mats and other matting. • Remove temporary fencing if not required for reclamation and ensure permanent fencing has been reinstalled as per landowner requirements/agreements. • Remove temporary culverts and other temporary drainage infrastructure. General Measures: • Surveys to be conducted during site reclamation include wildlife clearance surveys if reclamation is completed during breeding bird season (April 1 to July 15). Detailed Wildlife Surveys and mitigation measures are provided in 9-M2 to 9-M6. • Ensure all equipment is clean and free of leaks prior to bringing it to site. • Regrade areas with signs of surface erosion (e.g., rutting, rilling and gullies). • Recontour landscape to original topography and drainage slopes, keep drainages unblocked. • Disc or plow (chisel plow) and harrow subsoils to smooth the surface prior to topsoil replacement. • Test areas that are suspected to be compacted. If compacted, rip soils with a ripper or disc to the depth of approximately

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		30 cm or to the depth of compaction, whichever is deeper and postpone if soils are moist. • Replace topsoil evenly over stripped areas. Postpone topsoil replacement if soils are wet or winds are high to prevent damage and wind erosion. • Dispose of excess rock displaced from excavations. • Avoid scalping of the sod layer during topsoil replacement on pasture. Use equipment which will reduce scalping during the final topsoil replacement pass. • The Environmental Monitor will review the topsoil placement and instruct any further soil handling. • Seed disturbed soils in ditches using a suitable seed mix as recommended by the Municipality. • Apply tackifier or straw crimping from certified weed-free vendor on problematic soil erosion areas. • Install silt fences in areas which are anticipated to experience water flow (e.g., steep slopes and ditches) if straw crimping or tackifier is deemed ineffective due to flow. • Repair all fences and replace all gates with permanent fences of equal or better quality than original, unless otherwise advised by landowner. • Install temporary fences, if required, to restrict grazing cattle from newly seeded areas until vegetation has become established. • Plant low growing native shrubs or trees in riparian areas, or as otherwise advised by the landowner.
	Pre-C	**3-M5 Preconstruction Vegetation Surveys:** • Prior to construction the Proponent will assess range health per the Range Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta (Adams et al. 2003).
	C, D	**3-M6 Avoid disturbing native grassland and non-native land cover:** • Prepare site specific construction plans for Project components to reduce potential grassland disturbance (construction alignment sheets). • Conserve the integrity of the sod, topsoil, and subsoil through prescription of soil handling techniques to be used at specific sections of road, collector, pad, and substation construction. For ground disturbance activity that is short in duration (e.g., collector system installation) in native grassland, methods such as sod salvage (upper soil horizons removed intact) and replacement may be considered. • All collector lines will be underground. Ploughing will be used whenever soil and topography are suitable. Depth to bedrock may limit ploughing for some locations, and upon completion of detailed geotechnical surveys, we will advise AEP of these specific locations and discuss alternative methods. The collector crossings at two watercourses and adjacent to one wetland (Class III) will be buried. • Schedule activities to reduce effects as specified in the Reclamation Strategy (Appendix D), and Section 9.0 Wildlife and Wildlife Habitat (**9-M11**). Activities will be scheduled during the dormant season (i.e., August 31 to March 1) under dry and or frozen conditions utilizing methods such as matting and geotextiles to avoid topsoil stripping. Heavy equipment activities and soil handling during construction and reclamation should be restricted during wet conditions if the soil is being adversely affected. If activities must be undertaken in April to June, additional soil management measures (such as topsoil salvage, treatment for compaction) will be implemented (also see 6-M1 Soil Salvage and 6-M2 Erosion and Sediment Control Plan).

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C, O, D	**3-M7 Minimize the introduction of invasive species and weeds:** • Manage construction activities to limit the spread of invasive species, in accordance with the Weed Control Act [Wildlife Directive 200.3.2]. • A designated vehicle and equipment tire-cleaning station will be erected for the Project area. • Vehicles and construction equipment will be cleaned prior to arrival on site. Equipment involved in topsoil handling at weed sites will be cleaned prior to leaving the location. • Vehicles and equipment will be visually inspected for debris and weeds before moving between native prairie and cultivated fields. • Topsoil piles will be monitored during construction and if weeds are noted. mitigation will be conducted (i.e., approved herbicide application) • During operation, bi-annual weed control measures will be conducted around turbine pads, substation and Project roads. Problem areas that may require additional measures will be identified and recorded.
	C, D	**3-M8 Prepare Traffic Management Protocols:** • The Proponent will develop an Access Management Plan to be submitted to AEP. Traffic management protocols will be developed to limit traffic disturbance, particularly to school bus traffic and on public roads, with consultation with Alberta Transportation and Pincher Creek municipality. The Access Management Plan will incorporate the traffic management protocols listed below. • The Proponent will consult with the Municipality and Alberta Transportation to confirm school bus routes and identify public roads potentially affected by construction traffic. • All vehicle traffic and equipment will remain within the designated right-of-way and associated temporary workspaces. Grading will be restricted to what is required for the access and safe operation of equipment and vehicles. • Confine materials hauling vehicles to existing access roads and designated workspace prepared for transportation equipment. • If access routes and workspace have not been stripped, the Environmental Monitor will monitor the condition of the sod and soil condition, and assess if soil capability is being jeopardized and if further mitigation is required, such as topsoil stripping, gravel, matting and/or geotextiles. • Repair all roads damaged by materials hauling equipment. • Drivers transporting and handling fuels or other hazardous materials will possess valid TDG certification. • Follow all traffic safety regulations and road bans. • The Contractor will develop traffic management specifications that will incorporate measures such as 2-way radio-assisted road calling procedures, call signs, and flag persons when equipment may result in blockages of throughways. • Speed limits on new access roads will be set commensurate with road type, traffic volume, vehicle type, and site-specific conditions as necessary to ensure safe and efficient traffic flow as well as to protect workers on foot and wildlife. • Signs will be placed along the roads, to identify speed limits, travel restrictions, and other standard traffic control information. • Equipment and vehicles will yield the right-of-way to wildlife, and all equipment and vehicles will be operated with proper care and caution to avoid collisions with wildlife. • Equipment shall be clean, free of soil, organics, and chemicals prior to bringing material onsite. • Equipment shall be parked in identified staging areas when not in use. Traffic must obey all speed limits and traffic rules outlined for the construction site

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C	**3-M9 (new) Archaeological, paleontological, and historical and cultural resources will be handled as follows:** • Any archaeological, paleontological, and historical and cultural resources will be flagged and surrounded with fencing, as necessary. The area will be avoided by workers. • Any archaeological, paleontological, and historical and cultural resources encountered during construction will not be disturbed. Work will immediately stop in the area of discovery, the Environmental Monitor will be contacted and Alberta Culture will be notified to identify mitigation measures.
	C	**3-M10 (new)Staking and flagging will be used as follows:** • Locate all buried infrastructure using Alberta One-Call system. • Obtain and follow the conditions of all necessary Crossing Agreements for buried infrastructure. • Flag or stake the boundaries of the Project footprint. • Identify all temporary workspaces prior to construction. • Flag or stake the location of access roads, interconnection lines, temporary workspace, and other project components at wetlands, buried facilities, highways and roads as per crossing agreements. • Ensure that all environmental features (wetlands, archaeological, paleontological and historic sites, or other environmental features identified during surveys) are clearly marked using flagging. (See flagging requirements for wildlife features: **5-M1**, **8-M1**, **9-M4**, **9-M5**, **9-M6**). • Do not allow disturbance, including traffic, outside of the staked boundaries unless approval has been obtained from the Owner, regulators, and/or landowners as applicable. • Do not damage, clear or approach vegetation with clearing equipment marked with flagging (unique colour to be determined by Contractor) or stakes as it may contain nests or wildlife habitat. Contact AEP to determine appropriate mitigation for listed species • Fence off and sign all excavation areas to ensure wildlife, personnel and equipment cannot fall into excavation. Excavation areas will be monitored for wildlife
Designated Areas		
	C, O, D	Land Cover: • **3-M1** Minimize Project footprint during Project design, construction and operation. • **3-M4** Implement the Reclamation Plan following construction. • **3-M6** Avoid disturbing native grassland and non-native land cover. • **3-M7** Minimize the introduction of invasive species and weeds. Wildlife and Wildlife Habitat: • **9-M2** Construction in Key Wildlife and Biodiversity Zone.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
Wetlands		
	C, O, D	**3-M4** Implement the Reclamation Plan.
	C	**5-M1** Avoid wetlands and watercourses: • Required setbacks (100 m) for wetlands DLK001 and DLK003 will be flagged in the field prior to construction. • Watercourses will be delineated on Project maps prior to construction. The high-water mark of watercourses intersected by the Project footprint will be flagged in the field to prevent encroachment. Collector lines will be orientated to cross perpendicular to the watercourse. • Project infrastructure has been sited to avoid wetlands DLK002 and DLK003 and therefore Project activities (construction, operation, and decommissioning) will adhere to the required setback (100 m) and timing restrictions (year-round) at DLK002 and DLK003. • The collector line will be located within or immediately adjacent to the existing disturbance in the right-of-way for Road 291 to avoid wetland DLK001. The Proponent will complete a Wetland Impact Assessment Form, along with a mitigation plan to submit with an Application for a Licence under the Water Act. Additional field data, notifications and/or compensation may be required pending the wetland impact assessment. • Mixing cement must be completed at least 100 m from wetlands and watercourses. The batch plant, if required, will be operated in accordance with all regulations. • Excavated waste material shall not be disposed of in an environmentally sensitive area or within the setback of a wetland or watercourse. • During operation, the required 100 m setbacks at wetlands DLK002 and DLK003 will be adhered to. • At the time of decommissioning, a mitigation strategy will be developed to address decommissioning the collector line that crosses DLK001, for approval by AEP.
	C	**5-M2 Adhere to *Water Act* requirements:** • AEP Regulatory Approvals will be notified of all applicable watercourse crossings in accordance with the *Water Act* requirements (two collector line crossings). Watercourses will be evaluated for fish presence and classification. Permits will be obtained if required. Standard best management practices will be implemented to protect fisheries resources, including monitoring for fish presence, installing erosion and sediment controls and spill management.
	C,D	**5-M3 Implement erosion and sediment controls:** • Erosion prevention and sediment control measures will be implemented near wetlands and watercourses to prevent sedimentation in wetlands. These measures may include employment of rig matting, geotextiles, vegetated buffer zones, earthen berms, silt fencing, straw bales, etc. • Permanent erosion measures will be implemented around permanent Project infrastructure (i.e., roads, substation, and turbine pads). These measures may include revegetation, placement of large diameter rock on slopes, and installation of permanent berms. • No ditch or drainage swale shall drain directly into a wetland or watercourse. • Natural drainage shall be maintained whenever possible. • Should any water/drainage related non-compliance arise, the Environmental Monitor, Construction Manager, Project Regulatory Lead and Alberta Energy Regulator shall be contacted (Emergency Hotline 1-800-222-6514).

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C,D	**5-M4 Delineate wetlands and watercourses:** (now included in **5-M1**).
	C,O,D	**5-M5 (previously 5-M6) Spill response planning:** • The EMP will contain spill prevention and emergency response measures, which include the requirement for a spill kit on active work areas. Any spills on site will be contained and cleaned up in an orderly and timely manner, and reported to appropriate authorities if necessary. See **EMP** requirements in this table.
	C	**5-M6 (previously 5-M7) Prepare Guidance for Wetlands in an Environmental Management Plan:** • The EMP will provide specific guidance for implementing environmental protection measures for wetlands and watercourses during site preparation, construction activities, and site clean-up. See measures in **EMP** commitments in this table for details, as well as **5-M1**, **5-M2**, **5-M3**, **5-M7** and **8-M3**.
	C	**5-M7 (previously 5-M8) Equipment use around wetlands:** • If using materials in and around wetlands, ensure the materials are clean and free of soil, organics and chemicals. • Equipment shall not be left parked within 100 m of wetlands and watercourses.
Soils and Terrain		
	C,D	**6-M1 Soil salvage measures:** Soil salvage measures will be developed and implemented prior to the start of construction. The purpose of these measures is to describe the appropriate excavation, handling, and stockpiling of soils that will be used for reclamation. The measures will include the following information (adapted from Alberta Energy Regulator (AER) 2014): • Topsoil and subsoil salvage depths and range of variability (minimum and maximum), including consideration of saline/sodic soil horizons; • Detailed volume estimates of salvageable topsoil; • Stockpile locations; • Soil conditions (i.e., wet) that may require special consideration or handling techniques (if any), as well as a proposed mitigation approach; • Soils that may require special consideration or handling; • Topsoil will be stored in windrows on topsoil a minimum of 2 m from embankments, slumps, cuts, wetlands, and 1 m from excavated areas; • If warranted, gaps will be left in windrows at trails, access roads, wildlife trails, as per landowner's and/or AEP's request to allow for equipment or livestock/wildlife to cross workspace; • Consider tackifying, seeding, and watering down the topsoil windrow, as required; • Subsoil will be stored in previously stripped locations; and • Measures to reduce soil compaction, such as rooted crops or careful use of deep tillage in agricultural areas and paratilling (non-inversion deep tillage) (Smreciu et al. 2003) may be required. Grading will adhere to the following guidelines: • First, strip topsoil from areas to be graded and store in areas per soil storage recommendations.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		• Avoid over stripping; the area stripped will correspond to the area to be graded. • Do not grade topsoil, organics (sod, stumps and brush), or subsoil piles into one another. • Reduce grading, especially near wetlands, natural drainages, native grasslands, pasture, hay land and modified pasture with a complete sod layer to reduce erosion into the area. • Avoid blocking drainages and install culverts as required. • Do not grade materials into wetlands or watercourses. • Limit the width and duration of grading to the extent required to reduce the potential for erosion and subsoil compaction. • Limit grading on erosion prone slopes. • Do not store graded materials in low-lying areas. Soil excavation will adhere to the following guidelines: • If excavated spoil material is not to be used in backfill locations, the spoil materials will be hauled to an approved disposal facility or stored as per landowner agreements. • Store excavated spoil a minimum of 2 m from embankments, slumps, cuts, wetlands, and 1 m from excavation areas. • Store excavated spoil on previously stripped areas adjacent to excavation areas. Ensure sufficient space (minimum of 1 m) is left between the edge of the topsoil storage pile, the spoil storage pile and excavation, to ensure the materials do not slough into each other or back into the excavation. • In areas not previously stripped, place spoil on geotextile material at minimum of 1 m from excavation.
Erosion and Sediment Control Plan	C,D	**6-M2 Prepare an Erosion and Sediment Control Plan:** • Develop Erosion and Sediment Control Plan prior to construction and implement during Project construction, until revegetated areas are stable, such that construction erosion and sediment controls are no longer needed. • Use best management practices identified in the Field Guide for Erosion and Sediment Control (Government of Alberta 2011b). • Construction will be carried out using equipment with low ground pressure tires or wide-pad tracks. Rig matting or geotextile material will be used in problem areas to minimize disturbance. Consider salvaging an additional layer of topsoil in wet areas. • In the event of mud build-up, excessive rutting, or formation of standing water, effective measures can be adapted in consultation with an Environmental Monitor. • Implement dust control measures (e.g., applying water) to Project roads if nuisance dust results from operation and/or maintenance activities. • The Owner will assign Environmental Monitor(s) with sufficient knowledge of soils to be able to identify which soils are too wet for a particular activity. Soils are considered wet when the planned activity has the potential to cause adverse effects or damage to the soils (e.g., rutting, formation of puddles, tracking mud, etc.). • The decision to suspend work until soils are dry will be conducted through a discussion with the Project Environmental Manager, Contractor, and Environmental Monitor

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		• On cultivated land, temporary erosion berms (e.g., sandbags, subsoil, or weed free straw bales) will be installed; the remaining topsoil will be stripped and stored away from the work area; and temporary cross ditches will be installed as per instructions from Landowners/Occupants. • On native grasslands, temporary erosion berms (e.g., sandbags, subsoil, or weed free straw bales) will be installed; silt fences will be installed near the base of slopes and at intervals on longer slops; the remaining topsoil will be stripped and stored away from the work area; and rills and gullies will be regraded if they have formed on subsoil and stripped topsoil has not been replaced. • Silt fence and/or other erosion and sediment control measures must be installed prior to construction. Maintenance of silt fences must be completed as soon as possible. • Before grading, install silt fences on the downstream sides of the area to be graded. • Install silt fences and other sediment erosion control structures near wetlands. Inspect sediment erosion control structures on a regular basis and repair, if warranted, as soon as practicable after damage. • Soils which accumulate against silt fences or in sediment traps shall be removed on a regular basis to ensure effectiveness. • Install sediment and erosion control measures in areas of exposed soils to prevent erosion which may include: silt fencing, matting, geotextiles, tackifiers, weed-free bales, and any other approved (by the Environmental Monitor) control measures. • Direct runoff through swales and berms, where necessary, to sediment control measures and ensure no untreated runoff is discharged from the site. • Install temporary rock check dams, straw bale barriers and/or filter cloth barriers in swales, where appropriate. • Install construction entrance features (e.g., mud mats) at site entrances. • Inspect erosion and sediment control measures after each significant rainfall event or weekly, whichever is more frequent, and rectify deficiencies immediately. • Work shall not be completed on erodible soils, during or following rainfall events. • Areas where little or no vegetation exist may be graded after a light rain when the surface is in an optimal state, but not after heavy rains which promotes runoff, erosion and compaction issues. • Stabilize all disturbed areas, not subject to construction activities, within 30 days. • Cover, seed, apply water and/or pack topsoil stockpiles and windrows with approved equipment and/or seed mix, if the Environmental Monitor has assessed and indicated the soil is prone to wind erosion. • Soil handling activities may be postponed if winds are too high; the Environmental Monitor and Construction Manager will assess conditions and postpone and resume activities accordingly. • Dewater excavation prior to foundation work; dewater with sediment removal system as required, and pump water onto stable, vegetated areas, tarpaulins or sheeting in a manner which does not cause erosion or siltation into wetlands; dewatering must be approved by the Environmental Monitor and must be greater than 50 m from wetlands and watercourses.
Environmental Management Plan	C,O,D	**6-M3 Use best management practices for fuels and chemical storage and handling:** Best management practices and guidelines included in the construction EMP includes guidance from the Petroleum Tank Management Association of Alberta in the storage and use of fuel tanks (see EMP for Spill Prevention and Spill Response Measures in this table).

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
Groundwater		
Environmental Management Plan	C	**7-M1 Minimize groundwater quality and quantity effects:** • All Project activities will follow standard operating procedures and best management practices as outlined in the construction EMP to minimize the potential for adverse effects on the groundwater system. Measures include maintaining drainage patterns, and utilizing compacted rather than paved surface areas, such as all-weather gravel roads.
Spill Prevention and Spill Response	C,O,D	**7-M2 Spill response planning:** See spill prevention and spill response measures in EMP in this table.
	C	**7-M3 Dewatering mitigation:** • Should dewatering be required to accommodate foundation construction, groundwater will be stored in on-site holding tanks and its composition (e.g., turbidity) be controlled prior to release back to the environment. Available water well records information has indicated that groundwater in the Project area and immediate vicinity is typically encountered at greater than 10 m below ground surface and foundation excavations are not anticipated to intersect the water table and necessitate dewatering.
	C,D	**7-M4 Protection of recorded spring**: • Water well records indicated a spring is present near the proposed Project substation. The presence of the spring will be verified, and mitigation measures will be determined. Mitigation measures may include fencing off the surrounding area to spatially delineate it from the work area, and minor rerouting of roads and collection lines to avoid the area, if necessary.
Vegetation		
	C	**8-M1 Manage for rare plant occurrences:** • Rare plant surveys conducted in 2015 (Bear Tracks & McCallum) identified one vascular species of management concern: crested beardtongue. Crested beardtongue is tracked on the ACIMS tracking list and is ranked S2 in Alberta, and was generally encountered on exposed soil on dry aspects. The Proponent will manage for crested beardtongue as follows: ▫ Examine the ACMIS for occurrence of rare plant species for the project area plus a 1 km buffer [Wildlife Directive 100.2.1]. ▫ Should locations of high plant density be encountered by the Environmental Monitor during construction, a management plan will be developed to minimize effects. ▫ The management of invasive species measures (see **3-M7**) will help to prevent indirect loss of this species due to competition from invasive species. • In the event that additional rare plants or rare plant communities are found during onsite assessments during construction, the following mitigation measures may be implemented: ▫ Avoid the plant or plant community and flag or fence off with silt or snow fence. ▫ Temporarily cover the plant or plant community with geotextile matting, flex net, or rig mats. ▫ Realign access areas to avoid rare plant area and inform personnel of the restrictions as required.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C,D	**8-M2 Maintain mature poplars:** • Any mature poplars (dead or living) of 34 cm dba will be maintained in the project area and buffer zone. [Wildlife Directive 200.2.3]
	C	**8-M3 (new) Vegetation clearing will adhere to the following guidelines:** • Use clearing equipment that limits surface disturbance, soil compaction and topsoil loss (e.g., low pressure tracks/tires, blade shoes and brush attachments). • Use brushcutters, brushhogs or other equipment (e.g., rotary mowers) which should result in minimal soil disturbance when brushing non-salvageable timber in areas where grading is not warranted. • Do not skid or drag trees across wetlands. • Complete brushing or clearing activities in a manner that prevents siltation into wetlands. • Consider clearing vegetation manually in areas of steep slopes and soils with risk of erosion. • Consider leaving stumps in situ. • Clear brush or trees as per instructions the Owner has received from the landowner. • The Owner will consult with AEP and/or applicable Municipal District representatives and/or Landowners/Occupants to determine preferred brush disposal method. • If burning is conducted, brush piles to be burnt will be placed on exposed subsoil or as per the Fire Permit. • At no time will a fire be left unattended. Only brush will be burned. • Appropriate fire extinguishing equipment will be located to hand while conducting all burning.
Wildlife and Wildlife Habitat		
Access Management Plan	C, O, D	**9-M1 Access Management Plan:** • An Access Management Plan will be developed that will include access control and access management measures [Wildlife Directive 100.3.5 and 100.3.9] See traffic management protocols (**3-M8**).
	C, O, D	**9-M2 Construction in Key Wildlife and Biodiversity Zone:** • If construction is required in the Key Wildlife and Biodiversity Zone between December 15 and April 30, an EWB will be on site during construction to stop work if ungulates are within 200 m of construction activity, during adverse weather conditions (i.e., deep snow (20 cm or greater depth)), and at the discretion of an EWB when ungulates may congregate for shelter and/or grazing purposes [Wildlife Directive 100.3.16 and K. Morton, B. Downey, and K. Cline, Pers. Comm. May 2017]. • Wildlife shall not be approached. In the event of wildlife being encountered during construction in areas that were not staked or flagged: ▫ Stop work in the immediate area and contact the Environmental Monitor. ▫ Report any aggressive, nuisance, trapped, injured or dead wildlife to the Environmental Monitor and the Monitor will notify AEP and the Project Regulatory Lead.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C	**9-M3 Pre-construction wildlife surveys and monitoring by an Experienced Wildlife Biologist:** The EWB, as defined by the Wildlife Directive, will: • Have stop work authority as outlined in mitigation strategies agreed upon with AEP. • Have reviewed Project environmental documentation such as the EE and the mitigation measures listed in this table. • Be experienced in implementation and monitoring of wildlife mitigation measures. • Provide ongoing updates to the construction team on mitigation effectiveness as needed. • Monitor construction activity (pick-up truck and smaller vehicle access on constructed access roads) if occurring within the FEHA, PRFA, and STGR setbacks during restricted activity periods (see **9-M4, 9-M5**) • Monitor wildlife behavior and propose and implement on-site mitigation actions when construction activity is required within KWBZ during restricted activity periods (see **9-M2**). AEP will be notified if at a future date mitigation is proposed or considered that has not been approved by AEP (Wildlife Directive – Standard 100.3.15). An EWB will be present on-site to conduct pre-construction surveys: • To assess the activity status of known wildlife features during the appropriate restricted activity period for the species prior to construction activity within the wildlife feature setback, including nesting raptors and sharp-tailed grouse. • Determine nest activity status based on the following criteria: ▫ Ferruginous hawk nests will be considered active until June 1 of the second year of inactivity (Alberta Ferruginous Hawk Recovery Team 2009), and in consultation with AEP. ▫ Prairie falcon and Swainson's hawk nests will be considered active if they are presently being used by wildlife as confirmed through the visual presence of an animal, or the evidence of fresh feces, or other fresh signs of use (e.g., feathers) (AEP 2017b). ▫ To maintain wildlife surveys as current (Wildlife Directive Standard 100.2.4). • If a known wildlife feature is noted to be inactive this will not result in changes to Project infrastructure siting in relation to the previously identified setback. The wildlife feature will be revisited on a weekly basis until the mid-point in that species' breeding period, to reduce the potential of a late nesting pair moving into the nest during the construction period. If, after the mid-point in the breeding period the feature is still inactive, construction activities will no longer need to be adjusted or rescheduled to avoid the restricted activity period within the setback (per Government of Alberta 2011), except in the case of the ferruginous hawk nest and the prairie falcon nest where consultation with AEP would also be required prior to lifting the setback requirements for restricted activity. • To conduct pre-construction nest searches and monitoring for grassland birds during the grassland bird restricted activity period (see **9-M11**). The following pre-construction wildlife surveys will be kept current until the Project is commissioned (i.e., within two years of the last survey date) and data collected will be provided to AEP by year end [Wildlife Directive 100.2.4]: • Sensitive raptors (raptor nest surveys). • Sharp-tailed grouse (lek surveys). • Wildlife surveys to be repeated if Project not constructed by 2021: avian use study, breeding birds, bat migration, or others as determined through consultation with AEP [Wildlife Directive 100.2.10].

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C, O, D	**9-M4 Ferruginous hawk nest setback and timing restrictions:** Based on the nest's previous use by ferruginous hawks and AEP's assertion that the nest is to be considered active, all new Project infrastructure has been sited outside of the 1000 m setback. The FEHA setback is overlapped by the existing Range Road 291 and a portion of the existing access road (to be upgraded) to the decommissioned residence/farmyard to be used as a laydown area. General: • No Project personnel will be permitted to enter the improved pasture area to the east of Range Road 291, except for an EWB to ascertain nest status • The required setback (1,000 m) for the identified ferruginous hawk nest (Figure 9-2) will be flagged in the field west of Range Road 291 prior to construction. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. • The construction footprint for upgrades to the existing spur road will be flagged prior to the initiation of construction and encroachment into the nest setback beyond the flagged work area will not be permitted. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. • Operations staff will be provided with Wildlife Awareness training, which will include, but not be limited to: how to identify wildlife including raptors, how to identify behaviours, and steps to take when wildlife is observed. • At the time of Project decommissioning, nest activity will be assessed, and pending the results of the nest assessment, setbacks and timing restrictions will be discussed with the regulator.
		Construction – during the restricted activity period, March 15-July 15 (Government of Alberta 2011): • No construction or decommissioning activities, including reclamation, will occur within the ferruginous hawk nest setback during the restricted activity period. The use of the existing and upgraded spur road for access is not considered a construction activity. • Encroachment into the nest setback beyond the flagged work area will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. • Use of the spur road for access during the restricted activity period will be monitored by an EWB with stop work authority if ferruginous hawks are present, and work will stop if ferruginous hawks are showing signs of agitation above baseline levels. Construction – outside of the restricted activity period: • Prior to initiating construction activities within the nest setback, the EWB will confirm the ferruginous hawk nest is no longer active for the season. • Construction activities within the nest setback (outside of the restricted activity period) will be monitored by an EWB with stop work authority if ferruginous hawks are present and are showing signs of agitation above baseline levels. Operation – during the restricted activity period, March 15-July 15: • No major maintenance activities for the spur road and turbine V-11 will be scheduled during the restricted activity period • Approximately weekly routine access to Range Road 291 and the spur road to turbine V-11 will be limited to pick-up trucks and smaller vehicles. • In the event of a turbine malfunction that requires large vehicle (e.g., larger than a pick-up truck) access to Range Road 291 and the spur road to turbine V-11 through the nest setback during the nesting season, the Proponent will have an EWB onsite with stop work authority if ferruginous hawks are present and are showing signs of agitation above baseline levels.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C, O, D	**9-M5 Prairie falcon nest setbacks and timing restrictions:** General: • The substation will be outfitted with deterrents to limit bird use of infrastructure (e.g., greenjacket nest deterrents). • Parking at the substation will be limited to the existing parking area at the existing Old Man 2 substation, • The required setback (1,000 m) from the identified prairie falcon nest (Figure 9-2) will be flagged in the field prior to construction. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. • The construction footprint for the substation and the collector line will be flagged prior to initiation of construction and encroachment into the nest setback beyond the flagged work area will not be permitted. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. • Operations staff will be provided with Wildlife Awareness training, which will include, but not be limited to: how to identify wildlife including raptors, how to identify behaviours, and steps to take when wildlife is observed. • At the time of Project decommissioning, nest activity will be assessed, and pending the results of the nest assessment, setbacks and timing restrictions will be discussed with the regulator Construction – during the restricted activity period, March 15-July 15 (Government of Alberta 2011): • No construction or decommissioning activities, including reclamation, will occur within the prairie falcon nest setback during the restricted activity period, except for small vehicle access to the substation. Access along Highway 785 will not be restricted. • Encroachment into the nest setback during the restricted activity period will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. • Use of the substation area during the restricted activity period will be monitored by an EWB with stop work authority if prairie falcon are present and are showing signs of agitation above baseline levels. Construction – outside of the restricted activity period: • Prior to initiating construction activities within the nest setback, the EWB will confirm the prairie falcon nest is no longer active for the season. • Construction activities within the nest setback (outside of the restricted activity period) will be monitored by an EWB with stop work authority if prairie falcons are present and are showing signs of agitation above baseline levels. Operation – during the restricted activity period, March 15-July 15: • No major substation maintenance will be scheduled during the prairie falcon restricted activity period. • Regular (i.e., weekly) access to the substation will be limited to pick-up trucks and smaller vehicles. • In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to the substation within the nest setback during the restricted access period, the Proponent will have an EWB onsite with stop work authority if prairie falcons are present and are showing signs of agitation above baseline levels.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C, O, D	**9-M6 Sharp-tailed grouse leks setbacks and timing restrictions:** General: • Collector line will be installed at the same time road construction occurs within the sharp-tailed grouse lek setback for STGR03, to the extent practicable. Situations that may limit adherence to this mitigation include encountering weather events during construction that significantly alter the schedule (e.g., if construction of the road is underway before the restricted activity period, and excessive precipitation events limit execution of the collector line work, then it may be necessary to construct the components at different times for erosion and sedimentation or wildlife safety reasons). • The required setbacks (500 m) for each of the identified sharp-tailed grouse leks (STGR01, STGR02, STGR03, STGR04 as per Figure 9-2) will be marked in the field prior to construction with flagging (see 3-M10). Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. • The construction footprint for the collector line/access road will be flagged prior to initiation of construction and encroachment into the nest setback beyond the flagged work area will not be permitted. Flagging to be completed outside of the restricted activity period per Government of Alberta 2011. • Operations staff will be provided with Wildlife Awareness training, which will include, but not be limited to: how to identify wildlife including sharp-tailed grouse, how to identify behaviours, and steps to take when wildlife is observed. • At the time of Project decommissioning, lek activity will be assessed, and pending the results of the lek assessment, setbacks and timing restrictions will be discussed with the regulator. Construction – during the restricted activity period, March 15-June 15 (Government of Alberta 2011): • No construction or decommissioning activities, including reclamation will occur within a sharp-tailed grouse setback during the restricted activity period, including installation of underground collector line and construction of the road • Encroachment into the lek setback during the restricted activity period will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. • Use of the access road (constructed outside of the restricted activity period) during the restricted activity period will be monitored by an EWB with stop work authority if sharp tailed grouse are present and are showing signs of agitation above baseline levels. Construction – outside of the restricted activity period: • Prior to initiating construction activities within the lek setback, the EWB will confirm the leks are no longer active for the season. • Construction activities within the lek setback (outside of the restricted activity period) are limited to the installation of underground collector line and construction of the road. These activities will be monitored by an EWB with stop work authority if sharp tailed grouse are present and are showing signs of agitation above baseline levels. Operation – during the restricted activity period, March 15-June 15 (Government of Alberta 2011): • No major maintenance activities for the access route and turbine V-12 will be scheduled during the restricted activity period. • Approximately weekly routine access to turbine V12 will be limited to pick-up trucks and smaller vehicles. • In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to turbine V-12 during the restricted access period, the Proponent will have an EWB onsite with stop work authority if sharp tailed grouse are present and are showing signs of agitation above baseline levels.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C	**9-M7 (and 3-M2) Avoid valley breaks and coulees:** As per the Wind Energy Review Process: Transition from old (2011) Wildlife Guideline for Alberta Wind Energy Projects to new (2017) Wildlife Directives for Alberta Wind Energy Projects (AEP, 2017; herein the Grandfather Process), the Project may apply the 2011 Guidelines for all pre-construction activities, including siting of components. The 2011 Guidelines include avoidance of the tops of steep river valleys, and do not include the 100 m setback from coulee and valley breaks included in the Directives; therefore the 100 m setback does not apply to the Project. Despite the Grandfather Process status of the Project, all turbines, with the exception of V-08, have been sited to avoid coulees and valleys setbacks, and the two incursions into coulees are for the linear disturbance of collector lines, which will be installed underground. • Coulee break setbacks in the vicinity of turbine V-08 and the collector line route will be marked in the field prior to construction. • To reduce sensory disturbance effects to wildlife, collector line placement activities within the coulee setback will be scheduled outside the grassland breeding bird restricted activity period (April 1 to July 15) and the Key Wildlife Biodiversity Restricted Activity Period December 15th to April 30th (Wildlife Directive – Standard 100.3.2). If collector line placement activities cannot occur outside the grassland breeding bird and KWBZ restricted activity periods, the Proponent will develop an alternative mitigation strategy for approval by AEP that includes an Environmental Monitor with stop work authority (see **9-M2**) and fencing to limit activities to those that are needed for safe equipment operation. • If collector line placement occurs in early to late fall, fencing will be installed, and a pre-construction amphibian / snake survey will be conducted by an EWB. If amphibian species are present work will be halted until a salvage is completed (with a permit) and the area is confirmed clear of herpetiles by the EWB.
	C, O, D	**9-M8 Site and design Project infrastructure to reduce risk of wildlife mortality:** • Guy wires for meteorological towers and communication towers will be equipped with markers designed to reduce the potential for bird collisions [Wildlife Directive 100.3.14]. • Turbines will be spaced at least 200 m apart from blade tip to blade tip and will be located in a manner that minimizes the obstruction of bird movement [Wildlife Directive 100.2.11]. • Measures to minimize risk of wildlife mortality from turbines, including those described in *Wind Turbines and Birds, A Guidance Document for Environmental Assessment* (Environment Canada 2006), will be implemented as follows: ▫ The Proponent will install fewer large turbines rather than a greater number of small turbines. ▫ The Project will be configured into clusters of turbines rather than a long linear string of turbines. ▫ Turbine lighting will only be used in compliance with Transport Canada regulations. ▫ Tubular turbine towers, rather than lattice towers, will be used to minimize opportunities for birds to perch and nest [Wildlife Directive 100.3.13]. • Substation will be outfitted with deterrents to limit bird use of infrastructure (e.g., greenjacket nest deterrents). • The collector lines will be underground.
Environmental Management Plan	C, O, D	**9-M9 Develop a construction and operation mitigation plan:** The Proponent will develop and implement a construction and operation plan that adheres to the Wildlife Directive 100.3.1 (see Environmental Management Plan in this table).

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
Post Construction Monitoring Plan	O	**9-M10 Develop and Implement the Post-Construction Monitoring Plan:** • This plan includes operational mortality monitoring for birds and bats for a minimum of three years [Wildlife Directives 100.4.1, 100.4.2] (Appendix E). The plan includes a site-specific monitoring protocol that complies with the Wildlife Directives (AEP 2017b) [Wildlife Directives 100.4.3 through 100.4.10]. Mortality thresholds will be defined by the Bat Mitigation Framework, Government of Alberta 2013 and subsequent updates. • Wildlife monitoring for the Project will begin in the first spring or fall season after the initiation of commercial operation. • Surveys for wildlife features with setbacks such as sharp-tailed grouse leks and sensitive nesting raptors will occur annually for a minimum of three years post-construction. • Acoustic monitoring surveys for bats will be conducted concurrent with post-construction monitoring, the conduct of which might offer value to refining post-construction monitoring and mitigation. • A detailed report of post-construction monitoring will be provided to AEP annually by the first week of January of the following year. Upon consent from private landowners, AEP Wildlife Biologists or associated researcher(s) will be given access to the Project area for visits to the site [Wildlife Directive 100.4.13].
	C,O	**9-M11 Grassland bird restricted activity period and setbacks** Construction – during restricted activity period, April 1 to July 15: • Initial clearing activities will not occur within the grassland bird restricted activity period (see 3-M5). • If subsequent construction or decommissioning activities (including reclamation) cannot be scheduled outside the grassland bird restricted activity period, a pre-disturbance migratory bird nest search of the Project footprint plus up to a 100-m setback to identify potential wildlife features that could be impacted by construction activities will be conducted by an EWB. • If a wildlife feature (e.g. migratory bird nest) is identified, the EWB will apply and flag the appropriate setback as defined by Environment Canada and Climate Change (ECCC 2017) and by AEP (Alberta Environment and Parks (AEP) 2017b) and communicate the setback to the construction contractor and the client. Construction activities will not be able to occur within the setback without regulator approval. • Encroachment into a setback during the restricted activity period will be documented by the Environmental Monitor as an environmental non-compliance event and will be reported to AEP within 48 hours. • Pre-disturbance migratory bird nest methods will follow industry practices such as: ▫ Surveys will not be conducted during inclement weather such as heavy rain, snow, fog, high wind, or cold temperatures as bird detectability during these conditions may be limited. ▫ Surveys will not be conducted when ambient temperatures are ≤ 5°C or ≥ 30°C as survivability of eggs or nestlings is diminished. ▫ Surveys will be conducted within the clearing limits for the Project footprint and up to 100-m beyond the limits. ▫ Survey personnel will walk transects through the area to be cleared, passively searching for nests and nesting activity. For crews of two or more, individuals will be spaced within 5 m distance and walk parallel to one another along the transect.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
		▫ In addition to visually searching for nest structures, surveyors will also employ additional techniques to increase the likelihood of finding nests, such as observing bird song or behaviour as cues to locate nests. These behaviours may include adults flying with food, nesting material, and/or fecal sacks, young begging for food, adults exhibiting agitated behaviour. ▫ Nest location, species attributable to the nest (if possible), general nest characteristics (tree/shrub species, nest height, ground / above ground), nest contents if possible (eggs, young), and nest status (active/inactive) will be recorded with care taken not to unnecessarily prolong the disturbance of an active nest. Operation – during the restricted activity period, April 1 to July 15: • No major maintenance activities for the access routes and collector lines within native grassland land cover types will be scheduled during the restricted activity period. • Approximately weekly routine access will be limited to pick-up trucks and smaller vehicles. • In the event of a malfunction that requires large vehicle (i.e., larger than a pick-up truck) access to a turbine within the restricted access period, the Proponent will have an EWB onsite with stop work authority if grassland birds are present and are showing signs of agitation above baseline levels.
	O, D	**9M-12 General wildlife mitigations to avoid wildlife interactions during operation:** • Workers will be required to complete wildlife training to include guidelines for working around sensitive wildlife species and general measures such as the following: ▫ Environmental training prior to starting work at the site that will include, but not be limited to: location of wildlife features and setbacks; colour coding of flagging on the site; mitigations and their rationale, including setback and timing restrictions; reporting procedures for wildlife observations; and environmental non-compliances; and consequences for non-compliances. ▫ Wildlife, including waterfowl, local domestic and farm animals, rodents, coyotes, will not be approached, disturbed or harassed (or fed etc.) in or near the Project area. ▫ Pets will not be allowed onsite. • Prior to commencing scheduled servicing of each turbine, a 360° sweep of the turbine gravel pad, up to 10 to 15 m from the turbine base, will be conducted to look for any dead or injured wildlife. All fatalities should be photographed, left as found for inclusion in post-construction monitoring counts, and reported to the Owner. • All fatalities encountered during routine maintenance in Project operation will be reported to AEP and FWMIS annually. Fatalities of species of management concern (i.e., general status categories of at risk, may be at risk, and sensitive as per the Definitions of General Status Categories, Government of Alberta 2011) will be reported to AEP within 48 hours. • If environmental features (e.g., amphibian breeding ponds, mammal dens, or breeding colonies of sensitive species) are found during operation, the Owner will be notified immediately. Work near any environmental feature will be postponed until Environmental staff has determined if avoidance or mitigation is necessary (as per Appendix A of Wildlife Directive, or in consultation with AEP). • No nest shall be disturbed, and no person shall destroy or take a nest or egg. In the event of wildlife being encountered off site, report the location of collisions with wildlife while traveling to and from site to the Environmental staff and if warranted the Environmental staff will notify AEP and the Project Regulatory Lead.

Plans or Measures	Project Phase	Avoidance, Mitigation, and Adaptive Management Measures
	C, O, D	**9M-13 Assess previously unidentified features** • If active wildlife features with setbacks not previously identified (nests, dens) are encountered by the Environmental Monitor during Project activities, species-specific buffers and timing restrictions will be applied based on Appendix A of the Wildlife Directive and consultation with AEP. If buffers or timing restrictions cannot be applied, mitigation will be planned and implemented pending AEP approval. • If a bat roost is found during Project activities, work will be halted within 300 m for northern myotis and 100 m for other species (per Appendix A requirements for the nest/house/den of species not listed in the table) and AEP will be informed immediately. Work will not resume within 100 m of the bat roost until a mitigation strategy has been approved by AEP. • If listed reptiles or amphibians are encountered during construction within the construction rights-of-way, work in the area must stop and the Environmental Monitor must be contacted immediately. The Environmental Monitor, in consultation with an EWB, will develop a mitigation strategy for approval by AEP.

Notes: C=Construction, O= Operation, D=Decommissioning

References

Adams, B., R. Elhert, D. Moisey, R. McNeil Landwise Inc. 2003. Range Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta. Sustainable Resource Development, Edmonton, 97 p.

Alberta Agriculture and Rural Development. 2010. Agricultural Soil Compaction: Causes and Management. Government of Alberta. <http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex13331/$file/510-1.pdf?OpenElement>.

Alberta Environment and Parks (AEP) 2017a. Appendix A, AEP's Detailed Review of Windy Point Wind Park September 28th 2017 Submission. Alberta Environment and Parks.

Alberta Environment and Parks (AEP). 2017b. Wildlife Directive for Alberta Wind Energy Projects. Fish and Wildlife Policy, Alberta Environment and Parks.

Alberta Energy Regulator (AER). 2014. Guidelines for Submission of a Predisturbance Assessment and Conservation & Reclamation Plan. Under an Environmental Protection and Enhancement Act Approval for Enhanced Recovery In Situ Oil sands and Heady Oil Processing Plants and Oil Production Sites. Alberta Energy Regulator. <https://aer.ca/documents/manuals/Manual010.pdf>. Accessed 20 Apr 2017.

Alberta Ferruginous Hawk Recovery Team. 2009. Alberta Ferruginous Hawk Recovery Plan 2009-2014. Alberta Sustainable Resource Development, Fish and Wildlife Division, Edmonton, AB.

Bear Tracks Environmental Services, and McCallum Environmental Ltd. 2015. Wildlife and Rare Plant Survey for the Windy Point Wind Park 2015. Prepared at the Request of Windy Point Wind Park Ltd.

Cline, K. 2017. Meeting Minutes from the Windy Point Windfarm Follow-up Meeting.

Environment Canada. 2006. Wind Turbines and Birds - A Guidance Document for Environmental Assessment V.6. Environment Canada, Canadian Wildlife Service, Gatineau, QC. <http://www.bape.gouv.qc.ca/sections/mandats/eole_matane/documents/DB15.pdf>.

ECCC. 2017. Nesting calendars in Zone B, technical information for planning purposes covering Prairie (BCR11), Boreal Taiga Plains (BCR6) and Northwestern Interior Forest (BCR4). <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html#_05>. Accessed February 2018.

Government of Alberta. 2011. Recommended Land Use Guidelines for Protection of Selected Wildlife Species and Habitat within Grassland and Parkland Natural Regions of Alberta. <http://esrd.alberta.ca/fish-wildlife/wildlife-land-use-guidelines/documents/WildlifeLandUse-SpeciesHabitatGrasslandParkland-Apr28-2011.pdf>. Accessed 16 Dec 2015.

Government of Alberta (2011) Field Guide to Erosion and Sediment Control Version 2. Alberta Transportation. <http://www.transportation.alberta.ca/Content/docType372/Production/FieldGuideforErosionandSFieldGuideforE-June2011.pdf>.

Government of Alberta. 2013. Bat Mitigation Framework for Wind Power Development. Wildlife Land Use Guidelines, Government of Albert Environment and Sustainable Resource Development, Wildlife Branch, Calgary, AB. <http://srd.alberta.ca/FishWildlife/WildlifeLandUseGuidelines/documents/WildlifeGuidelines-BatMitigationFramework-Jun19-2013.pdf>.

Morton, K. 2016. Renewable Energy Referral Report for the Windy Point Wind Project. Alberta Environment and Parks, Operations Division, Wildlife Management.

Smreciu, A., H. Sinton, D. Walker, and J. Bietz. 2003. Establishing Native Plant Communities. Alberta Agriculture, Food and Rural Development, Alberta Environment and Sustainable Resourve Development.

McCallum Environmental Ltd.
2018 Windy Point Wind Park 2018 Update

Windy Point Wind Park
2018 Update due to changes in turbine characteristics
January 10, 2018

I. Fall Migration - 2015

At the request of Alberta Environment & Parks (AEP), the following is an update to the risk assessment provided in *Appendix F3 - Fall Migration Survey for the Proposed Windy Point Wind Park 2015 (Bear Tracks Environmental Services and McCallum Environmental Ltd. 2015b),* more specifically*, Section 3.2, Flight Behavior.* This was included in page 345 and 346 of the *Windy Point Wind Park Environmental Evaluation*, *September 2017*.

The new turbine characteristics are as follows:
Hub Height: 105 metres
Rotor Diameter: 136 metres
Blade Length: 68 metres
Total Height = Hub height + Blade length = 105 + 68 = 173 metres

1.1 Flight Behaviour

Table 1 details the description of the new Rotor Swept Arc at Windy Point in relation to flight height.

Table 1. Turbine rotor swept arc (RSA) measurements.

Height	Description
0 - 37 m	Below rotor swept arc.
37 - 173 m	Within rotor swept arc.
>173 m	Above rotor swept arc.

Flight height characteristics are outlined for individual species (Table 2) and species groups (Table 3). Unknown individuals identified to species group (i.e. unknown raptors and passerines) were included in analysis of species groups. Individuals that were not in flight during the entire observation period were removed from analysis. Tables include the number of individuals observed; the average (weighted) lowest, highest, and overall observed flight height; and the percentage of individuals under, within, or over the rotor swept arc.

All data in the flight height tables come strictly from in-flight observations during the surveys, and does not include historical or published data from other sources. In several instances, a low number of observations were recorded, and therefore may not accurately reflect actual

flight characteristics of the species. It should also be noted that because this data only includes observations during migratory periods, it will not likely reflect the flight characteristics of a given species during other times of the year (e.g. during the breeding season, when many species are performing flight displays). It also only reflects height characteristics during the observation timelines and cannot be construed to represent a consistent pattern or behaviour of flight characteristics. Finally, as is inherent in the limitations associated with any species count, it is likely that some birds may have been counted multiple times.

Table 2 lists individual species and unclassified species groups that were observed during fall migration surveys, and their flight height characteristics. All data in the table comes strictly from observations during the surveys, and does not include historical or published data from other sources. In several instances, a low number of observations were recorded, and therefore may not accurately reflect actual flight characteristics of the species. It should also be noted that because this data only includes observations during migratory periods, it will not likely reflect the flight characteristics of a given species during other times of the year (e.g. during the breeding season when many of the documented species are performing flight displays as part of the breeding process).

Table 2. Flight height characteristics by species

Species	Number of Individuals	Avg. Flight Height (m above ground)*	Relation to Rotor Swept Arc (37 m to 173 m)		
			Below	Within	Above
American crow	14	35		Y	
American goldfinch	3	68		Y	
American kestrel	4	53		Y	
American robin	5	8	Y		
Black-billed magpie	24	34	Y		
Brown-headed cowbird	103	51		Y	
Canada goose	140	224			Y
Clay-colored sparrow	11	2	Y		
Cliff swallow	3	30	Y		
Common raven	13	223			Y
Eastern kingbird	2	1	Y		
European starling	35	40		Y	
Ferruginous hawk	2	158		Y	

Species	Number of Individuals	Avg. Flight Height (m above ground)*	Relation to Rotor Swept Arc (37 m to 173 m)		
			Below	Within	Above
Great blue heron	1	50		Y	
Golden eagle	9	176			Y
Gray partridge	12	1	Y		
Horned lark	66	13	Y		
Killdeer	5	68		Y	
Mallard	10	-			
Merlin	6	9	Y		
Northern harrier	1	150		Y	
Northern shoveler	6	-			
Prairie falcon	5	25	Y		
Ring-billed gull	3	113		Y	
Red-tailed hawk	21	242			Y
Snow goose	540	515			Y
Song sparrow	1	-			
Sharp-shinned hawk	1	200			Y
Sharp-tailed grouse	38	6	Y		
Savannah sparrow	5	2	Y		
Swainson's hawk	20	187			Y
Unknown accipiter	2	126		Y	
Unknown goose	1	100		Y	
Unknown gull	1	300			Y
Unknown Passerine	79	33	Y		
Unknown Raptor	28	204			Y
Unknown Sparrow	20	6	Y		
Vesper sparrow	5	1	Y		
Western meadowlark	67	5	Y		

* Some of the species listed in the table do not have specific flight height characteristics recorded for them because some of the species were recorded as incidentals and did not have accompanying flight data.

Table 3. Flight height characteristics by species group - Windy Point WPP.

Species Group	Number of Individuals	Weighted Average Flight Height for Species Group Observed (m above ground)			Individuals in relation to Rotor Swept Arc (%)		
		Lowest	Highest	Average	Under (0 – 37 m)	Within (37-173m)	Above (>173m)
Grouse and Allies	38	2	6	4	100.0	0.0	0.0
Corvids & Other	37	76	91	84	43.2	45.9	10.8
Raptors	94	159	192	176	20.2	41.5	38.3
Shorebirds & Gulls	6	57	73	65	0.0	100.0	0.0
Passerines	360	11	47	29	55.8	44.2	0.0
Waterfowl	682	445	463	454	0.0	9.4	90.6
Total	**1217**	**268**	**292**	**280**	**22.5**	**23.4**	**54.1**

1.1.1 Waterfowl

The average flight height for waterfowl species was 454 m, with 90.6% above the Rotor Swept Arc (RSA).

1.1.2 Passerines

Overall, passerines were detected to be predominately flying under the RSA (55.8%). The average flight height for songbirds was approximately 29 m during fall migration surveys, which is slightly below the RSA for the turbines.

1.1.3 Raptors

Average flight height for raptors was 176 metres, which is 3 metre above the total turbine height. Approximately 41% of all raptors were found within the RSA.

It should be noted that several observations of Red-tailed hawks, Swainson's hawks, and Prairie Falcon were likely made from the same individuals across several survey rounds as they were documented in proximity to known nesting locations. It is our opinion that the flight

height data for these three species may have been skewed more towards flight behaviors during foraging as opposed to strict migration movements.

1.1.4 Corvids and Others

Species in this group had a combined flight height average of 84 m, with 46% of the species group detected within the RSA.

1.1.5 Shorebirds & Gulls

Only 6 Shorebirds & Gulls were observed in-flight during fall migration surveys, therefore it is difficult to draw comparisons about flight height for this species group. However, 100% of individuals were observed within the RSA, at an average flight height of 65 m.

1.1.6 Grouse and Allies

Of the 38 Grouse & Allies observed, 100% of individuals were under the RSA. On average, this species had a flight height of 4 m.

II. Spring Migration - 2016

At the request of Alberta Environment & Parks (AEP), the following is an update to the risk assessment provided in *Appendix F5 - Windy Point Wind Park Spring Migration Surveys 2016 (Bear Tracks Environmental Services and McCallum Environmental Ltd. 2016),* more specifically*, Section 3.2, Flight Behavior.* This was included in pages 376 - 379 of the *Windy Point Wind Park Environmental Evaluation*, *September 2017*.

The new turbine characteristics are as follows:
Hub Height: 105 metres
Rotor Diameter: 136 metres
Blade Length: 68 metres
Total Height = Hub height + Blade length = 105 + 68 = 173 metres

1.2 Flight Behaviour

Table 4 details the description of the Rotor Swept Arc at Windy Point in relation to flight height.

Table 4. Turbine rotor swept arc (RSA) measurements.

Height	Description
0 - 37 m	Below rotor swept arc.
37 - 173 m	Within rotor swept arc.
>173 m	Above rotor swept arc.

Flight height characteristics are outlined for individual species (Table 5) and for species groups (Table 6). Unknown individuals identified to species group (i.e. unknown raptors and passerines) were included in analysis of species groups. Individuals that were not in flight during the entire observation period were removed from analysis. Tables include the number of individuals observed; the average (weighted) lowest, highest, and overall observed flight height; and the percentage of individuals under, within, or over the rotor swept arc.

All data in the flight height tables come strictly from in-flight observations during the surveys, and does not include historical or published data from other sources. In several instances, a low number of observations were recorded, and therefore may not accurately reflect actual flight characteristics of the species. It should also be noted that because this data only includes observations during migratory periods, it will not likely reflect the flight characteristics of a given species during other times of the year (e.g. during the breeding season, when many species are performing flight displays). It also only reflects height characteristics during the

observation timelines and cannot be construed to represent a consistent pattern or behaviour of flight characteristics.

Table 5. Flight height characteristics by species

Common Name	Number Observed	Weighted Average Flight Height for Species Observed (m)			Individuals in Relation to Rotor Swept Arc (%)		
		Lowest	Highest	Overall	Under (0 – 37 m)	Within (37-173 m)	Above (>173 m)
American Crow	32	52	92	72	31.3	65.6	3.1
Black-billed Magpie	9	4	10	7	100.0	0.0	0.0
Brewer's Blackbird	16	29	36	33	68.8	31.3	0.0
Canada Goose	9	69	80	74	44.4	22.2	33.3
Common Raven	21	60	89	74	100.0	0.0	0.0
European Starling	252	20	20	20	22.7	68.2	9.1
Franklin's Gull	2	10	50	30	100.0	0.0	0.0
Golden Eagle	6	88	157	123	0.0	100.0	0.0
Horned Lark	13	5	13	9	0.0	100.0	0.0
Long-billed Curlew	1	0	15	8	100.0	0.0	0.0
Mallard	12	57	68	63	100.0	0.0	0.0
Northern Harrier	18	15	32	23	100.0	0.0	0.0
Northern Pintail	3	40	100	70	16.7	83.3	0.0
Prairie Falcon	3	40	50	45	72.2	27.8	0.0
Red-tailed Hawk	23	40	75	58	0.0	100.0	0.0
Red-winged Blackbird	1	64	106	85	0.0	100.0	0.0
Ring-billed Gull	1	2	5	4	4.3	95.7	0.0
Savannah Sparrow	3	0	15	12	100.0	0.0	0.0
Sharp-tailed Grouse	37	0	2	1	0.0	100.0	0.0
Swainson's Hawk	15	54	102	78	100.0	0.0	0.0
Tree Swallow	10	5	10	8	100.0	0.0	0.0
Vesper Sparrow	29	17	30	24	100.0	0.0	0.0
Western Meadowlark	22	0	2	1	6.7	93.3	0.0

Table 6. Flight height characteristics by species group

Species Group	Number of Individuals	Weighted Average Flight Height for Species Group Observed (m above ground)			Individuals in relation to Rotor Swept Arc (%)		
		Lowest	Highest	Average	Under (0 – 37 m)	Within (37-173 m)	Above (>173m)
Grouse and Allies	37	10	15	12	100.0	0.0	0.0
Corvids & Other	62	48	79	63	46.8	58.1	4.8
Raptors	72	61	97	79	26.0	71.2	2.7
Shorebirds & Gulls	4	15	48	31	50.0	50.0	0.0
Passerines	355	18	20	19	98.1	1.9	0.0
Waterfowl	24	59	77	68	25.0	62.5	12.5
Total	**554**	**27**	**37**	**32**	**79.1**	**19.5**	**1.4**

*The number of individuals does not match the total number observed (644) because only 554 have flight height data associated with them.

1.2.1 Waterfowl

Based on the 24 individuals observed, the average flight height for waterfowl species was 68 m, with the majority within (62.5%) the Rotor Swept Arc (RSA).

1.2.2 Passerines (Songbirds)

Overall, passerines were detected to be predominately flying under the RSA (98.1%). The average flight height for passerines was approximately 19 m during spring migration surveys.

1.2.3 Raptors

Raptors (n=72) had the highest percentage of individuals detected within the RSA (71.2%). The average flight height for this species group was approximately 79 m.
It should be noted that several observations of Red-tailed hawks, Swainson's hawks, and Prairie Falcon were likely made from the same individuals across several survey rounds as they were documented in proximity to known nesting locations. It is our opinion that the flight

height data for these three species may have been skewed more towards flight behaviors during foraging as opposed to strict migration movements.

1.2.4 Corvids and Others

Species in this group had a combined flight height average of 63 m, with 58% of the species group detected within the RSA. The most commonly observed corvid, the American crow (n=32) was detected with an average flight height of 72 m. The common raven had a higher proportion of individuals flying within the RSA, at 81%.

1.2.5 Shorebirds

Shorebirds were observed in-flight in limited numbers (n=4) during spring migration surveys, therefore it is difficult to draw comparisons about flight height for this species group but 50% of individuals were observed within the RSA.

1.2.6 Grouse and Allies

Of the 37 sharp-tailed grouse observed, 100% of individuals were under the RSA. On average, this species had a flight height of 12 m. No other species of this group were observed.

Appendix Q: NAV Canada Assessment

Appendix K: NAV Canada Assessment

Serving a world in motion
navcanada.ca

December 13, 2017

Your file
Windy Point Wind Farm
Our file
17-3101

Mr. Marc Stachiw
Alberta Wind Energy Corporation
Suite 1320 – 396 11th Ave SW
Calgary, AB
T2R 0C5

RE: Wind Farm: 14 Wind Turbines - Pincher Creek, AB
(1.3 NM Centred on N49° 36' 44.9" W113° 49' 41.165" / 567.5853' AGL / 4689.6325' AMSL) (See attached spreadsheet)

Mr. Stachiw,

NAV CANADA has evaluated the captioned proposal and has no objection to the project as submitted, provided the following conditions are met:

- In the interest of aviation safety, it is incumbent on NAV CANADA to maintain up-to-date aeronautical publications and issue NOTAM as required. **To assist us in that end, we ask that you notify us at least 10 business days prior to the start of construction.** This notification requirement can be satisfactorily met by returning a completed, signed copy of the attached form by e-mail at landuse@navcanada.ca or fax at 613-248-4094.

- In the event that you should decide not to proceed with this project or if the structure is dismantled, please advise us accordingly so that we may formally close the file.

The nature and magnitude of electronic interference to NAV CANADA ground-based navigation aids, including RADAR, due to wind turbines depends on the location, configuration, number, and size of turbines; all turbines must be considered together for analysis. The interference of wind turbines to certain navigation aids is cumulative and while initial turbines may be approved, continued development may not always be possible.

If you have any questions, contact the Land Use Department by telephone at 1-866-577-0247 or e-mail at landuse@navcanada.ca.

NAV CANADA's land use evaluation is valid for a period of 12 months. Our assessment is limited to the impact of the proposed physical structure on the air navigation system and installations; it neither constitutes nor replaces any approvals or permits required by Transport Canada, Industry Canada, other Federal Government departments, Provincial or Municipal land use authorities or any other agency from which approval is required. Industry Canada addresses any spectrum management issues that may arise from your proposal and consults with NAV CANADA engineering as deemed necessary.

Yours truly,

Gheorghe Adamache | NAV CANADA
Manager - AIM IFP Service Delivery

cc NOPR - Northern and Prairie Region, Transport Canada

Appendix R: Alberta Transport Permit

Alberta Transportation

Delivery Services Division
Box 314
3rd Floor, Administration Building
909 Third Avenue North
Lethbridge, Alberta T1H 0H5
Telephone: 403/381-5426
Fax: 403/382-4057
www.transportation.alberta.ca

Our Reference: 2511-SE 27-7-29-W4M (785), P-385
Permit No. 5101-17

August 24, 2017

Windy Point Wind Park Ltd.
c/o Marc Stachiw
President
Alberta Wind Energy Corporation
marc@albertawindenergy.com
Suite 1320, 396 – 11 Avenue SW
Calgary, AB T2E 5B9

Dear Mr. Stachiw:

RE: PROPOSED ELECTRICAL SUBSTATION AND 35 KV TRANSMISSION LINE

Attached is a permit issued under the Highways Development and Protection Regulation, being Alberta Regulation 326/2009 and amendments thereto, authorizing the above noted development. This permit is subject to the conditions listed on page 2.

In consideration of Permit No. 5101-17, the applicant shall indemnify and hold harmless Alberta Transportation, its employees and agents, from any and all claims, demands, actions, and costs whatsoever that may arise, directly or indirectly, from anything done or omitted to be done in the construction, maintenance, alteration, or operation of the works authorized.

Issuance of this permit by Alberta Transportation does not relieve the holder of the responsibility of complying with relevant municipal bylaws and this permit once issued does not excuse violation of any regulation, bylaw, or act which may affect this project.

Upon completion of the project, we ask that you notify Darren Davis, Assistant Development/Planning Technologist or John Thomas, Development/Planning Technologist at Lethbridge, 403/381-5426, who will inspect the conditions of the permit. Your cooperation in this matter will be appreciated.

I trust issuance of this permit will allow you to proceed with acquirement of Alberta Utilities Commission (AUC) approval.

Yours truly,

John Thomas
Development/Planning Technologist

JT/jb

cc: Municipal District of Pincher Creek No. 9 – admindevoff@mdpinchercreek.ab.ca
tccryderman@mdpinchercreek.ab.ca
Volker Stevin – fortmacleod.admin@volkerstevin.ca
Rick Lemire – e-mailed
Jack Houtekamer – e-mailed

Alberta

.../2

Alberta Transportation

(To be completed by Alberta Transportation)

ROADSIDE DEVELOPMENT APPLICATION APPROVAL FOR DEVELOPMENT NEAR A PRIMARY HIGHWAY

PERMIT

Permission is hereby granted to **Windy Point Wind Park Ltd.** to carry out the development in accordance with the plan(s) and specifications attached hereto and subject to the conditions shown below.

If the development has not been carried out by the **24th** day of **August** **2018** this permit lapses and the applicant must reapply for a new permit if they wish to proceed.

SIGNED _____ PERMIT NO. **5101-17**

FILE NO. **2511-SE 27-7-29-W4M (785), P-385**

TITLE Development/Planning Technologist DATE **August 24, 2017**

PERMIT CONDITIONS: (Note: This permit is subject to the provisions of Section 11 - 19 inclusive of the Highways Development and Protection Act, Chapter H-8.5 2004, amendments thereto, and Highways Development and Protection Regulation (Alberta Regulation 326/2009) and amendments thereto).

A. ACCESS CONDITIONS: (Note: All highway accesses are to be considered temporary. No compensation shall be payable to the applicant or his assigns or successors when the Department removes or relocates the temporary access or if highway access is removed and access provided via service road).

1. (a) No direct highway access will be permitted. Access shall be via the local undeveloped municipal road. ~~(b) Use of the existing highway access may continue on a temporary basis. (c) Permit authorizes construction of proposed access at the location shown and to the attached specifications. (Figure D-3.3b)~~
2. No additional highway access will be permitted.
3. The applicant shall construct and maintain any highway access to the Operations Manager's satisfaction.
4. Approval of companies having buried utilities shall be obtained prior to access construction or upgrading.

B. SETBACK CONDITIONS (Note: Minimum setbacks usually allow for anticipated highway widening and construction of a service road parallel and adjacent to the highway).

1. The proposed **electrical substation and 35 kv transmission line** are to be set back **85 meters (280 feet)** from the property line as shown on the attached approved site plan.
2. The department accepts no responsibility for the noise impact of highway traffic upon any development or occupants thereof.

C. OTHER CONDITIONS:

1. This permit is issued subject to the approval of the **Municipal District of Pincher Creek No. 9.**
2. This permit approves only the development contained herein, and a further application is required for any changes or additions.
3. The department is under no obligation to reissue a permit if the development is not completed before expiry of this permit.
4 Darren Davis, Assistant Development/Planning Technologist or John Thomas, Development/Planning Technologist in Lethbridge, telephone number 403/381-5426, shall be notified before construction commencement.
5. The Applicant shall not place any signs contrary to Alberta Regulation 326/2009. A separate "SIGN APPLICATION" form shall be submitted for any proposed sign.

D. ADDITIONAL CONDITIONS and/or ADVISEMENTS:

See attached Schedule "A" – Site Specific Conditions

SCHEDULE "A"
Site Specific Conditions
(Permit 5101-17)

D: ADDITIONAL CONDITIONS and/or ADVISEMENTS:

1. This permit is approval for development of an electrical substation and 35 kv transmission line only. Any additional development will be expressly subject to Condition C.2.

2. The applicant shall ensure that all on-site development, including ancillary development, is setback from the highway right-of-way boundary as shown on the attached approved site plan. Under no circumstance shall a different setback be implemented without the written permission of Alberta Transportation.

3. Further to condition A.1.(b), the department will not accept any responsibility for compensation requests/claims dealing with loss of business, inconvenient access, or any other disruption that may arise as result of the possible revision to the existing access arrangement. The possible revision to the existing access arrangement may be due to access management/operational, construction, or planning activities carried out by the department or its consultants.

4. Any peripheral lighting (yard lights/area lighting that may be considered a distraction to the motoring public or deemed to create a traffic hazard will not be permitted.

2511-SE 27-7-29-W4M (785)
P-385

Government of Alberta
Transportation

ROADSIDE DEVELOPMENT APPLICATION FOR DEVELOPMENT NEAR A PROVINCIAL HIGHWAY

(print please)

Alberta Transportation Permit # 5101-17

Applicant's Name	Windy Point Wind Park Ltd.				
Mailing Address	Suite 1320 - 396 11th Ave SW				
City/Town/Village	Calgary	**Province**	AB	**Postal Code**	T2E 5B9
Phone #	403-266-5635	**Fax #**	403-294-9665	**e-mail**	marc@albertawindenergy.com
Landowner's Name (if different from above)	Stuwart & Theresa Hann				
Mailing Address	Box 219				
City/Town/Village	Lundbreck	**Province**	AB	**Postal Code**	T0K 1H0
Phone #	403-627-7814	**Fax #**		**e-mail**	

APPLICATION IS HEREBY MADE TO: (Please provide a description of the proposed development including all proposed above and below ground installations. Attach a detailed report if necessary.)

Proposed electrical substation and underground and/or overhead 35 kV transmission line to be routed south-west from project site to Substation.

Substation (Boulder Run 501S) to be located on an approx. 1 acre parcel leased from Stuwart & Theresa Hann (landowner), adjacent to the existing Old Man 2 Substation.

Substation facilities/equipment to be located a minimum of approximately 85m from Hwy #785 right of way boundary.

Also attach a plan showing in detail the location of all existing and proposed development and access.

Property Information

(NE, NW, SE, SW)	¼ Section	Township	Range	West of Meridian
SE	27	7	29	4

Lot	Block	Plan Number	Parcel size (acres or hectares)
			approx. 1 acre

Highway No. 785 ~10 **kilometres** north-east (north, south, etc.) **of** Pincher Creek (City, Town or Village)

Distance of the proposed development to the highway right-of-way boundary ~85 **metres**

Name of Municipality	Existing / Proposed Land Use	Estimated cost of proposed development
Pincher Creek	Agricultural/Proposed Substation	~$3,000,000

It is understood that all works will be constructed, altered, maintained or operated at the sole expense of the undersigned, and that any work must not begin before a permit has been issued by Alberta Transportation.

In consideration of any permit issued in respect to this application, the Applicant shall indemnify and hold harmless Alberta Transportation, its employees and agents from any and all claims, demands, actions and costs whatsoever that may arise, directly or indirectly from anything done or omitted to be done in the construction, maintenance, alteration or operation of the works authorized. The Applicant also consents to a person designated by Alberta Transportation to enter upon land for the purpose of inspection during the processing of this application.

The issuance of a permit by Alberta Transportation does not relieve the holder of the responsibility of complying with relevant municipal bylaws and this permit once issued does not excuse violation of any regulation, bylaw or act which may affect this project.

I Marc Stachiw/Pascal Hurtubise (print full name) hereby certify that (●) I am the registered owner — Signature

I _____ (print full name) hereby certify that ( ) I am authorized to act on the owner's behalf — Signature

and that the information given on this form is full and complete and is, to the best of my knowledge, a true statement of facts relating to this application for roadside development.

(Date) August 15, 2017

RECEIVED
AUG 16 2017
Southern Region
TRANSPORTATION

Aug. 16/17 GB

Aug 22/17

Government of Alberta
Transportation

ROADSIDE DEVELOPMENT APPLICATION FOR DEVELOPMENT NEAR A PROVINCIAL HIGHWAY

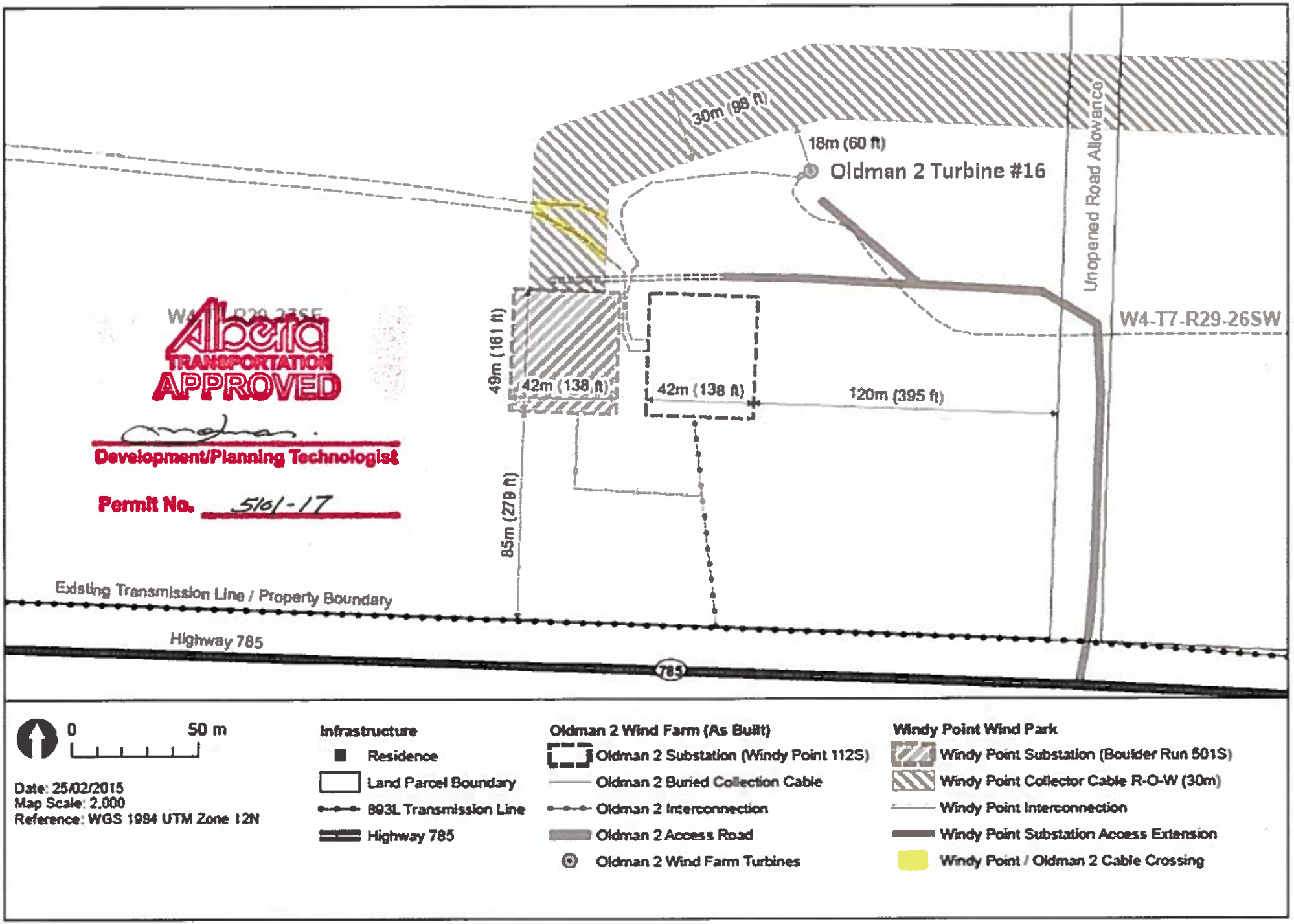
Alberta Transportation Permit # 5101-17

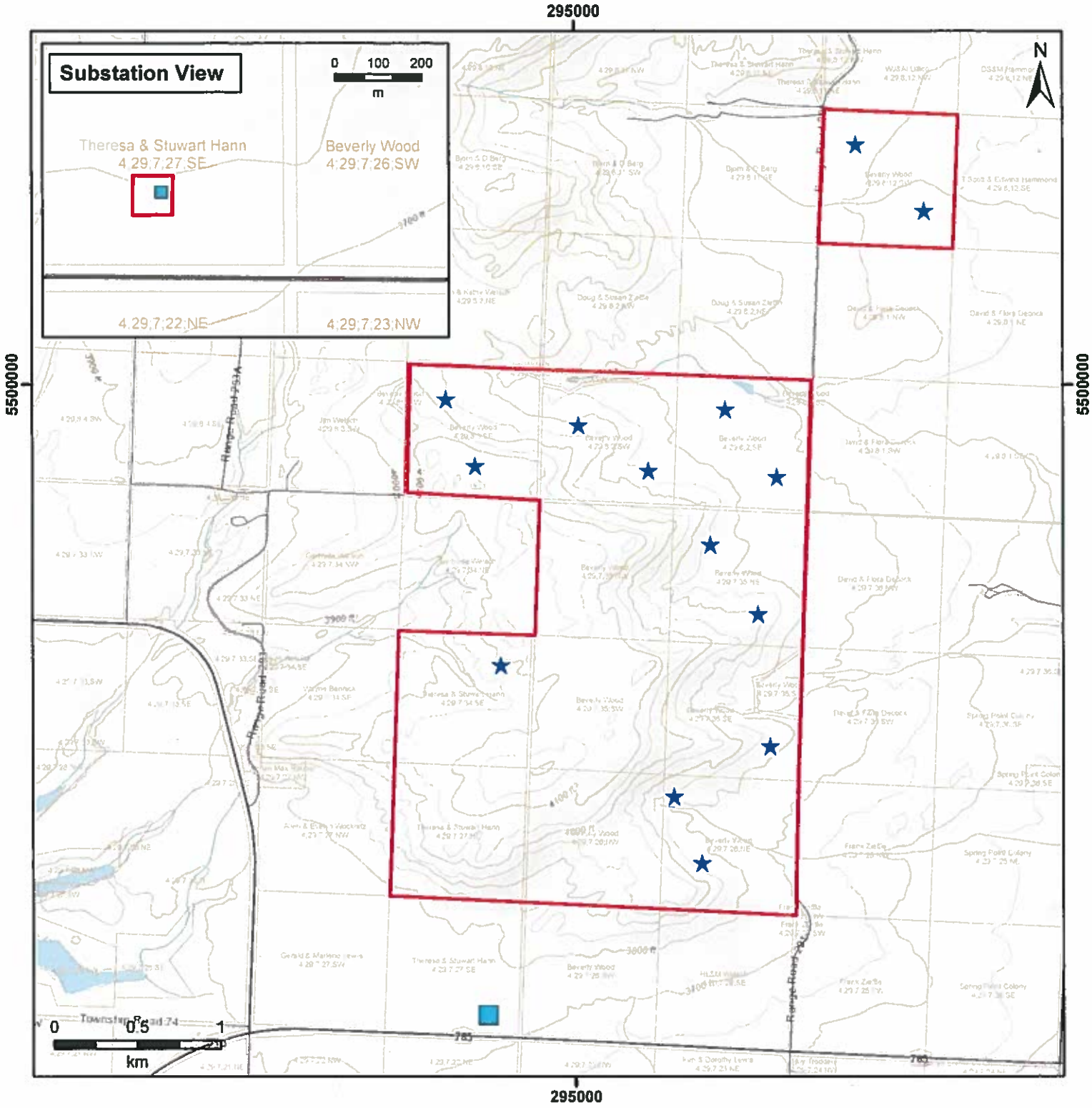
Please see attached diagram

Note: distances may be shown in metres or feet

SITE PLAN

Signature of Registered Owner or Authorized Agent


30m (98 ft)
18m (60 ft)
Oldman 2 Turbine #16
Unopened Road Allowance
W4-T7-R29-26SW
49m (161 ft)
42m (138 ft)
42m (138 ft)
120m (395 ft)
85m (279 ft)
Existing Transmission Line / Property Boundary
Highway 785
785
Alberta TRANSPORTATION APPROVED
Development/Planning Technologist
Permit No. 5161-17
0
50 m
Date: 25/02/2015
Map Scale: 2,000
Reference: WGS 1984 UTM Zone 12N
Infrastructure
Residence
Land Parcel Boundary
893L Transmission Line
Highway 785
Oldman 2 Wind Farm (As Built)
Oldman 2 Substation (Windy Point 112S)
Oldman 2 Buried Collection Cable
Oldman 2 Interconnection
Oldman 2 Access Road
Oldman 2 Wind Farm Turbines
Windy Point Wind Park
Windy Point Substation (Boulder Run 501S)
Windy Point Collector Cable R-O-W (30m)
Windy Point Interconnection
Windy Point Substation Access Extension
Windy Point / Oldman 2 Cable Crossing



Legend

- Project Area
- Land Parcel
- Generating Unit
- Substation

BORALEX

Alberta Wind Energy Corporation

Windy Point Wind Park
-
Site Diagram

Coordinates: NAD83 UTM Zone 12

Date: 2017/06/15

Source: Esri World Topographic Map

Appendix S: HRA Approval

Alberta Culture and Tourism

HRA Number: 4941-10-0003-003
January 18, 2018

Historical Resources Act Approval with Conditions

Proponent: Windy Point Wind Park Ltd.
1320 - 396 11th Ave SW, Calgary, AB T2R 0C5
Contact: Mr. Marc Stachiw

Agent: Windy Point Wind Park Ltd.
Contact: Marc Stachiw

Project Name: **Windy Point Wind Park**

Project Components: Wind Power

Application Purpose: Requesting HRA Approval / Requirements
Amendment to Project Submitted Previously

Historical Resources Act approval is granted for the activities described in this application and its attached plan(s)/sketch(es) subject to the following conditions.

David Link
Assistant Deputy Minister

SCHEDULE OF CONDITIONS

ARCHAEOLOGICAL RESOURCES

Historical Resources Act approval is granted in relation to archaeological resources, subject to the conditions outlined below.

1. The requirement to conduct a Historic Resources Impact Assessment for archaeological resources, issued on December 1, 2017 (HRA #4941-10-0003-002), is hereby rescinded, and Windy Point Wind Park development is granted *Historical Resources Act* approval to proceed. However, given that a proposed collector line traverses archaeological site DjPk-119, care must be taken in this area to minimize ground disturbance and to not deviate from the proposed development footprint in the vicinity of DjPk-119.

2. A map and shapefile of the site location are attached to facilitate meeting these conditions. These files contain sensitive information about historic resources that are protected under provisions of the *Historical Resources Act*. This information is provided to your organization to be used in planning the proposed project only. It is not to be shared for any other purpose without permission from the Historic Resources Management Branch, Alberta Culture and Tourism.

SCHEDULE OF CONDITIONS (continued)

SITE	HRV	SITE DESCRIPTION	CONDITIONS/APPROVAL
DkPj-119		campsite, stone feature, killsite (jump), drive lane	All development activities must minimize disturbance to this site and must adhere to the proposed development plan.

PALAEONTOLOGICAL RESOURCES

Historical Resources Act approval is granted on the understanding that a Historic Resources Impact Assessment for palaeontological resources in the form of a monitoring program will be conducted, as outlined below.

1. The monitoring program must include areas of high palaeontological potential; i.e., where bedrock is close to the surface. Should significant palaeontological resources be encountered during the conduct of the monitoring program the Royal Tyrrell Museum of Palaeontology must be contacted. It may then be necessary for Alberta Culture and Tourism to issue further instructions regarding these resources.

2. No excavation activities are to take place on the project until a professional consulting palaeontologist is on-site to monitor construction activities. Should significant palaeontological resources be encountered during the conduct of the monitoring program, the Royal Tyrrell Museum of Palaeontology must be contacted. It may then be necessary for Alberta Culture and Tourism to issue further instructions regarding these resources.

3. The monitoring program is to be conducted on behalf of the proponent by a palaeontologist qualified to hold a palaeontological research permit within the Province of Alberta. A permit must be issued by Alberta Culture and Tourism prior to the initiation of any palaeontological field investigations. Please allow ten working days for the permit application to be processed.

ABORIGINAL TRADITIONAL USE SITES

There are no Historical Resources Act requirements associated with Aboriginal traditional use sites of a historic resource nature; however, the proponent must comply with standard conditions under the Historical Resources Act, which are applicable to all land surface disturbance activities in the Province.

HISTORIC STRUCTURES

There are no Historical Resources Act requirements associated with historic structures; however, the proponent must comply with standard conditions under the Historical Resources Act, which are applicable to all land surface disturbance activities in the Province.

PROVINCIALLY DESIGNATED HISTORIC RESOURCES

There are no Historical Resources Act requirements associated with Provincially Designated Historic Resources; however, the proponent must comply with standard conditions under the Historical Resources Act, which are applicable to all land surface disturbance activities in the Province.

SPECIAL CONDITIONS

1.

SCHEDULE OF CONDITIONS (continued)

1. To obtain contact information for consultants qualified to undertake the assessment work specified above, please consult the list of Alberta Historic Resource Consultants.

2. In addition to any specific conditions detailed above, the proponent must abide by all Standard Conditions under the *Historical Resources Act*.

Lands Affected: Additional Lands

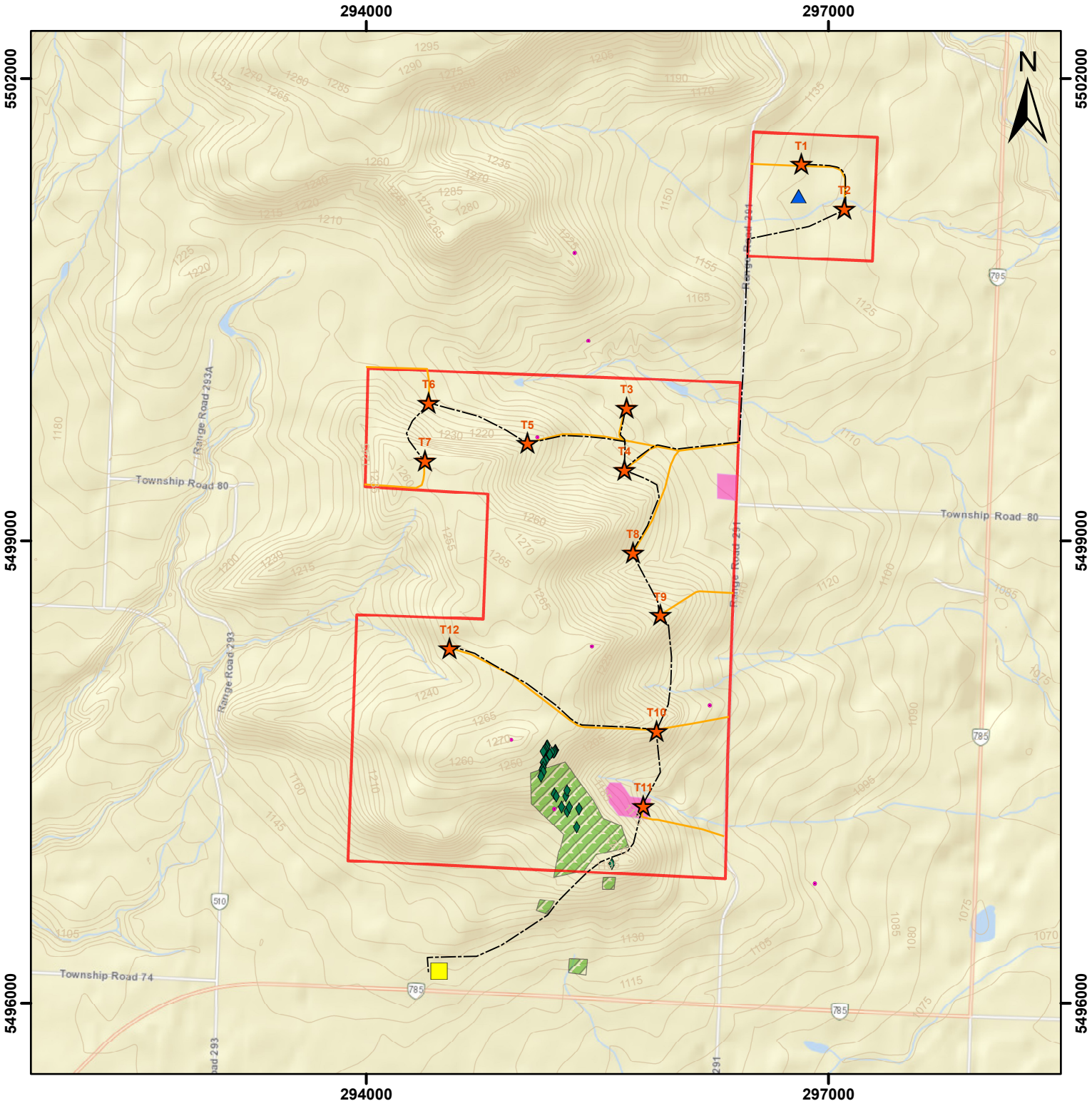
Proposed Development Area:

MER	RGE	TWP	SEC	LSD List
4	29	7	25	12-13
4	29	7	26	4-6,9-11,15-16
4	29	7	27	1,8
4	29	7	33	16
4	29	7	34	8,13-15
4	29	7	35	1-5,8-10,15-16
4	29	7	36	4,13
4	29	8	1	4-5,12-13
4	29	8	2	1-9,16
4	29	8	3	1-4,6-8
4	29	8	4	1
4	29	8	11	1,8
4	29	8	12	3-6

Documents Attached:

Document Name	Document Type
Detailed map showing avoidance of DjPk-119	Illustrative Material
Project Map	Illustrative Material
map of collector line across DjPk-119	Miscellaneous
shapefile of DjPk-119	GIS Data File

Appendix T: Historical Resources Map



Legend

- Project Area
- Proposed Laydown Areas
- Wind Turbine
- Proposed Permanent Met Tower
- Project Substation
- Proposed Collector Network
- Proposed Project Roads
- Ground Contour Elevation (5m)
- Historical Resource Point
- Archeological Site (Point)
- Archeological Site (Polygon)

BORALEX

Alberta Wind Energy Corporation
Renewable Energy for future generations

Windy Point Wind Farm
-
Historical Resource Map

0 1 2
km

Coordinates: NAD83 UTM Zone 12

Date: 2018/02/16

Source: Esri Topographic Map

Appendix U: STARS Letter

Head Office / Calgary Base
1441 Aviation Park NE, Box 570
Calgary, AB T2E 8M7
tel: 403-295-1811 fax: 403-274-1812

Edmonton Base
City Centre Airport, Building 16
29 Airport Road, Edmonton, AB T5G 0W6
tel: 780-447-5492 fax: 780-447-5493

Grande Prairie Base
101C 11010 Airport Drive
Grande Prairie, AB T8V 7Z5
tel: 780-830-7000 fax: 780-830-7009

STARS Aviation Canada Inc.

April 25, 2011

stars.ca

Subject: Pincher Creek / Windy Point Wind Park (Impact on GPS Instrument Approach into the Pincher Creek Hospital)

Hi Steven,

I have assessed the Windy Point Wind Park Structures as supplied in your E-mail dated April 20th 2011. The structures **do not conflict** with STARS Instrument Approach Procedure into the Pincher Creek Hospital.

Thank you for the additional data and keeping us informed.

Ken Ryniak
G.P.S Approach Designer
***STARS* Aviation Canada Inc.**
Building 16, 29 Airport Road
Edmonton, AB T5G 0W6
Office: 780.447.5492
Fax: 780.447-5493
Email: kenr@stars.ca
Website: www.stars