TECHNICAL REVIEW COMMENTS
on the Environmental Impact Statement

Blue Hill Wind Energy Project

Prepared by
Saskatchewan Ministry of Environment
Environmental Assessment and Stewardship Branch
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Acronyms

the Act	*The Environmental Assessment Act* (Saskatchewan)
ARG	*Saskatchewan Activity Restriction Guidelines for Sensitive Species*
DTC	Crown's duty to consult
EASB	Environmental Assessment and Stewardship Branch
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPP	Environmental Protection Plan
HRIA	Heritage Resource Impact Assessment
IBA	Important Bird Area
the ministry	Saskatchewan Ministry of Environment
the Minister	Saskatchewan Minister of the Environment
the project	Blue Hill Wind Energy Project
ROW	Right-of-Way
SEARP	Saskatchewan Environmental Assessment Review Panel (technical reviewers)
TRC	Technical Review Comments
TOR	Terms of Reference
WTGs	Wind Turbine Generators

Preface

This document is provided by the Environmental Assessment and Stewardship Branch (EASB) of the Saskatchewan Ministry of Environment (the ministry) as supporting information for the public review of the Algonquin Power Co. (Algonquin) environmental impact statement (EIS) for the proposed Blue Hill Wind Energy Project (the project). Algonquin is proposing to construct and operate a 177 megawatt (MW) wind energy project to be sited on approximately 4,028 hectares (ha) (9953 acres) of private land in southern Saskatchewan. The project would be located approximately 10 kilometers (km) south of the town of Herbert, SK and 40 km east of Swift Current within the rural municipalities (RMs) of Morse No. 165 and Lawtonia No. 135. The area of physical disturbance associated with the project (footprint) would be approximately 158 ha primarily on cultivated land. The proposed project was chosen by SaskPower to enter into a 25-year Power Purchase Agreement to provide additional wind energy to SaskPower's integrated grid.

The project's supporting infrastructure would include access roads, an underground fibre-optic communications network, an electrical collection system for the generated power, and a new 34.5-kilovolt (kV) to 138 kV substation.

This document has four major sections with the first section providing an overview of the provincial environmental assessment and review process. It outlines the events and activities that led to the EIS being released for public review and describes how the public can provide comments to the Minister of the Environment (the Minister) on the proposed project.

The second section provides a brief summary of the project. This summary is intended to provide information to assist the reader in deciding whether they are interested in finding out more about the project. It is not intended to be a full representation of the project. Interested readers should access the EIS from the ministry website (saskatchewan.ca/environmentalassessment) or visit a review centre (locations are listed in section 4).

The third section of the document provides the ministry's evaluation of Algonquin's conclusions regarding the predicted impacts of the proposed project, the effectiveness of any identified mitigative measures and any follow-up requirements that would be placed on Algonquin by the Minister, should the project be approved.

The fourth section presents the conclusions reached by the ministry and invites the public to comment. The Minister, when making the final decision regarding the environmental acceptability of the proposed project, considers both the public's comments and Technical Review Comments (TRC).

1. Environmental Assessment and Review Process

Introduction

The Environmental Assessment Act (the Act) in Saskatchewan requires the proponent of a "development" to conduct an environmental impact assessment (EIA). The EIA provides information needed by the Minister responsible for the Act (Minister of Environment) to determine whether, from an environmental perspective, a proposed development should be allowed to proceed and, if so, under what conditions.

As part of the environmental assessment process, the proponent is required to prepare an EIS that documents the proponent's assessment and conclusions on the potential environmental effects of the proposed project. The EIS also describes the measures the proponent plans to take to reduce negative environmental effects and enhance positive impacts. Once completed, the EIS undergoes both a technical and public review prior to a decision being made by the Minister regarding the project.

The EIA review process provides a broad understanding of the potential impacts and ways to minimize the impacts of a Project.

The purpose of the environmental assessment and review process is to ensure that adequate environmental safeguards are in place before a development is allowed to proceed and that developments proceed in a manner understood and broadly accepted by the public. These environmental safeguards may arise out of the actual design and nature of the proposed development or, should the development receive approval under the Act, as a result of ongoing regulatory involvement by government agencies.

In addition to the Act, this project may be subject to the following Acts:

- *The Environmental Management and Protection Act, 2010*
- *The Heritage Property Act*
- *The Wildlife Act, 1998*
- *The Weed Control Act, 2010*
- *Migratory Birds Convention Act, 1994*
- *Species at Risk Act, 2002*

Other provincial and federal agencies also have legislation and regulations that may be applicable to the project.

Submission of the Environmental Impact Statement

In February 2017, the EASB received a proposal and Terms of Reference (TOR) termed "the Application" for the Algonquin Blue Hill Wind Energy Project. In the Application, Algonquin self-declared the proposed project a "development" as defined in the Act and was therefore required to proceed through the EIA process. The proposal and TOR were sent to the Saskatchewan Environmental Assessment Review Panel (SEARP) for technical review. Following technical review of the application documents, Algonquin was asked to submit an EIS for the project.

Pursuant to section 10 of the Act, public notice announcing an EIA is underway for the project was placed in local daily and weekly newspapers beginning on March 4, 2017. Subsequent to public notification of the EIA, Algonquin submitted a revised TOR to outline specific studies which would be conducted to obtain information on the potential impacts of the project and the information required in the EIS by provincial reviewers and regulatory agencies. The TOR was accepted on March 28, 2017.

Technical Review

Technical review provides the government perspective on the proposed development.

The draft EIS was received in December 2017 and reviewed by provincial technical reviewers to ensure that potential environmental issues (including biophysical, social and economic) had been identified and adequately addressed. The technical review identified issues that required revisions to the EIS and additional clarification before the EIA process could proceed to the public review phase. A revised EIS was prepared by Algonquin to address deficiencies identified. This revised EIS containing responses to all requested information was provided to the ministry in April 2018 and upon further review was judged to contain adequate information to proceed with public review.

This TRC document has been prepared pursuant to section 11 of the Act, and is meant to assist the public and government decision-makers in their review by summarizing the information within the EIS and the comments received from SEARP. In preparing the TRC document, the ministry focuses on those factors that are considered to be of primary environmental significance with respect to the proposed project.

Public Review

The public is invited to comment on the Blue Hill Wind Energy EIS for a 30 day period ending July 10, 2018.

Pursuant to section 12 of the Act, both the EIS and TRC are made available for public inspection for a period of not less than 30 days. During the review period, members of the public may make written submissions to the ministry regarding the EIA and information provided in the EIS and associated documents. Interested readers should visit a review centre (locations are listed in section 4), or the ministry website (saskatchewan.ca/environmentalassessment) to review the EIS for the project.

Ministerial Decision

The Minister considers both the public and technical review comments when making a decision

Information generated during the public and technical reviews of the EIS will be submitted to the Minister of Environment for consideration. The Minister, under section 15 of the Act, may give Ministerial Approval to proceed with the development, with any terms and conditions that the Minister considers necessary or advisable, or the Minister may refuse to approve the development as proposed and will provide reasons for the decision.

2. Summary of Proposed Project

Information in this section is taken from the project EIS and is neither comprehensive nor inclusive of the information contained in that document. Please refer to the Executive Summary and the EIS main document and annexes for complete information. Section 2.0 of the EIS provides detailed information regarding the project. A description of the existing (baseline) environmental setting of the project area can be found in Section 5.0 as well as in Appendices F and G of the EIS.

Information on potential effects on wildlife and wildlife habitat including a review of bird and bat fatality risk can be found in section 8.0 and Appendix H of the EIS. Details of planned construction and post-construction mitigations are found in the Environmental Protection Plan (EPP) in Appendix C.

Algonquin has a Power Purchase Agreement with SaskPower for the 177 MW wind energy project. The proposed project is located approximately 10 km south of the town of Herbert, SK and 40 km east of Swift Current, SK within the RMs of Morse No. 165 and Lawtonia No. 135. The project area was selected to maximize wind resource potential and avoid identified environmental constraints. The project footprint is 158.2 ha located over 4,028 ha (62 quarter

sections) of private land consisting of cultivated lands (98.8 ha), hayland and tame pasture (44.5 ha); water/wetland (4.3 ha), developed and exposed land (10 ha), and native prairie (0.6 ha). The project area does not overlap any large waterbodies or wind turbine avoidance zones as identified in the ministry's *Wildlife Siting Guidelines for Saskatchewan Wind Energy Project* (siting guidelines. The project area is located 4.5 km east of the Highfield Reservoir and 5km southwest of the Reed Lake Important Bird Area (IBA), which provides staging and nesting grounds for migratory shorebirds and waterfowl. Algonquin has proposed the nearest wind turbine generator (WTG) would be located 7 km from Reed Lake. Algonquin has incorporated standard industry best practices such as greater turbine spacing and lighting designs to allow passage of birds and bats and reduce attractiveness in order to reduce fatality risk to birds and bats.

The proposed project would consist of 49 to 56 WTGs, each with a capacity between 3.2 and 3.7 MW to generate the required 177 MW total capacity. However, the final number and size of turbines would depend on the selection of the WTG model and manufacturer. The project scope includes supporting infrastructure such as permanent access roads, an electrical collection system for the generated power, permanent maintenance/storage facilities, temporary offices and lay down areas, a high speed fibre-optic communications lines and meteorological towers.

Each turbine would be seated on a reinforced concrete foundation (pad) approximately 2 m deep and 15 m in diameter covering a total surface area of 177 m^2. The turbine towers would be between 80 to 105 m from the foundation to the hub, where the turbine blade connects to the main shaft and to the rest of the drive train. There would be three blades approximately 40 to 68 m long on each turbine resulting in a total height of approximately 120 to 173 m from the ground to the top of the blade.

A temporary workspace would be required during construction and maintenance at each WTG for laydown areas, crane operation and vehicle staging. Temporary workspaces would be sited to avoid Crown land or other environmentally sensitive locations such as wetlands and native prairie. The temporary workspaces would be approximately 50 to 75 m in radius from the center of the WTG.

The voltage of electricity produced (i.e. power) by the WTG would be stepped-up from 690 volts to 34. 5 kV by a transformer located inside the WTG system or outside the tower at the base of each WTG. The power would then be distributed through an electrical collection system that includes underground collector lines through private lands and along overhead collector lines located along existing

municipal grid road rights-of-ways (ROWs) to a new collector substation. A total of 57 km of collector lines would be required for the project. The 34.5 kV power at the collection center would be stepped up to 138 kV and conveyed overhead via transmission lines to a future SaskPower switching station. A communication and data collection fiber-optic cable would be required and would be placed in the same trench as the electrical collection system wherever possible.

Approximately 20 km of permanent access roads would be required to allow for access to the WTG pads during the construction, operation and maintenance phases. During construction, the roads would be 10 to 25 m wide to facilitate hauling of the turbines and large equipment such as heavy lift cranes and transport vehicles. Following construction, the roads would be reclaimed to a 5-6 m wide gravel road to be used to service and maintain WTGs during the operation and maintenance phases of the project. An operations and maintenance building would be required for storage and as an office for on-site staff.

Two permanent hub-height meteorological towers would be required to monitor meteorological conditions at the site during operations. The expected lifespan of the project is a minimum of 25 years. Decommissioning and reclamation of the site would occur according to an approved decommissioning plan and would adhere to environmental standards in place at the time of decommissioning. Decommissioning would involve dismantling and removal of all project components from the site and removal of WTG pads to a depth of 1 to 1.5 m in order to return the site to a condition suitable for previous land uses (e.g. agriculture, grazing) or new uses as may be determined in consultation with landowners.

Alternatives Considered

Alternatives considered by Algonquin are presented in Section 2.3 of the EIS. The factors that governed the selection of a suitable site were wind sources with acceptable capacity, favorable transmission and load requirements, compliance with the ministry's siting guidelines and acceptance of the development by local landowners and RMs. Algonquin considered alternative sites in the province but ultimately settled on the proposed Blue Hill Wind Energy Project location as the most favorable for siting of the project.

3. Technical Review Comments

Introduction

The intent of the technical review phase of the environmental assessment and review process is to give provincial specialists at a variety of agencies an opportunity to examine the draft EIS to:

- develop their professional opinions about how adequately the environmental issues related to the development have been characterized and addressed; and,
- determine whether the information provided is sufficiently complete and technically accurate enough to support the public review phase of the process.

The technical review of the draft EIS often identifies issues related to potential environmental impacts and proposed mitigation methods that require clarification. These issues are communicated to proponents and addressed with additional information. Results are presented in the revised EIS submission that undergoes a further review. Upon further review, if the revised EIS contains adequate information, it is accepted and released for public review.

Release of the EIS for public review should not be interpreted as absolute agreement with all items within the EIS, but simply that the issues identified have been sufficiently characterized in order to provide a full understanding of the project and related impacts to interested members of the public.

The final EIS for the Blue Hill Wind Energy Project was accepted by the EASB as Algonquin has sufficiently addressed the issues raised during the technical review of the EIS. If the project is approved, terms and conditions included in *The Environmental Assessment Act* approval would be the primary regulatory mechanism utilized to ensure proponent commitments in the EIS are being fulfilled, relevant guidelines are being adhered to, reporting requirements are being met and appropriate environmental safeguards are being implemented throughout the life of the project.

Public, First Nations and Métis Engagement Feedback and Response

Section 3.0 of the EIS provides details on Algonquin's engagement with the public, environmental non-governmental organizations (ENGOs), RMs, and

First Nations and Métis communities. Public engagement activities with local communities, landowners, the RMs of Morse No. 165 and Lawtonia No. 135 (host RMs) and the RMs of Coulee No. 136 and Excelsior No. 166 (nearby RMs), have included meetings and open houses to introduce the project and collect information on potential environmental and socio-economic impacts. Project information handouts and maps were made available to the public at open house meetings in January, June and September 2017 and online through the project website. Primary concerns expressed specifically from landowners centered on general project aspects such as location, aggregate supply, landowner remuneration, safety/speed limits, jobs and the project timeline.

Algonquin has engaged with ENGOs including Nature Saskatchewan, the Saskatchewan Environmental Society, Saskatchewan Wildlife Federation, Nature Conservancy of Canada, Chaplin Nature Centre, Public Pastures - Public Interest and Ducks Unlimited Canada. Other organizations identified as interested in the project include the Saskatchewan Stock Growers Association and the South of the Divide Conservation Action Program Inc.. Primary concerns expressed by organizations included: potential disturbance to native prairie grass, bird fatality and mitigation, post-construction monitoring, the adaptive management plan and potential conservation opportunities. All project-specific concerns raised during engagement and consultation activities were addressed by Algonquin through the various studies conducted for the EIA and during meetings as documented in Section 3, Table 3-3 of the EIS.

Algonquin also engaged local First Nations and Métis communities via invitations to public open houses for the project as well as follow-up phone calls. There has been no response from the communities to engage with Algonquin on the project with the exception of representatives from Swift Current Métis Local #35 who attended two public open house meetings. Based on the information as presented in the EIS no duty to consult was triggered for this project as it would be located on private land, with no expected off-site impacts.

Technical Review Findings on Public, First Nations and Métis Engagement

Technical reviewers are satisfied with Algonquin's public engagement activities. Algonquin is encouraged to continue engaging stakeholders with an interest in the project to ensure accurate project information is being communicated and concerns are being addressed.

The public review period for the EIA, provides an additional opportunity for the public to review project details and provide comment, and ongoing engagement activities would continue as required should the project receive approval.

Biophysical Impacts

Algonquin has evaluated the possible impacts of the project on the biophysical environment, the possible measures that could be employed to eliminate or mitigate (reduce) the impacts and any residual effects that might remain after the mitigation is in place. In undertaking the EIS, a number of valued ecosystem components (VECs) were identified to facilitate the assessment and interpretation of potential effects associated with the proposed project. The general assessment approach is presented in Section 4.0. A list of the VECs and associated characteristics are presented in Section 4.2.1 of the EIS. A description of the existing conditions for each VEC as well as the assessment of potential impacts to each of the VECs is outlined in Section 6 through 12. A proposed Environmental Protection Plan (EPP) summarizing Algonquin's corporate commitments and regulatory requirements including construction and post-construction programs and the Adaptive Management Plan are presented in Appendix C.

Terrestrial Environment

The EIS discusses the potential impacts of the project on the terrestrial environment that includes project-related changes to land, vegetation and wildlife.

Vegetation

Section 7.3 of the EIS provides information on the assessment of potential effects of the project on vegetation. The 158.2 ha project footprint would be located predominantly on cropland and avoid sensitive areas with the exception of 0.6 ha of native prairie.

Rare plant surveys conducted in the early-blooming (May 29 to June 14, 2017) and late-blooming (July 24 to August 15, 2017) seasons identified no rare plants within the project footprint. Rare plant surveys identified 16 non-native invasive species that consisted of 12 noxious and 4 nuisance species. No prohibited species were observed.

Mitigation measures to prevent significant impacts to vegetation communities are described in Section 7.4 and Appendix C of the EIS. Mitigation measures for vegetation would include: avoiding sensitive areas when selecting locations for project infrastructure and temporary workspaces; utilizing salvaged topsoil and native seedbanks to enhance re-vegetation; re-seeding with appropriate seed mixes; and implementing appropriate weed control measures.

Wildlife and Wildlife Habitat

Descriptions of wildlife and habitat as well as information on potential effects of the project on wildlife habitat availability and fatality risk, with a focus on sensitive species, are provided in Section 8.0 and Appendix H of the EIS. Section 8 also summarizes concerns raised during engagement regarding potential effects of the project to wildlife.

The project area would be located 5 km southwest of Reed Lake and 4.5 km east of the Highfields Reservoir. Reed Lake is designated as an Important Bird Area (IBA) for staging migratory bird species. There are no designated wildlife conservation lands within the project area and the nearest designated land would be located 1.6 km west of the project area. The project area does not overlap any critical habit defined by the federal government's species recovery strategies or any wind turbine avoidance zones as outlined in the siting guidelines. The closest proposed WTG to an avoidance zone, the Reed Lake IBA, would be 7 km.

Appendix H and F of the EIS include the wildlife data collected for the EIA. Algonquin conducted field surveys in 2017 focused on detecting sensitive species and documenting their occurrence in various target areas of suitable wildlife habitat within the wildlife local assessment area (LAA), which includes the project footprint and a one km buffer.

Based on historical occurrences of species at risk (listed under Schedule 1, Schedule 2, or Schedule 3 of the *Species at Risk Act* as endangered, threatened, or special concern) and suitable habitat in the project area, Algonquin conducted various surveys as part of the EIA. These surveys included: sharp-tailed grouse lek, raptor stick nest, diurnal bird movement, nocturnal radar, acoustic bat, breeding bird, burrowing owl, common nighthawk, short-eared owl, nocturnal amphibian and yellow rail. Survey results showed the proposed project area supports species at risk including: Sprague's pipit, chestnut-collared longspur, Baird's sparrow, barn swallow and bobolink which are migratory species, as well as little brown myotis and northern leopard frog which are resident species.

The spring and fall diurnal bird movement survey results are presented in Appendix H.5 and summarized in Table 8-8. Results of the diurnal bird movement surveys indicated similar movement rates as at a control site established near the Centennial Wind Project and lower rates than at control sites established near Reed Lake. The results of nocturnal bird radar surveys showed movement rates at half of what was observed at the Reed Lake control site and lower than at the Centennial Wind Project control site. As a result, Algonquin concluded there was no apparent dominant bird movement corridor in the project area and collision risk during the day is expected to be similar to the existing Centennial Wind Project.

Algonquin measured bat activity in the project area following guidance established in Alberta which uses units of 'bat passes per detector night'. The results of acoustic bat surveys during the spring monitoring period indicated low bat activity with an average of 0.1 migratory bat passes per detector night. Results of acoustic surveys during the fall monitoring period were more variable with a peak of activity in August of 4 migratory bat passes per detector night; the average bat activity rate over the fall period was 0.5 migratory bat passes per detector night.

Changes to Habitat Availability

Vegetation clearing during construction of the project including WTG foundations, crane pads and access roads would result in impacts to 9.1 ha of direct habitat loss for wildlife over the 158.2 ha project footprint. 119.1 ha would be reclaimed following construction. No new direct habitat loss is expected during the operation phase of the project.

The project area would be located on cultivated and previously disturbed land which provides lower quality wildlife habitat in order to minimize the potential for impacts to wildlife. Algonquin would implement a number of measures to mitigate changes to habitat availability including: siting project infrastructure away from sensitive environmental features; adhering to setback restrictions for sensitive species as necessary; conducting construction activities in native prairie grassland (if unavoidable) outside of the migratory bird nesting period (April 26 to August 15); limiting tree clearing in hedgerows to maintain perch and roost sites; minimizing vehicle traffic in the project area; and reclamation of temporary disturbance areas following construction. Construction would occur over approximately 8-18 months, and would be staged so disturbance to habitat and wildlife from construction activities would be spatially limited to areas directly adjacent to project components currently under construction.

Direct and Indirect Fatality Risk

During operation of the project, direct fatality of wildlife can occur through collisions with wind turbines and associated project infrastructure. Collision fatality usually results from birds and bats striking revolving turbine blades, towers and nacelles. Collision fatality is variable with species behavior, project location, landscape features, and atmospheric conditions.

Indirect impacts and fatality of wildlife could result from disturbance in the project area during both the construction and operation phases of the project. The indirect disturbance fatality to wildlife during the decommissioning phase would be similar to construction and would include displacement of wildlife and behavioral changes potentially leading to increased predation.

Mitigation and Adaptive Management Plan

Algonquin has included a discussion of fatality thresholds (also referred to as management triggers) in the Adaptive Management Plan (AMP) in Appendix C, which were established in the *Adaptive Management Guidelines for Saskatchewan Wind Energy Projects* (AMGs). The ministry has defined management triggers in the AMGs to guide reporting and management actions required in response to bird and bat fatality at wind energy projects in Saskatchewan.

Algonquin has committed to employ a number of mitigation measures as detailed in Section 2, Sections 8.4.3.2 and Appendix C of the EIS, to reduce the risk of bird and bat fatality. The proactive mitigation measures proposed include burying electrical lines where feasible; installation of transmission line bird diverters; appropriate lighting; minimum cut-in speeds of WTGs; and appropriate WTG spacing.

Algonquin has described other mitigation measures that could be implemented in the event a management trigger is met or exceeded during operation including: adjusting cut-in speeds of turbines to start operating at a programmed threshold wind speed; or feathering/pitching turbine blades (i.e. blades are pitched parallel to wind direction so they can only spin at very low rotation rates). The wind speed threshold to reduce fatality events would be established based on site meteorological and fatality monitoring data.

In the event that increased cut-in speeds were not effective in reducing fatality rates, Algonquin could implement partial or complete turbine shutdown (i.e. curtailment) of individual or turbine clusters irrespective of wind speed. This would occur in specific periods when fatality rates exceed management

triggers for birds or bats or during periods of high bird/bat abundance to reduce or avoid collision fatality. This method could also be employed in instances where fog events extending through the rotor-swept altitude, which reduces the ability of birds to see and avoid turbines, are known to occur. Should effectiveness monitoring of any adaptive management technique prove unsuccessful, Algonquin could implement additional technology proven to decrease bird/bat fatality such as deterrents, based on ongoing research.

Post-Construction Monitoring Program

Algonquin has committed to following the post-construction monitoring protocol and reporting as outlined in the AMP and described in Appendix C, to confirm impacts to wildlife are consistent with predictions in the EIS. Post-construction monitoring would be conducted over an 18-week period between April 1 and October 31 for the first two years of wind turbine operation. Monitoring would also be conducted on years five and ten of operation and would be scoped to project-specific issues, conservation objectives or species of concern in a given location and would include clearly defined measurements for success. Fatality monitoring would include: casualty surveys, carcass removal trials and searcher-efficiency trials. If a management trigger is met or exceeded, Algonquin would consult with the ministry about the need for additional mitigation to reduce impacts to birds and/or bats.

Should fatality of a listed species be observed or a significant fatality event occur at the project, Algonquin would conduct a cause-and-effect analysis and consult with the ministry on the need for additional mitigation to reduce fatality of birds or bats. Such operational mitigation could be applied to one or more turbines or turbine clusters as identified in the cause-and-effect analysis. Operational mitigations may also be required if annual fatality levels were to meet or exceed the management triggers outlined in the AMGs.

Technical Review Findings on the Terrestrial Environment

Technical reviewers are satisfied with the assessments conducted to characterize project impacts to vegetation. Prior to construction, Algonquin would stake boundaries of vegetation clearing to ensure no construction disturbance occurs beyond the staked limits and no disturbances to edges of sensitive areas adjacent to work areas occurs. If previously undetected rare plants are observed during construction, the environmental monitor would ensure species-specific mitigation measures are followed and would consult with rare plant ecologists. Further, Algonquin would adhere to species-specific setback distances, appropriate timing restrictions and wetland avoidance

wherever possible during construction to minimize and/or mitigate disturbance to wildlife species of concern.

Technical reviewers have acknowledged Algonquin's efforts to avoid high-value habitat such as wetlands and native grasslands and to observe avoidance zones identified in the siting guidelines.

Technical reviewers have noted that siting of the project and adherence to the post-construction monitoring and reporting requirements, management triggers and mitigation measures as outlined in the AMGs appear adequate to manage potential impacts to wildlife and wildlife habitat throughout construction, operation and decommissioning of the project. Technical reviewers are satisfied with the assessment of the project's potential impacts on wildlife and wildlife habitat and the mitigations proposed to prevent or minimize impacts.

Water and Aquatic Environment

Algonquin described the project-related effects to wetlands, hydrology and the aquatic environment during construction, operation and decommissioning in Sections 5.1.3, 5.1.4, 7.4 and Appendix C of the EIS. There are no fish-bearing waterbodies or watercourses within the project area. The project is located 5km southwest of Reed Lake which is saline and non-fish bearing.

Desktop surveys identified 14 wetlands which would intersect the project area with the dominant classes of wetlands being class II temporary wetlands (2.8 ha) and class III seasonal wetlands (1.1 ha). Algonquin has committed to further refinements of the project layout to avoid wetlands where feasible during siting of temporary workspaces and ROWs associated with collector lines and access roads.

Algonquin would maintain a 100 m setback from wetlands when siting project infrastructure and access roads wherever possible, and as such project activities would have minimal interaction with the aquatic environment. Any potential for impacts to aquatic habitats would be further minimized through the use of construction best management practices outlined in Appendix C of the EIS, as well as adhering to all relevant guidelines.

Technical Review Findings on Water and Aquatic Environment

The erosion control measures proposed during construction appear adequate to prevent sediment from entering any nearby waterbodies; silt fences and

berms would also be used where necessary. Technical reviewers are satisfied by the assessment of the project's potential impacts on surface water and the aquatic environment and the mitigations proposed to prevent or minimize impacts.

Atmospheric and Acoustic Environment

Air and dust emissions would be generated primarily during construction of the project. Construction vehicle emissions during land-clearing and road development would be cumulative with other activities (e.g. agricultural) in the area. Air and dust emissions during construction would be managed by standard industry and best management practices. Atmospheric emissions during operation and maintenance of the project would be short term and transient in nature. Operation of the project would provide a cumulative and positive offsetting of greenhouse gas emissions that are byproducts of other sources of electricity generation such as coal-burning power plants.

Noise generation from operation of WTGs was assessed in Section 6.4 of the EIS. The scope of the assessment of potential effects on the acoustic environment focused on human receptors at residential locations.

Algonquin commissioned a noise assessment (included as Appendix E) in order to evaluate the noise impact on receptors in the area. In the absence of Saskatchewan noise guidance or regulations, the acoustic environment assessment used the Ontario Ministry of the Environment and Climate Change (MOECC) *Noise Guidelines for Wind Farms* (MOECC 2016) level of 40 A-weighted decibels (dBA) sound level limit to determine a significant adverse effect threshold. The approximate noise receptors distance from noise sources in the project area are minimum and maximum distances of 800 m and 3 km respectively. The modelling results predicted sound levels at all noise receptors would be within the 40 dBA limit for rural areas at all times. Algonquin would conduct further noise assessments if there are changes to the project layout or WTG model selected for the project.

Technical Review Findings on Atmospheric and Acoustic Environment

Technical reviewers are satisfied with the assessment of the project's potential for impacts to the atmospheric and acoustic environment and with the mitigations proposed to prevent or minimize impacts.

Residual and Cumulative Effects

Algonquin included an analysis of the cumulative impacts of the project in each VEC section of the EIS. The cumulative effects assessment is included where there is a residual environmental effect on a VEC and the residual effect acts cumulatively with residual effects of other physical activities. For example, cumulative effects may be associated with future activities such as the construction of transmission power lines, roads and all ancillary project components (Figure 2-2, Section 2.4.3, and Appendix C of the EIS). These effects could include: changes in plant species abundance and distribution and changes in wildlife habitat availability. Algonquin would implement a suite of mitigation measures to address project-specific cumulative effects on VECs. Mitigation proposed to reduce or avoid significant cumulative effects includes: minimizing disturbance in native vegetation, coordinating access requirements with future projects to avoid the need for construction of additional roads; avoiding development in wetlands; using existing roads wherever possible to reduce the length of new roads constructed; and utilizing high-use roads where possible to reduce road traffic and disturbance to wildlife.

Possible cumulative impacts to wildlife populations as a result of SaskPower's planned build-out of future wind projects will be addressed through effective adaptive management and the implementation of the ministry's siting guidelines and AMGs.

Technical Review Findings on Residual and Cumulative Effects

Given the uncertainties associated with predicting cumulative impacts particularly for activities undertaken by individuals or companies other than Algonquin, reviewers are satisfied with the assessment of cumulative effects presented in the EIS. The monitoring program and mitigation strategy proposed would help to confirm residual and cumulative effects are consistent with those predicted in the EIS.

Effects of the Environment

Algonquin considered how the environment could potentially adversely affect the proposed project in Section 13 of the EIS. The environmental events that were considered include: extreme temperatures; extreme precipitation (i.e., rain, snow, sleet); severe storms and lightning; extreme winds; and wildfires. The results indicated the project as proposed is not likely to be adversely affected by natural disaster or predicted changes to climatic conditions in the project area.

Technical Review Findings on the Effects of the Environment

Technical reviewers are satisfied by the assessment of the potential for the environment to impact the project and the mitigations proposed to prevent or minimize impacts.

Heritage Resources and Socio-Economic Considerations

Heritage Resources

An assessment of potential effects on heritage resources resulting from the project can be found in section 9.4 and Appendix I of the EIS. A Heritage Resource Impact Assessment (HRIA) was required for the project as the potential for heritage sites was ranked as moderate to high. Algonquin commissioned an archaeological consultant to carry out all of the heritage work under the requirements of *The Heritage Property Act*.

Four previously recorded archaeological sites were located within the project area. Algonquin has proposed mitigation measures to protect heritage resources including staking an appropriate avoidance buffer around each heritage site by a professional archaeologist followed by monitoring of construction by the environmental monitor on-site. Should new heritage resources be discovered during construction, Algonquin would halt all activities and consult with the Heritage Conservation Branch of the Ministry of Parks, Culture and Sport until acceptable mitigation was approved.

Socio-Economic

The socio-economic environment and the detailed assessment of potential effects to residents in the project area are discussed in section 10, 11, and 12 of the EIS.

Land and Natural Resources

Algonquin has recognized that the construction of the wind energy project has the potential to affect the communities in the local area of the project. Algonquin engaged with the community in order to discuss and address any concerns about the project on the land and natural resources in the project area and anticipate any issues. Algonquin heard concerns regarding

interruption of farming operations during construction of the project and has committed to contacting landowners prior to construction to determine any areas of concern. The effects of the project on land and natural resources are expected to be reversible and low in magnitude except for changes to non-consumptive recreational activities (e.g. bird-watching) which would be moderate due to changes in viewscape.

Employment and Economy

Construction of the project would require approximately 45 to 90 person-years of employment for an 8 to 18 month construction period. Operation of the project would require approximately 7 to 15 full time workers. Algonquin has committed to providing local communities with job opportunity information to encourage interest and promote participation in the development and ongoing operation of the project.

Community Services and Infrastructure

Algonquin also anticipated minor changes due to increased demand for housing, services and physical infrastructure from additional workers. Potential mitigations to address these changes in demands on local infrastructure and services include: coordination with emergency response agencies; development of approved emergency response plans; having first-aid trained personnel on site; and development of traffic management plans.

Based on Algonquin's assessment, the project would have a net positive effect on employment and business opportunities in the area.

Technical Review Findings on Heritage and Socio-Economic Considerations

Technical reviewers are satisfied that Algonquin has adequately examined the heritage and socio-economic impacts of the project and proposed acceptable measures to address any adverse impacts.

Decommissioning, Reclamation and Closure Plan

Section 2.5.3.1 of the EIS includes a conceptual decommissioning and reclamation plan for the project site. The project would have an expected lifespan of 25 years with the option to replace or recondition the turbines to extend the life of the project. At the time of decommissioning, Algonquin will develop a site specific reclamation plan based on industry standards and best

management practices and in consultation with landowners and the appropriate regulatory and government bodies.

Decommissioning would involve dismantling and removal of above ground infrastructure and removal of the turbine pads to a depth of 1-1.5m below grade.

Technical Review Findings on Decommissioning, Reclamation and Closure Plans

Technical reviewers are satisfied with Algonquin's decommissioning, reclamation and closure program.

4. Conclusions

Saskatchewan Environmental Assessment Review Panel members and the ministry conclude that Algonquin has provided sufficient information such that the EIS can be made available for public review.

Invitation to Comment

The public is invited to comment on the project EIS for a 30 day period ending July 10, 2018

The public is invited to review Algonquin's EIS and the TRCs and provide their comments no later than July 10, 2018. The EIS and TRCs are being made available for review at the offices of the Town of Herbert, and the RMs of Morse No. 165 and Lawtonia No. 135 and at saskatchewan.ca/environmentalassessment.

Written comments received during the public review of the EIS and TRCs will be considered by the Minister of Environment when he makes his decision under section 15(1) of *The Environmental Assessment Act* to either:

(a) give ministerial approval to proceed with the development and impose any terms and conditions that he considers necessary or advisable; or
(b) refuse to approve the development.

Contact

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