Niagara Escarpment Commission

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Niagara Escarpment Commission
An agency of the Government of Ontario

March 13, 2013

DEVELOPMENT PERMIT APPLICATION N/S/2012-2013/191
Niagara Region Wind Corporation
Town of Lincoln, Region of Niagara

SUMMARY

PROPOSAL: Construct an underground 115 kV transmission line through the Town of Lincoln to connect a proposed wind farm to the Beach Transformer Station in Hamilton.
DESIGNATION: Escarpment Natural Area, Escarpment Protection Area and Escarpment Rural Area
ISSUE: Does the proposed underground transmission line address the NEC's, municipalities', agencies' and the public's concerns regarding the visual, social and environmental impact in consideration of the applicant's submissions, the Hydro One and Morrison Hershfield peer reviews?
RECOMMENDATION: That the application be approved, subject to the attached conditions of approval in Appendix 1, provided that at the time of the NEC meeting, the Town of Lincoln has informed the NEC that they have no objection to the Development Permit application.

REASON: The application is consistent with the PPS and the NEP, the use is permitted and the conditions address the requirements of the NEC and the circulated agencies.

RECEIVED: November 15, 2012

SOURCE: Applicant, Niagara Region Wind Corporation

APPLICATION: To construct an underground 115 kv transmission line through the Town of Lincoln to connect a proposed wind farm to the Beach Transformer Station in Hamilton.

RELATED FILES: ON 5 08N, Route assessment study, pre-consultation and visual impact assessment for an above ground transmission line

COMMENTS RECEIVED:

1) **Region of Niagara –** The Region noted that although part of the transmission line is within the NEP, the part extending north passes through Greenbelt

Protected Countryside and lands that are designated “Unique Agricultural Area” in the Niagara Region Official Plan. The primary use of land is to be agriculture but policies provide for utilities provided that alternative routes are examined and the impact on agriculture and the natural environment are considered. The Region acknowledges that there does not appear to be a route that is located outside agricultural areas but the recommended route, being the shortest, passes through the least amount of agricultural land.

Given the importance of wineries to the local economy, the Region recommended a Development Permit condition requiring consultation with business owners to determine when construction would have less impact and how road access could be maintained at all times during construction.

The proposed transmission line passes through areas designated as Environmental Conservation Areas but the Region concludes that there should not be significant impacts if the line is constructed within the roadway.

With respect to water resources, the Region notes that three watercourses containing fish habitat cross Mountainview Road and that the area is part of a Groundwater Recharge Zone and a Highly Vulnerable Aquifer Area. Further review of potential impacts is necessary in consultation with the Conservation Authority.

While the Region notes that there is consideration for the installation of bike lanes and suggests that there be a Development Permit condition to ensure that there is no negative impact from the construction of bike lanes and that the Town should be consulted because it is a local road. However, the Region goes on to note that the road is under consideration as part of a separate environmental assessment as one possible corridor for a truck route.

The Region recommends Development Permit conditions to ensure continuity of the Bruce Trails during construction and that the safety of the trail be improved along this section of the Road.

With respect to archaeology, the Region recommended that the Ministry of Tourism, Culture and Sport (MTCS) be satisfied with the draft Stage 1 and 2 archaeology reports prepared for NRWC. At this stage, only the Stage 1 report has been added to the Provincial Register and the Stage 2 report is under consideration. MTCS does not clear the reports and indicates in their comments that further study may be necessary. The Region proposed conditions of Development Permit to address archaeology.

2) **Town of Lincoln –**The Town of Lincoln had advised in initial comments that they were opposed to the proposed transmission as they are not satisfied with the scope of the peer reviews that were undertaken. They are seeking to address their concerns about the impact of the transmission line on their road infrastructure and have been meeting with NRWC to determine if they can reach agreement.

The Development Permit application was not signed by the Town of Lincoln, the owner of the municipal right of way. NEC staff has advised NRWC that they should continue to seek a resolution of the outstanding issues with the Town as staff cannot recommend approval of this Development Permit for works on the Town's land without the consent of the Town. In discussion with Town staff, we understand that progress has been made with respect to the Town's issues and that the matter will be considered at Town Council on March 18. Town staff will provide an update at the Commission meeting.

The Town noted in its comments of February 4, 2013 that the land uses along the proposed transmission line include grape and tender fruit farms, greenhouses and wineries, agri-tourism uses, conservation lands, rural residential and commercial uses and lands containing environmental features. Town staff concurred with the comments of the Region of Niagara. The Town supports consultation with business owners adjacent to the route should occur to determine when construction would have the least impact and to ensure that noise and dust control measures are put in place as it is part of the Town's Strategic Directions to grow economic development.

The Town further noted rural local roads are not designed for the heavy trucks, equipment and machinery that would be involved in constructing the transmission line and requires detailed design to address issues relating to access to and protection of the existing municipal infrastructure in the road including an emergency response plan.

3) **Niagara Peninsula Conservation Authority (NPCA) –** NPCA advises that further review of detailed designs will be required to determine if Works Permits are required from them. The review of the detailed designs would need to take place prior to construction to determine how impacts to fish habitat and valleys could be addressed.

   NPCA confirms that the route encompasses a Highly Vulnerable Aquifer and that there could be risks to wells within 120 metres of the transmission line according to the Stantec report. Pre- and Post- construction monitoring should address any impacts and monitoring reports should be provided to NPCA.

   NPCA also requires detailed design drawings as they need to assess any potential impact on their Mountainview Conservation Area and how construction impacts could be mitigated including measures to decrease noise impacts on birds, the use of buffers and the use of fencing to protect adjacent vegetation and habitat.

4) **Bruce Trail Conservancy (BTC) –** The BTC agreed that NRWC should address the continuity and safety of the Bruce Trail at the road crossing as part of the Development Permit application.

5) **Ministry of Natural Resources** – staff of the MNR in Peterborough advised that they would not be providing comments to the NEC on the Development Permit Application; they are reviewing the natural heritage assessment and the Stantec

Environmental Impact Study (submitted by NRWC to satisfy the requirements outlined within O.Reg. 359/09 (s. 24 through 28, 37 and 38) and submitted to the MNR as a component of the Renewable Energy Approvals (REA) application. and indicated that they would provide comments through the REA process. NEC staff has requested the MNR to share those comments when they become available. Preliminary comments from August 2011 indicated to NRWC that they should address impacts on water crossings and fish habitat, Species at Risk, woodlands, wildlife habitat and wetland boundaries.

6) **Ministry of Environment –** confirms that NRWC is completing the REA process and that the transmission line will tap in to the Hydro One Networks (HONI) line south of the QEW in Lincoln. The power will then be conveyed along an existing HONI line to the Beach Transformer Station in Hamilton. MOE acknowledges that the details of the alignment would be finalized at the detailed design stage. MOE notes that dewatering may be required in order to permit construction in a dry trench. Whether a Permit To Take Water would be necessary for the dewatering would be determined through the REA process. MOE concludes on the basis of the applicant's report that the mitigation of the temporary construction-phase impacts "appears to be satisfactory" but that a comprehensive review of the entire project has yet to be completed as part of the REA approval so comments on the transmission corridor should not be construed as an approval of the entire project.

7) **Hydro One –** no comments or concerns at this time with respect to High Voltage Facilities and Corridor Lands.

8) **Public – Mr. and Mrs. Christie –** The NEC received a letter on January 10, 2013 from these residents who have a property at the corner of Mountainview and McLeod on the proposed transmission line route. They note that their property includes a steep slope, a stream and Carolinian forest. They advise the NEC that while they would have preferred no transmission line to cross the Escarpment, they now accept the transmission line but only if it is buried under the paved portion of the roadway because, in their view, it addresses health, visual, social, safety, agricultural, flora and fauna, environmental and economic concerns. Their letter is attached as Appendix 2.

9) **MNECA –** Representatives of the Mountainview Niagara Escarpment Community Association (MNECA) gave a presentation to the Town Corporate Priorities Committee of the Town of Lincoln and indicated that MNECA supports the burial of the proposed transmission line but they are concerned about possible construction during the busy tourist months of June to September.

No comments were received from the Ministry of Transportation, CN or CP Rail, Ontario Heritage Trust or the Department of Fisheries and Oceans (DFO).

PEER REVIEWS:

a) Hydro One: Hydro One, at the request of the Mountainview Niagara Escarpment Community Association (MNECA) undertook a peer review of the route analysis undertaken by NRWC. (See Appendix 3) They concluded that the

selection of the Mountainview route for the proposed transmission line was appropriate considering that there is only one point where the proposed transmission line can connect with the hydro grid, at the Beach Transformer station in Hamilton.

b) Morrison Hershfield (MH) – following a competitive process, Morrison Hershfield was selected by the NEC to undertake a peer review of the route analysis contained in the NRWC Development Permit application report. MH concluded that the analysis undertaken by NRWC was appropriate and conducted in accordance with industry standards (See Appendix 4) MH will be in attendance at the Commission meeting to present the peer review and respond to any questions that may arise.

ANALYSIS:

Niagara Escarpment Plan (NEP):

<u>The Route</u>
There has been considerable analysis of the proposed route of the transmission line before and as part of the Development Permit application. The NEC and the Town of Lincoln wanted more information about alternatives to the route preferred by the NRWC including options that would avoid crossing the Niagara Escarpment.

The NRWC Development Permit Application Report, (Stantec, November 14, 2012), confirms that their preferred route would follow Kemp Road East and Mountainview Road north within the NEP area. (See Map 3) This route was chosen based on economic, social and environmental impact factors recognising that the point of origin and destination of the transmission line are fixed. The NEP designation of the land along the route includes Escarpment Natural, Escarpment Protection and Escarpment Rural Areas. (See Map 1)The lands along the preferred route of the transmission line are primarily residential and agricultural in nature. Utilities are permitted uses in all those designations, however, within the Escarpment Natural Area, the utility must be "essential". Essential is defined in the NEP as "that which is deemed necessary to the public interest after all alternatives have been considered". The Stantec report states that the transmission line is essential "by virtue of the approved FIT contract with the OPA" (p.2.3). NEC staff does not agree that the approval of a contract makes a utility essential. To satisfy the test in the definition, there must have been a consideration of alternatives. This has taken place and been peer reviewed as discussed below. There does not appear to be any alternative route that would completely avoid the Escarpment Natural Area and the installation of the underground transmission line within the municipal right of way would reduce disturbance of the natural environment, as described later in this report. There is also an onus on planning authorities in the PPS to promote renewable energy. The NEC took the policy position in 2004 that it generally supported wind power provided that issues related to the visual impact of the turbines were addressed. In this case, the turbines are not within the NEP and the issue of visual impact, discussed later below, would be addressed by having an underground transmission line. If the REA is approved for the wind farm, there will be a necessity to transmit the electricity from it and it would be in the public interest to make that possible.

An underground transmission line would maintain the most natural Escarpment features, consistent with this objective of the Escarpment Natural Area.

Utility facilities are permitted within the Escarpment Protection and Escarpment Rural Areas with the proviso that within prime agricultural areas and specialty crop areas, only linear facilities are permitted. An underground transmission line is a linear facility. Permitted uses must meet the objectives for those designations and the relevant Development Criteria. The objectives in the Escarpment Protection and Escarpment Rural Areas include maintaining and enhancing the open landscape character of Escarpment features, maintaining natural areas of regional significance and encouraging agriculture. The construction of an underground transmission line addresses the open landscape character and construction within the right of way of the existing road addresses the protection of natural areas of regional significance. The period of construction could impact agriculture by affecting roadway accessibility and winery events. The proposed conditions of approval (Conditions 13 and 17) address this by requiring the establishment of a community liaison committee and a requirement that Mountainview Road be kept open at all times during construction of the transmission line.

There were two peer reviews of the preferred alternative as described above. One as completed by Hydro One at the request of MNECA and one was completed by an independent consultant retained by the NEC. The Hydro One peer review concluded that there was not an option for a transmission route that could avoid the NEP. The MH review of the Stantec analysis concluded that industry standards had been followed in the assessment of route alternatives and they did not take issue with the conclusion of their analysis that Mountainview Road was the preferred route.

The Construction

On February 22, 2013, the NRWC's consultants provided a set of preliminary construction drawings to NEC staff and to the Town to assist them in their analysis of the impact of the proposed construction on their right of way relative to the Town's utility infrastructure. NEC staff also forwarded the drawings to the NPCA. Detailed design drawings will be provided to the agencies after the REA approval. The proposed conditions of Development Permit approval (Conditions 8, 9 and 12) require the submission of the detailed drawings as it is difficult to fully assess potential impacts of the construction based on the preliminary drawings as they do not confirm the exact location of the transmission line in the right of way, do not address watercourse crossings locations and degree of vegetation removal for construction.

In discussion with the staff of the Ministry of the Environment (MOE) Environmental Approvals Branch responsible for the NRWC application, NEC staff was advised that the MOE is prepared to impose a condition on the REA approval ensuring that the NRWC is required to satisfy the Development Permit conditions, including the provision of detailed construction drawings. This process would ensure that the NEC can satisfy itself that the transmission line would be constructed in accordance with the NEP policies and Development Criteria.

Natural Heritage

Woodlands

Six woodland features have been identified within 120 metres of Mountainview Road. A large contiguous woodland feature associated with the Mountainview Conservation Area occurs along the west side of Mountainview Road. The proposed transmission line trench will be situated the travelled portion of Mountainview Road, outside the woodlands situated adjacent to the roadway. The location of the buried transmission line should be positioned on the east side of Mountainview Road in order to minimize required vegetation removal and to avoid sensitive plants species and clearing along the edges of natural features associated with this large contiguous woodland feature.

Three of the identified adjacent woodlands are considered significant woodlands (under the PPS), using the Niagara Region Official Plan criteria. No portion of the transmission line is to remove or fragment existing woodland habitat or create new edges that would increase edge effects on existing woodlands.

Two rare vegetation community types were identified within 120 m of the proposed transmission line, west of Mountainview Road within the Mountainview Conservation Area. These communities include the Ecological Land Classification community of Fresh-Moist Black Maple Carbonate Tree Talus and Carbonate Open Cliff Ecosite (includes a cliff ranging between 3m and 10 m). These communities are situated a minimum of 6 metres and 49 metres from the right of way, respectively.

Objective and policies of Part 2.7 New Development in Wooded Areas will be satisfied as disturbance to treed areas will be minimized by avoiding new crossings or clearing of woodlands. Underground transmission lines are not anticipated to cause any significant root damage, as proposed works will be situated outside of the woodland edge drip line. The proponent has identified that further information will be provided during the detailed design phase to provide specific details on the proposed vegetation to be removed and to refine the proposed mitigation measures for woodlands. Conditions of approval including the requirement for a vegetation protection plan, restoration plan and erosion and sediment control plans will ensure compliance with NEP Part 2.7 New Development in Wooded Areas.

Life Science Areas of Natural and Scientific Interest (ANSIs)

The objective of Part 2.14 Areas of Natural and Scientific Interest is to protect provincially and regionally significant elements of the natural landscapes of Ontario. Part 2.14.1 requires that development be directed to locate outside of Provincially and Regionally Significant Life Scientific ANSIs, and minor encroachments are only considered under restricted conditions whereby the ANSI values are maintained. The Mountain View-Valentine Escarpment Terrace Regionally Significant ANSI is situated within 120 m of the proposed transmission line (See Map 2). The ANSI is associated with the Mountainview Conservation Area and associated woodlands west of Mountainview Rd.

As identified for all woodland features, potential impacts to vegetation within the ANSI include minor trimming of trees and limited removal of vascular plants and plant communities along Mountainveiw Road. NRWC has identified that vegetation removal will be limited to tree trimming within the existing municipal road right-of-way or as close as possible to the pavement or roadside. Some vegetation clearing and trimming will be required as part of ongoing maintenance for the existing local distribution system.
As identified above, the extent of vegetation removal will be minimized by locating the transmission line trench within the travelled portion of Mountainview Road. Therefore it is expected that the objective and policies of Part 2.14 respecting Regionally Significant ANSIs will be met with the proposed transmission line development. Conditions of Approval will address that for any minor encroachments (i.e. trimming and minor vegetation removal) that the specific features for which the ANSI has been identified will be maintained.

Wildlife Habitat

Consistent with the NEP Part 2.8 Wildlife Habitat, impacts to wildlife habitat will be minimized through the routing and design of the transmission line, with any potential indirect impacts limited to the temporary disturbance caused by minimal tree trimming and vegetation removal. No habitat of Species at Risk within the NEP Area of the proposed transmission line has been identified by the proponent during site investigations and review of background documents. No development is proposed within the habitat of endangered or threatened species.

Some of the woodland features (on the east side of Mountainview Road) have been identified as supporting woodland amphibian breeding habitat (breeding pools). In order to avoid impacts associated with amphibian breeding, a condition of approval is included which identifies that known and potential breeding ponds adjacent to construction areas are to be delineated and construction is to avoid breeding ponds. Site disturbance is to be minimized and alterations to surface drainage patterns in the vicinity of the breeding ponds is to be avoided. Additionally, construction and decommissioning phases is to occur, to the extent reasonably practical outside amphibian breeding months (April to June).

No wildlife corridors or linkages are anticipated to be impacted by the proposed development. Rare vegetation communities described above will be protected with the boundaries delineated and the use of sedimentation and erosion control fencing. A condition of approval will include the requirement to avoid of vegetation clearing during the breeding bird season (May 1 to July 31). A condition of approval has been included which identifies measures to be taken if Species at Risk are encountered prior to or during construction activities.

Water Resources & Fisheries

The objective for water resources in the NEP is to ensure that new development affecting streams, watercourses, lakes, wetlands and groundwater systems will have minimum individual and cumulative effect on water quality and quantity and on the Escarpment environment (NEP 2.6).

No Provincially Significant Wetlands (PSWs) were identified within the proposed transmission line location. Two unevaluated wetlands (.69 ha and .02 ha in size) have been identified within 120 m of the proposed transmission line route (see Map 2). One wetland in close proximity to Mountainview Road, currently has a limited setback from the Road allowance of approximately 2.4 metres, and the second wetland is a distance of approximately 119 metres. However the exact setback of the transmission line from each of these wetland features will not be identified until the detailed design phase. No development is proposed within a wetland and no loss of wetland functions is anticipated. Indirect impacts to wetlands may include dust, sedimentation and erosion; however conditions of approval can address these short term temporary indirect impacts. Therefore, provided conditions of approval are met, NEP Part 2. 6 respecting wetlands can be met.

Dewatering will likely be required during construction to ensure that the trench remains dry. The extent of dewatering will not be confirmed until completion of detailed geotechnical investigations prior to construction. No changes to the natural drainage patterns along Mountainview Road are anticipated. Maintenance of all surface flow patterns to adjacent amphibian breeding ponds will be required and become condition of approval. Additionally, to avoid any contamination and subsequent degradation of breeding ponds by sediment erosion, sediment and erosion control measures will be required to be implemented in addition to re-vegetation of disturbed areas. There will be no clearing of trees in or near any of the wetland features that could result in wetland desiccation or drying.

Five watercourse crossings will be required along the proposed transmission route, all of which are situated within the existing right-of-way. No new culverts or crossings are proposed. General mitigation measures have been identified to include erosion and sediment controls to avoid water quality impacts, and vegetated buffers within riparian zones should be maintained.

NRWC has indicated that any potential impacts to watercourse crossing and proposed mitigation to address such impacts will be further addressed at the detailed design phase, once the location of the buried transmission line relative to the culverts (i.e. above or below) has been determined. This is to include the location of the buried transmission line relative to the existing culverts and details demonstrating how flows within these watercourses will be maintained during and following construction activities. Additionally, any potential impacts to watercourses and related fish habitat along Mountainview Rd will be required to be assessed by the NPCA Development, Alterations to Waterways Regulation and meet the Level 2 agreement with DFO.

With respect to water quality, the Stantec Report states that erosion and sediment controls would be installed and maintained during construction and disturbed areas are to be stabilized and revegetated immediately after construction. The NPCA noted that several of the watercourses that cross Mountainview Road are identified as Type 2 – Important Fish Habitat. The NPCA requires detailed construction drawings to address the protection of fish habitat. NEP policies state that changes to natural drainage should be avoided and generally require development setbacks from streams to protect fish. A setback is not possible in this case as the stream passes under the road and so

the provision of detailed construction drawings including the stream crossings is a Condition of Development Permit approval (Condition 12). In order to satisfy NEP policies in this regard, the drawings and any supporting information must address the Fisheries policies in Part 2.6 of the NEP and demonstrate that there will be no net loss of productive capacity of fish, maintenance of minimum baseflow of watercourses, best available construction and management practices are to be used to ensure water quality and quantity, both during and after construction. Construction should be appropriately timed to minimize impacts on fish habitat.

The Region of Niagara and NPCA noted in their comments that the proposed transmission line will travel through an area identified as a Highly Vulnerable Aquifer and Groundwater Recharge Zone. The Stantec Development Permit Report indicated that there is potential to impact private wells within 120 metres of the transmission line route. The Report states at page 6.4, “While adverse impacts on these wells are not anticipated as a result of the construction of the buried transmission line, pre- and post-construction monitoring of the water quality and availability in these wells is proposed (where access is permitted by landowners)”. A condition requiring well monitoring reports is included in the proposed conditions of Development Permit approval (Condition 14). The NRWC has also committed to working with NEC staff to develop a well monitoring program including water quality/quantity parameters, notification procedures for asking property owners for access to their wells and in the event of an anticipated change to existing well conditions and a dispute resolution mechanism to investigate and resolve any complaints. The NRWC has also committed to ensuring a potable water supply to property owners whose wells are within the possible zone of influence.

Social Impact

The General Development Criteria in Part 2.2 of the NEP state that the objective is “to permit reasonable enjoyment by the owners of all lots that can sustain development”. One of the issues raised during the assessment of the application has been the impact of the proposed transmission line on the properties and businesses along the route. The proposed underground transmission will lessen the visual impact but there will be construction impacts. As this area is important to the local economy for tourism and includes wineries, NRWC has committed to maintaining road access throughout the construction. In addition, NEC staff has recommended that the NRWC establish a Citizen Liaison Committee as a means of conveying information to the community about the proposed construction project and addressing issues that may arise. This is a condition of the Development Permit (Condition 17).

Visual Impact

The visual impact of the proposed underground line will have no substantive effect on the visual and scenic resources of the Plan area, consistent with the Objectives of the NEP including maintaining and enhancing the open landscape character of the Niagara Escarpment. There may be some localized vegetation impacts depending on where within the right of way the transmission is placed; given that the exact location of the transmission line is not known at this time, this matter is to be dealt with at the detailed

design stage. To address this matter, the conditions of approval include requirements for vegetation protection and mitigation (Conditions 10 and 11).

The visual impact assessment (VIA) component of the documentation submitted for the Development Permit application focused on the impact of an overhead transmission line; while there are a number of issues with the assessment submitted, staff have not addressed the overhead line proposal as it is not the subject of this application.

Transportation and Utilities

The objective of the Development Criterion in the NEP relating to utilities is “to design and locate new and expanded...utility facilities so the least possible change occurs in the environment and the natural and cultural landscape” (Part 2.15). New utility facilities, which includes by definition, the transmission and distribution of electric power, are to be designed and located to minimize the impact on the Escarpment environment.

The NRWC has proposed to address this NEP requirement by proposing to construct an underground transmission line which addresses Part 2.15 1.e) of the NEP (minimising visual impact) as described above.

The NRWC has also indicated that it intends to minimize the construction impacts of the transmission line by not using blasting in the construction of the conduit for the transmission line. Engineering drawings recently provided by the NRWC indicate that the concrete conduit that will house the transmission line would be placed beneath the infrastructure owned by the Town of Lincoln for ease of maintenance of their facilities but the exact depth of the excavation is not known at this time (approximately 2 metres below grade). The NRWC proposes to address the possibility that bedrock might be encountered during construction through a condition of approval requiring the submission of a contingency plan that would detail the method of excavation and proposed mitigation measures to be implemented (Condition 15). This would be satisfactory to address the NEP Part 2.15 1.a) which requires blasting to be minimized.

Part 2.15 1.a) also requires that tree removal be minimised. By constructing an underground transmission line, there will be less impact on the trees along the transmission line route as the line would be constructed within the municipal right of way.

Provincial Policy Statement 2005 (PPS):

The PPS policies provide guidance on balancing development and supporting renewable energy with the protection of the natural environment. With respect to infrastructure which includes transmission lines, the PPS (1.6.6.4) states that there must be consideration of significant natural resources. In their analysis NEC staff has determined that based on the information provided by the proponent to date, that the proposed underground transmission line is consistent with PPS Parts 2.1 respecting natural heritage as the development is not proposed within and is not anticipated to negatively impact significant woodlands, wetlands or the habitat of endangered or threatened species. Further information will be required through the detailed design drawings to confirm whether there may be indirect impacts on natural heritage features

and functions and conditions of approval have been included which address additional actions to be taken prior to construction to ensure consistency with these PPS provisions.

The PPS (1.7.1(h)) provides support for the development of increased energy generation including the use of renewable energy systems. NRWC has a contract to provide renewable energy through a proposed wind farm and the underground transmission line would transport the energy generated to the provincial hydro grid.

In accordance with the PPS, planning authorities are required to promote renewable energy systems where feasible (1.8.2). The PPS also states that renewable energy facilities are to be permitted in settlement areas, rural areas and prime agricultural areas in accordance with federal and provincial requirements (1.8.3). As described above in the analysis of the NEP, while some policies have been addressed, others have not, until such time as more detail of the construction is known.

In accordance with the PPS (2.2.1) planning authorities are required to protect, improve or restore the quality and quantity of water by implementing necessary restrictions on development and site alteration by implementing necessary restrictions on development and site alteration to protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features and natural heritage features and areas. In their comments, the Region and the NPCA noted that the area includes a Highly Vulnerable Aquifer. Conditions of approval are necessary to require private well monitoring and a well protection program and construction details to address potential impacts to private wells, streams and any associated fish habitat (Conditions 9, 12 and 14).

With respect to cultural heritage and archaeology, the PPS (2.6) permits development and site alteration provided that archaeological resources have been conserved and documented. No cultural heritage resources would be impacted by the proposed transmission line according to the NRWC studies. The NRWC has submitted their Stage 1 and 2 archaeological reports to the MTCS. The Stage 1 report was received and added to the Provincial Register and the Stage 2 report is under review. It should be noted that the MTCS does not “approve” archaeological reports or provide any comment with respect to the adequacy of the reports. They simply add them to the Register and advise that they may require additional analysis in the future. To address this, conditions are proposed requiring a letter from the MTCS confirming that proper conservation and documentation of any archaeological resources found had taken place (Conditions 20 and 21).

Overall, the proposed transmission line route is consistent with the policies of the PPS with respect to renewable energy and appropriate conditions of approval are needed to address the PPS policies with respect to any possible construction impacts on water resources and natural heritage features once additional construction information is available.

Regional Official Plan (ROP):

The route of the transmission line is within lands designated Unique Agricultural Area – Good Tender Fruit and Good Grape Lands in the ROP as discussed above. The Region is satisfied that it is not possible to locate the transmission line outside agricultural areas and the recommended conditions of Development Permit approval that are incorporated in Appendix 1 (Conditions 8, 9, 14, 18) include the Region's requirements relating to community consultation, potential impact on the aquifer, archaeology and construction on Regional roads .

Local Official Plan (LOP):

The Town applies the NEP designations in their Official Plan but advised that if the subject land was not in the NEP, the area would be designated Unique Agricultural and Natural Environment in the LOP and zoned Agricultural (A) and Environmental Conservation (EC) in Zoning By-law 93-14-Z1. Essential public uses such as utilities are permitted if they cannot be reasonably located outside of agricultural areas.

CONCLUSIONS:

After considering all the submissions with respect to the Development Permit application by NRWC, NEC staff concludes that considerable analysis of the transmission line route and the proposed construction of the underground transmission line has been undertaken. Conditions of Development Permit approval are necessary to address the fact that the decision on the REA application occurs after the NEC decision. The details of the proposed construction, necessary to assess how the project will satisfy all of the relevant policies and development criteria of the NEP will be confirmed after the decision on the REA application. However, we understand that additional information, in the form of detailed construction and landscaping drawings, would be available after the REA application is approved by the MOE and the Ontario Energy Board gives the NRWC Leave to Construct. The MOE has advised that they can impose a condition on the REA application to require the NRWC to satisfy all the Development Permit and other requirements of the NEC.

The Region of Niagara and the NPCA have indicated that they are satisfied with the Development Permit application subject to conditions that have been incorporated into the Development Permit approval. NEC staff understands that the Town of Lincoln may have recently reached agreement with the NRWC about entering into a Road Use Agreement and Emergency Services Agreement to address its concerns about the use of their right of way for the proposed transmission line. MNECA also expressed its support for the proposed underground transmission line at a meeting of the Town's Corporate Priorities Committee on February 25, 2013 provided that matters relating to the timing of construction during the busy tourist season can be addressed.

RECOMMENDATION:

That the application be approved, subject to the attached conditions of approval in Appendix 1, provided that at the time of the NEC meeting, the Town of Lincoln has informed the NEC that they have no objection to the Development Permit application.

Original Prepared by:

Original Signed By:

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APPENDIX 1

Niagara Region Wind Corporation

CONDITIONS OF APPROVAL **N/S/2012-2013/191**

1. Non-fulfillment or breach of any of the conditions shall render the Development Permit void.

2. Site inspections of the property may be undertaken by the Niagara Escarpment Commission to ensure that the development complies with the Development Permit. Persons who possess expert or special knowledge related to the Development Permit may accompany the Commission representative on the site inspection(s).

3. No building permit or other licence, certificate, permit or other similar permission relating to development shall be issued or considered to be in force unless a Development Permit is in effect.

4. The Development Permit shall expire three years after its date of issuance unless the development has been completed.

5. The underground transmission line shall be in accordance with the site plan and Development Permit application submitted.

6. No grading of the existing contours of the roads is permitted except that which is absolutely necessary for the construction of the underground transmission line.

7. All drawings submitted to the Niagara Escarpment Commission to satisfy the Development Permit conditions must include:
   a) a bar scale
   b) the application number
   c) the address or location of the development
   d) the date and revision dates
   e) the consultant's name and contact information.

8. **Prior to any development including site disturbance or site preparation,** the applicant shall submit for the approval of the Niagara Escarpment Commission, in consultation with the Region of Niagara, the Town of Lincoln, the Niagara Peninsula Conservation Authority, detailed design plans identifying the location and design of the proposed transmission line and the buried concrete encased duct bank including plan view and cross-section drawings confirming the design, depth and location within the municipal road right of way. Once approved, these detailed design plans shall form part of the Development Permit.

9. **Prior to any development including site disturbance or site preparation,** the applicant shall submit for the approval of the Niagara Escarpment Commission, in consultation with the Region of Niagara, the Town of Lincoln, the Niagara Peninsula Conservation Authority, detailed construction plan drawings identifying the haul route, limits of construction, construction phasing, method of installing

the buried transmission line and appropriate construction mitigation measures, including erosion and sediment control plans, construction envelope and demarcation details, cut-off collars, engineered fill requirements, temporary material storage areas, staging areas, refuelling areas and dewatering details, during in accordance with the recommendations of the tree/woodlot/significant woodlot preservation plan. The detailed design drawings shall identify installation of “Limit of Work” fencing to ensure that no material or equipment is placed outside the work area and to limit potential effects on adjacent vegetation and habitat, and incorporate buffers from any identified species at risk habitat. No grading of the existing contours of the land is permitted along the transmission line route except that which is absolutely necessary for the construction/placement of the transmission line.

10. Notwithstanding any other approval or any conflict or inconsistency with any plans or conditions relating to any other approval (including a Renewable Energy Approval), development shall only occur in accordance with the final construction plan drawings approved by the Niagara Escarpment Commission pursuant to Condition 9 of this Development Permit approval.

11. **Prior to any development including site disturbance or site preparation,** the applicant shall submit for the approval of the Niagara Escarpment Commission, a tree/woodlot inventory, impact assessment and preservation plan (including an invasive species management plan), prepared by a Landscape Architect, Arborist or other qualified consultant.
    - **a)** A vegetation management/monitoring plan identifying which trees and vegetation are to be preserved will be required.
    - **b)** Confirmation in writing by a qualified consultant that protective fencing has been installed and inspected prior to construction commencing, shall be provided to the Niagara Escarpment Commission.
    - **c)** Subsequent to the completion of the works, including mitigation, a letter certifying that the work has been completed in accordance with the approved plan by a qualified consultant.
    - **d)** Should post-construction monitoring identify additional vegetation impacts due to construction, the mitigation shall include replacement of trees lost on a per calliper basis.

    Once approved, these plans shall form part of the Development Permit.
    No trees other than dead or diseased trees shall be cut or removed along the transmission line route, except those identified and approved by the Niagara Escarpment Commission as absolutely necessary for the construction/placement of the transmission line.

12. **Prior to any development including site disturbance or site preparation,** the applicant shall submit for the approval of the Niagara Escarpment Commission, a landscape plan prepared by a landscape architect or other qualified consultant addressing all planting requirements associated with screening and visual and environmental mitigation requirements.

a) Species selection shall be appropriate to the local area and all trees, shrubs, groundcovers and nursery stock shall be native to Ontario.
b) Installation of all plant material shall be completed within the first growing season (April to October) following completion of the transmission line.
c) All plant material shall be guaranteed for a minimum of 18 months following installation. All plant material found during this time to be dead or dying must be replaced with a size and species satisfactory to the Niagara Escarpment Commission.
d) Subsequent to the completion of the works, a letter shall be submitted to the Niagara Escarpment Commission by the consulting Landscape Architect or Arborist certifying that the work has been completed in accordance with the approved plan.

Once approved, the landscape plan shall form part of the Development Permit.

13. **Prior to any development including site disturbance or site preparation,** the applicant shall submit for the approval of the Niagara Escarpment Commission, in consultation with the Niagara Peninsula Conservation Authority, design and construction details surrounding the proposed watercourse crossings, including the location of the buried transmission line relative to existing culverts and details demonstrating how flows within these watercourses will be maintained during and following construction, how runoff will be controlled and how fish habitat will be protected.

14. **Prior to any development including site disturbance or site preparation,** the applicant shall provide a letter to the Niagara Escarpment Commission describing how consultation with business and property owners was undertaken to address concerns regarding the maintenance of property access and the control of noise and dust during the construction period and including confirmation that access to all private properties along the route will be maintained throughout the construction period.

15. **Prior to any development including site disturbance or site preparation,** the applicant shall complete to the satisfaction of the Niagara Escarpment Commission, in consultation with the Region of Niagara and the Niagara Peninsula Conservation Authority, a review of groundwater quality and quantity impacts of the construction of the underground transmission line indicating how impacts are to be mitigated and outlining a pre-construction and post-construction private water well monitoring and protection program for all wells located within 120 metres of the proposed construction to identify monitoring of water quality and quantity, mitigation measures, and a notification, response and dispute resolution protocol to address potential impacts to private wells along the transmission line route.

16. **Prior to any development including site disturbance or site preparation,** the applicant shall complete to the satisfaction of the Niagara Escarpment Commission, additional geotechnical investigations along the proposed transmission line to confirm the extent of dewatering required and to supplement existing borehole data to confirm whether bedrock will be encountered during

construction and how the location of bedrock will impact the proposed method of construction so as to avoid the use of blasting.

17. **Prior to any development including site disturbance or site preparation,** the applicant shall consult with the Bruce Trail Conservancy and provide a letter to the Niagara Escarpment Commission confirming how they will address continuity of access to the Bruce Trail during construction and how safety along this section of Mountainview Road can be improved, if feasible.

18. **Prior to any development including site disturbance or site preparation,** the applicant shall submit to the Niagara Escarpment Commission a letter describing the role and mandate of a Community Liaison Committee to be established as part of the renewable energy project to address project communication and dispute resolution regarding the construction and operation of the Project.

19. **Prior to any development including site disturbance or site preparation,** the applicant shall enter into an agreement with the Region of Niagara for the crossing of Regional Road 81 respecting the location, construction and maintenance of all Niagara Region Wind Corporation facilities on this Regional road right-of-way.

20. **Prior to the issuance of the Development Permit,** the applicant shall enter into a Road Use agreement and an Emergency Services agreement with the Town of Lincoln.

21. No excavation, grading or other soil disturbances, or construction shall take place prior to the issuance of a letter from the Ministry of Tourism, Culture and Sport confirming that an archaeological assessment has been completed to the satisfaction of the Ministry and that all archaeological resource concerns have met licensing and resource conservation requirements. Adverse impacts to any significant archaeological resources found on the site shall be mitigated through preservation or resource removal and documentation.

22. Should archaeological resources be discovered during construction, the applicant shall immediately cease construction and undertake an archaeological assessment and mitigation by a licensed archaeologist. Adverse impacts to any significant archaeological resources found on the site shall be mitigated through preservation or resource removal and documentation. No further excavation, grading or other soil disturbances or construction, shall take place within 50 metres of the location where the resource was found prior to the issuance of a letter from the Ministry of Tourism, Culture and Sport confirming that all archaeological resource concerns have met licensing and resource conservation requirements.

23. That no vegetation clearing shall occur between May 1st and July 31st. In the event that vegetation clearing is required, surveys will be undertaken by a qualified biologist to identify the presence/absence of nesting birds within the areas to be cleared. If an active next is located, a designated buffer will be

established in consultation with NEC staff and marked off in the field within which no construction activity will be allowed while the nest is active.

24. The detailed design drawings shall identify that construction activities shall be avoided in all identified amphibian breeding ponds and that site disturbance shall be minimized in their vicinity. Alterations to surface and drainage patterns in the vicinity of the breeding ponds shall be avoided. Additionally construction activities adjacent to breeding ponds shall occur, to the extent reasonably practical, outside of amphibian breeding months (April – June).

25. Should any Species at Risk be identified prior to or during construction, the Ministry of Natural Resources and the Niagara Escarpment Commission shall be notified.

26. **Prior to any development including site disturbance or site preparation**, the boundaries of all wetlands within 30 m of the proposed construction area will be staked in the field by a qualified ecologist to assist with the demarcation of the construction area, to ensure construction activities avoid these sensitive areas and to assist with the proper field installation of erosion and sediment controls. These barriers shall be regularly monitored and properly maintained during and following construction until soils in the construction area are re-stabilized with vegetation.

27. All material storage or staging areas and vehicle re-fueling shall be avoided in the NEP area. If necessary, p**rior to any development including site disturbance or site preparation**, these areas shall be identified and approved by the Niagara Escarpment Commission and shall be located a minimum of 30 metres from all wetlands, water bodies and wooded areas.

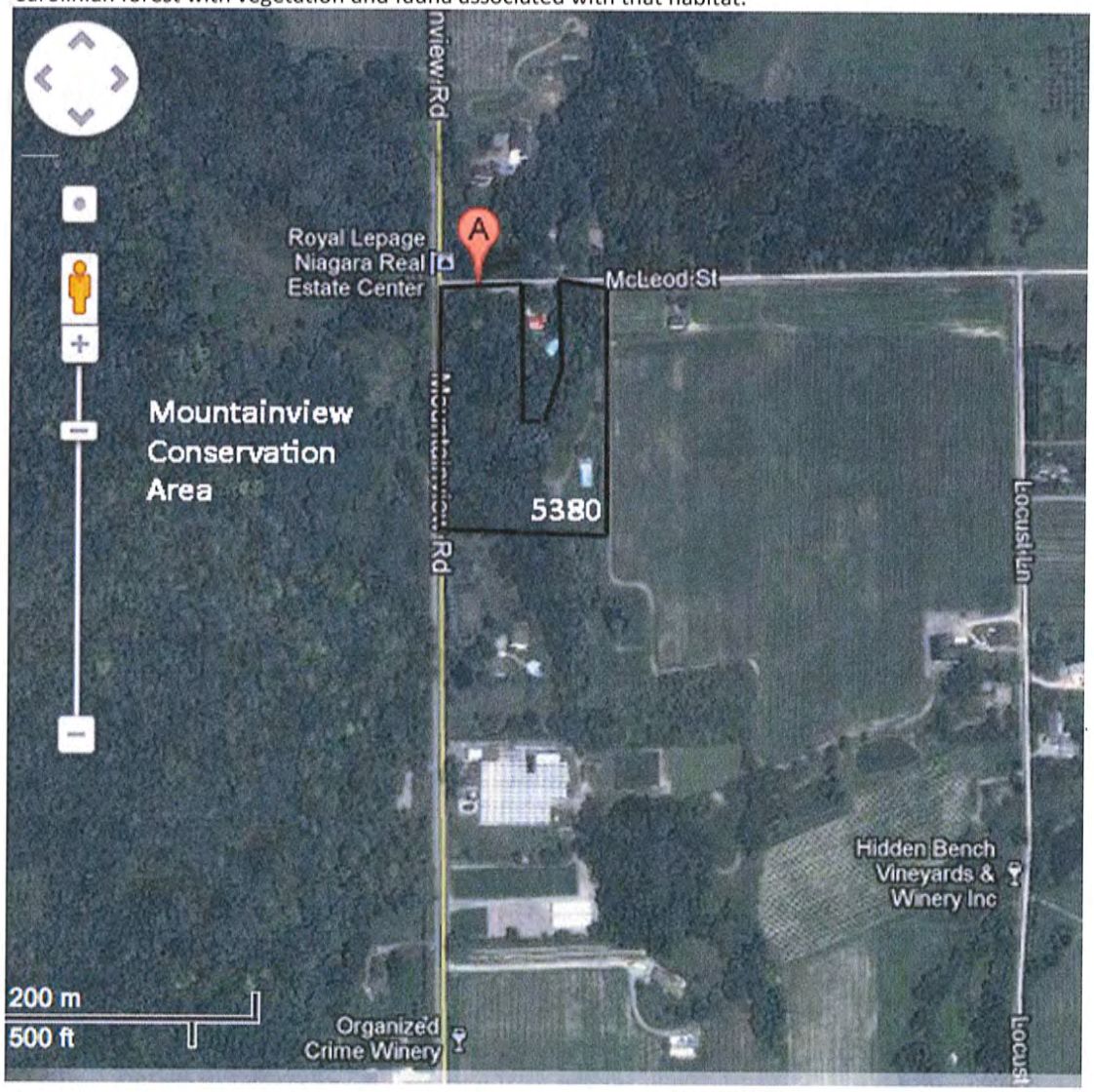
28. This conditional approval shall be void if a Development Permit is not issued within three (3) years of the date of confirmation of the Commission's decision.

January 10, 2013

Commissioners
Niagara Escarpment Commission

This letter is intended to register our opinion regarding the high voltage transmission line proposed by the Niagara Region Wind Corporation to be constructed on Mountainview Road in the Town of Lincoln.

Located at 5380 McLeod Street, our property is on the southeast corner of Mountainview Road and McLeod Street in the Town of Lincoln. It is located adjacent to Mountainview Conservation Area. The property is 4.2 acres, of which 2.76 acres is designated as Escarpment Natural Area. The lot length on Mountainview Road is 174 meters (572 feet). The land features a steep slope of 35%, descending from the Mountainview Road right-of-way to a stream at the base of the slope. The natural area includes a Carolinian forest with vegetation and fauna associated with that habitat.



Please be advised that **we support the burial** of the 115 kV high voltage transmission line on Mountainview Road. **We do not support an aboveground** transmission line. An aboveground transmission line would have a detrimental environmental impact on the Niagara Escarpment and negative effect on the rural and cultural heritage of the area. It will have damaging health effects on the residents and compromise the slope, watercourses and indigenous species of the Carolinian forest. The impact on local businesses and tourism will cause harm to the local economy.

One of the positive features we considered when we purchased this property, was that it was protected from development through the NEP (supported by the Green Belt Act). In developing and improving our property and investment, we have faithfully followed the rules of the NEP. We have employed arborists to manage our forest. We have complied with the Niagara Peninsula Conservation Authority's (NPCA) rules in altering our site. We have spent many hours removing invasive, non-indigenous plants from our forest (i.e. garlic mustard). We plan to remove two existing wells on our property to improve ground water quality as recommended by the NPCA. We are also planning on returning approximately one-half acre of lawn area to woodland by planting indigenous trees.

When we bought this property in 2006, we assumed the responsibility for it's stewardship as private landowners owning part of a UNESCO World Biosphere Reserve, part of the Niagara Escarpment, and part of The Green Belt. Since assuming this responsibility, we have invested heavily in improving the property and building an artist's studio and workshop. We plan to further develop the property with renovations and an addition to the existing house.

While we would have preferred the transmission line not cross the Escarpment in any way, shape or form, we are now resolved to accepting the transmission line if, and only if, it is buried. Niagara Region Wind Corporation has indicated that they intend on burying the transmission line under the paved portion of the roadway. This solution reduces many of the negative impacts that construction adjacent to the roadway would have because the construction occurs in land already previously disturbed during the original construction of the road.

In the foregoing, we have indicated the issues of importance to us. We identify, with a brief description, the issues with an aboveground transmission line and if and how the underground line reduces or eliminates these issues.

Health Concerns

- Transmission lines produce both electric fields and magnetic fields. Burying the high voltage line underground eliminates the electric field. The magnetic field is not eliminated, but its effects are reduced to a narrower range.

- Evidence exists that childhood leukaemia can be caused by EMF: **Reduced.**

- Depression and suicide are possibly caused by EMF, but not definitively proven: **Reduced.**

- Lung cancer and skin cancer can result from the combination of corona ion emissions from electric fields and pollution near aboveground high voltage lines. Electrically charged particles attract pollution particles, which lodge deep in the lungs and on the skin: **Eliminated.**

- Electric field can disrupt medical implants (i.e. pacemakers): **Eliminated.**

Safety Concerns

- Electrostatic induction causing "micro shocks" to people riding bicycles or walking with rubber boots in the vicinity of power lines: **Eliminated.**
- Electrostatic induction energizing metal fences and metal wires in vineyards and creating a hazard to farm workers and residents: **Eliminated.**
- Electric field causing stray voltage and sparks resulting in vehicle accidents and fires during fueling of vehicles: **Eliminated.**
- Aircraft collisions: **Eliminated.**
- Severe weather dangers from fallen wires resulting from high winds, ice storms and tornadoes: **Eliminated.**
- Traffic accidents and collisions with transmission towers resulting in fires and hazardous situations: **Eliminated.**

Visual Concerns

- Towers and lines have a negative industrial appearance: **Eliminated.**
- Towers and lines spoil the sight lines of the Escarpment. Brow and tree canopy are negatively impacted: **Eliminated.**
- Towers and lines spoil the vistas of Lake Ontario and Toronto: **Eliminated.**
- Other power and telephone lines could be included in the underground trench: **Improvement.**

Agricultural Concerns

- Electric field can (some evidence exists) cause a drop in crop yields, which have a detrimental effect on fruit and grape crops: **Eliminated.**
- Electric field causing micro shocks to bees: **Eliminated.**
- Electric field energizing of metal fences and vineyard wires a danger to workers and animals: **Eliminated.**

Flora and Fauna Concerns

- Electric field can cause micro shocks to native animals: **Eliminated.**
- Electric field can cause bird and bat electrocutions: **Eliminated.**

- Avian collisions: **Eliminated**.
- Annual vegetation removal in right-of-way: **Eliminated.**
- Amphibians/reptiles disruption to habitat: **Reduced.**
- Removal of vegetation during construction: **Reduced**.
- Forest fires due to stray voltage, sparks, downed wires due to storms: **Eliminated.**

Environmental Concerns

- Erosion to slopes: **Reduced**.
- Corona noise and light: **Eliminated.**
- Corona radio interference: **Eliminated.**
- Corona ozone odour: **Eliminated**.
- Corona (drying of vegetation) effect on canopy: **Eliminated.**
- Concerns for water table and watercourse contamination: **Reduced.**
- Objectives of the Green Belt Act. "5.(j) to ensure that the development of transportation and infrastructure proceeds in an environmentally sensitive manner": **Satisfied.**
- Objectives of the Ontario Environmental Bill of Rights. "Purposes of Act 2(2)5. The identification, protection and conservation of ecologically sensitive areas or processes. 1993, c. 28, s. 2 (2)." **Satisfied.**

Economic Concerns

- Concern for drop in property values/tax base: **Eliminated.**
- Loss of natural beauty of the area causes loss in tourism traffic: **Eliminated.**
- Objectives of Niagara Region Economic Development and Tourism Policies for the Niagara Wine Country: **Satisfied.**

Niagara Escarpment Plan Policies

- Niagara Escarpment Plan 2.15.1 a) "Blasting, grading and tree removal should be minimized where possible through realignment and utilization of devices such as curbs and gutters, retaining walls and tree wells." **Reduced or eliminated.**

- Niagara Escarpment Plan 2.15.1 b) "Finished slopes should be graded to a 2 to 1 slope minimum and planted; large cuts should be terraced to minimize surface erosion and slope failure." **Reduced or eliminated.**

- Niagara Escarpment Plan 2.15.1 c) "Site rehabilitation should use native species of vegetation and blend into the surrounding landscape." **Reduced or eliminated.**

- Niagara Escarpment Plan 2.15.1 d) "Vegetation screens should be used where feasible." **Reduced or eliminated.**

- Niagara Escarpment Plan 2.15.1 e) "Transportation and utility structures should be sited and designed to minimize visual impact." **Achieved.**

- Niagara Escarpment Plan 2.15.1 f) "A development setback from the Escarpment brow for utility structures will be established by the implementing authority to minimize visual impacts." (Environmental Protection Act, Ontario Regulation 359/09 s. 38.1 requires 120 m setback from a conservation area.) **Intent achieved.**

- Niagara Escarpment Plan 2.15.1 g) "Transmission towers (e.g. microwave and television towers) should be located in areas where similar facilities exist provided the area's carrying capacity is not exceeded." **Not necessary.**

- Niagara Escarpment Plan 2.15.1 h) "The visual impact of utility structures and service roads should be minimized by siting, structural design, colouration and landscape planting in order to minimize the impact on the Escarpment environment." **Achieved.**

- Niagara Escarpment Plan 2.15.1 i) "Transportation and utility facilities should be sited and designed to avoid or minimize the impacts on parks, open space and the Bruce Trail. Where Trail impacts cannot be avoided the objective will be to provide for an acceptable, safe alternative." **Achieved.**

- Niagara Escarpment Plan 2.15.2 "New transportation and utility facilities should avoid Escarpment Natural Areas." **Intent achieved.**

- Niagara Escarpment Plan 2.15.3 "Agricultural areas, especially prime agricultural and specialty crop areas should be avoided where possible and protected when new transportation and utility facilities are being considered and developed." **Achieved.**

We have given considerable research and thought to this matter and can provide published reports and studies to substantiate our concerns, should you require them. Please contact us for any questions you may have.

Sincerely,

Marcia Christie
John Christie
5380 McLeod Street
Beamsville, Ontario L0R 1B2
christie.marcia@sypatico.ca

Hydro One Networks Inc.
483 Bay Street
15th Floor North Tower
Toronto, Ontario M5G 2P5
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Tel: 416-345-5390
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John Sabiston
Manager, Transmission Planning
Transmission System Development Division

November 22. 2012

Mr. Harald M. Thiel
Mountainview Niagara Escarpment Community Association
4152 Locust Lane
Beamsville, ON L0R 1B2

Dear Mr. Thiel:

Further to my letter to you dated October 3, 2012, we mentioned that "Hydro One will undertake studies to assess the feasibility and effectiveness of shifting load from lines south of the escarpment to lines north of the escarpment, to accommodate the 230 MW output of the proposed wind farm". Please find enclosed the feasibility study as promised.

If you have any questions or concerns, please contact me and I trust that this information helpful and useful.

Sincerely,

John Sabiston
Manager, Transmission Planning

Encl.

cc Mr. Mervin Croghan, Chairman and CEO
Niagara Region Wind Corporation

Ms. Nancy Mott-Allen, Senior Strategic Advisor
Niagara Escarpment Commission

Ms. Ann Louise Heron, Chief Administrative Officer
Town of Lincoln

hydro one

483 Bay St., Toronto, Ontario M5G 2P5

John Sabiston,
Manager – Transmission Planning
Transmission System Development

November 13th, 2012

Re: Letter from Mountainview Niagara Escarpment Community Association

Feasibility Report

Background

The Niagara Region Wind Corporation (NRWC) is proposing to connect a 230 MW wind farm located in the Niagara Peninsula. The NRWC's Feed-In Tariff (FIT) contract with the Ontario Power Authority (OPA) designates a 115 kV connection to the grid at Hydro One's Beach Transformer Station (Beach TS) in Hamilton. The proposed solution to reach Beach TS – and subsequently fulfill the contract – is the construction of a new 115 kV circuit by NRWC to connect its substation northward, across the Niagara Escarpment to the idle Q5G transmission line, and utilize Q5G to access Beach TS.

The Niagara Escarpment Commission, during its hearing on June 21st, 2012, passed a motion requiring a third-party peer review of the proposed solution. A further requirement of the approved motion is to "identify options that do not require the installation of a power line down the face of the escarpment" by the peer review.

Mr. Harald Thiel and the Mountainview Niagara Escarpment Community Association has proposed the possibility of shifting or reducing the supply flow from the south of the escarpment to increase the flow north of the escarpment at either St. John's Valley or Rosedene Junctions. This could eliminate the need to connect to the Q5G circuit north of the escarpment. The following information is intended to assist in rendering the required peer view as complete as possible.

Feasibility Study

Scope

Hydro One will undertake a feasibility study to identify the possibility of shifting the supply flow from the south of the escarpment to the north of the escarpment to accommodate the 230 MW output of the proposed wind farm. If successful, this could negate the construction of a new HV line across the face of the Niagara Escarpment. This study will:

- Assess the current configuration of the HV lines in the Niagara Peninsula.
- Verify the practicability of shifting line flows at either St. John's Valley or Rosedene Junctions.
- Quantify the load shift required to accommodate the wind farm south of the escarpment.
- Identify significant issues that may occur due to shifting the current load.

A load flow study will be executed to determine the required load shift to accommodate connecting the NRWC wind farm south of the escarpment. This study will examine reconfiguring Hamilton-area circuits and transferring load from the south to the north, thus freeing capacity along the south to accommodate the wind farm.

Findings

The main transmission corridor in the Niagara Peninsula, referred to as the Queenston Flow West (QFW) interface, is composed of five 230 kV circuits that run from Beck #2 TS to Middleport TS, Beach TS and Burlington TS. This corridor is heavily utilized due to the zone's generation, primarily from the two Sir Adam Beck generating stations, and imports on the NY Niagara interconnection. Approximately 400 MW of the zone's load is located east of St. John's Valley and Rosedene junctions. There are also 115 kV transmission circuits both north and south of the escarpment. These are used to supply local load and to connect generation located at Decew Falls GS and part of the Beck complex. These circuits are not connected to the Hamilton load centre for technical reasons.[1]

All of the QFW circuits, as well as most of the 115 kV circuits, are located south of the escarpment. With the exception of the circuits that supply Niagara-on-the-Lake and St. Catharines, the only circuit north of the escarpment is Q2AH – a long radial 115 kV line. In theory, additional load in the Hamilton area can be connected to the Q2AH so that the output of the NRWC will be utilized locally.

To quantify the load shift, it must be hypothetically assumed that Q2AH can be forced to operate in its closed configuration. This will allow industrial loads west of Beach TS to be supplied via Q2AH by closing Q2AH between Beamsville and Winona and by disconnecting the three Beach TS 115/230 kV auto transformers. This configuration changes the load supply from a double circuit supply to a single radial circuit

[1] Connecting the Niagara 115 kV circuits to the Hamilton load centre results in the following: a direct violation of Q2AH/ Winona TS Operating Restriction, affecting the Allanburg and Beck's remote protection operations; it creates a circular flow from Niagara to Hamilton to Winona, reducing the efficiency of the system in the area; it increases the susceptibility to faults for customers supplied by the circuits; it creates possible overloading and voltage support concerns in the Allanburg area.

The study concludes that approximately 120 MW of additional load can be transferred in this arrangement, which is not enough to offset the 230 MW of generation from NRWC.

Even though approximately 120 MW of load can be transferred to the single radial circuit, this is not a feasible or recommended practice. The security and reliability of power to the additional industrial loads, from a double circuit supply to a single circuit supply, is greatly compromised. In addition, the fault susceptibility for all load customers on the circuit is significantly increased.

Conclusions

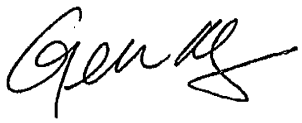
1. The QFW interface circuits south of the escarpment are heavily utilized and cannot accommodate the 230 MW output of the NRWC wind farm.
2. The only HV circuit north of the escarpment, Q2AH, is operated in a normally-open configuration so that Winona TS and Beamsville TS are both supplied on a single radial circuit to reduce fault susceptibility, improve line utilization and customer reliability.
3. The only means of shifting load to Q2AH is to operate it in a normally closed configuration, which violates operating restrictions, protection schemes and reduces the efficiently and security of the area.
4. A maximum of 120 MW of industrial Hamilton load can be supplied by Q2AH before continuous voltage requirements are violated and the area becomes more susceptible to a voltage stability issues. This does not free enough capacity on the QFW interface to accommodate the 230 MW wind farm.

Therefore, the possibility of shifting or reducing the supply flow from the south of the escarpment to increase the flow north of the escarpment at either St. John's Valley or Rosedene Junctions is not a feasible solution to negate the construction of a 115 kV line across the face of the Niagara Escarpment.

Prepared by:

Mitchell Dellandrea
Engineering Grad
Transmission System Development

Approved by:



Gene Ng, P.Eng
Network Management Engineer
Transmission System Development

MORRISON HERSHFIELD

January 11, 2013

Nancy Mott-Allen
Senior Strategic Advisor
Niagara Escarpment Commission
232 Guelph Street
Georgetown, Ontario, L7G 4B1
Email: Nancy.Mott-Allen@ontario.ca

Re: Peer Review for NRWC Transmission Line
Development Permit Application File No.: N/S/2012-2013/191

Project Overview/Background

The Niagara Region Wind Corporation (NRWC) has applied to the Niagara Escarpment Commission (NEC) for a Development Permit to authorize the construction of a below grade 115 kV transmission line through the Niagara Escarpment Plan Area. The purpose of the transmission line is to connect the electricity generated by the proposed Niagara Region Wind Corporation's (NRWC) wind farm, which is located south of the Niagara Escarpment Plan (NEP) Area to the Independent Electricity Systems Operator (IESO) controlled grid for further distribution. The proposed wind farm has a maximum installed nameplate capacity of 230 MW and power generated will connect to the grid at a voltage of 115 kV.

The Point of Connection to the IESO grid has been identified to be the Beach Transformer Station (Beach TS) in Hamilton, which is located north of the NEP Area. This Point of Connection is incorporated into NRWC's Feed-in-Tariff (FIT) contract with the Ontario Power Authority (OPA).

There are existing Hydro One Network Inc. (HONI) 115 kV transmission lines north and south of the NEP Area which are connected to the Beach TS. However, the existing lines south of the NEP Area are heavily utilized and cannot accommodate the capacity of the wind farm. A further study was performed by HONI to investigate shifting the loads from these lines to those north of the NEP Area so as to enable the NRWC line to tap into the existing ones on the south. The study found that it is not feasible as it will affect the operation, protection and security of the system. Hence the only solution is for the NRWC transmission line to cross the NEP Area to tap into the existing HONI line north of the NEP Area. There is an existing idle line, Q5G, which runs alongside the QEW Highway on its south side available to do so.

A further requirement by the Niagara Escarpment Commission (NEC), the Town of Lincoln and the Mountainview Niagara Escarpment Community Association (MNECA) is that the NRWC transmission line crossing the NEP Area is to be buried underground instead of on poles above ground. The proposed route for the 115 kV transmission line will be contained within the municipal road rights of way along Mountainview Road in the Town of Lincoln. Portions of this transmission line within the Niagara Escarpment Plan area are located between Walker Road and King Street.

Scope of Work

As part of NRWC's Development Permit application to NEC the proponent has submitted a report entitled "Transmission Line For Niagara Region Wind Farm, NEC Development Permit Application Report," (the Report) dated November 14, 2012 and prepared by Stantec Consulting Ltd. Subsequently, NEC staff has been authorized by the NEC to retain a consultant, at the expense of NRWC, to peer review the Report and provide advice to the NEC as further input to the evaluation of the Development Permit application.

On behalf of the Niagara Escarpment Commission, Morrison Hershfield (MH) undertook the following as part of the peer review:

- The assessment of the adequacy of evaluation methods used by the Proponent's agent (Stantec Consulting Ltd.) of different alternative routes for the proposed transmission line;
- Confirmation that supporting documentation provides sufficient information to assist in the selection of the preferred alternative route; and
- Ensure that electrical industry practices were adhered to.

MH has restricted the peer review of work completed by the Proponent to Section 3.0 and Section 4.0 of the above referenced report in accordance with the Niagara Escarpment Commission's direction. In undertaking the review, MH took the following components of the agent's description into close consideration:

1. The objective outlined for the selection of the preferred corridor.
2. The rationale used to select the three (3) corridor options.
3. The methodology used by the Proponent's agent to evaluate the alternative corridors including the presentation of the evaluation results in Appendix C of the Report and the information documented in support of the evaluation.
4. The objectives outlined for the selection of the preferred route for the transmission line.
5. The identification of the six alternative routes for the transmission line.
6. The methodology used by the agent to evaluate the six alternative routes including the presentation of the evaluation results in Appendix C of the Report and the summaries of the evaluation results presented in Section 3.2.4 of the Report.
7. The identification and evaluation of alternative design & construction options including the methodology used in the evaluation.

MH examined the Report's text as well as the figures, tables, matrices and illustrations appended to the Report to complete our review. Our comments regarding each of the components of the Report listed above are outlined in the following sections followed by our overall conclusions and recommendations for consideration by the Niagara Escarpment Commission.

Peer Review Findings

Assessment of the Adequacy of Methods Implemented and Confirmation of Supporting Documentation in the Selection of the Preferred Alternative

Objective for the Selection of the Preferred Corridor:

The objective provided by the Proponent for the selection of a preferred Corridor within which alternative routes for the proposed transmission line would be identified is outlined on page 3.1 of the Report. This statement of intent for this first element of the subject Study is considered to be compliant with the Renewable Energy Approval (REA) process protocols and appropriate for the purposes of identifying a preferred route for a transmission line.

The Selection of Alternative Corridors or Corridor Options:

The rationale used to identify the three corridor options are provided on page 3.2 of the Report in Subsection 3.1.3 Results. The Report states that the alternative corridors were delineated so that they end at a "reasonable distance from the Beach transformer station" in Hamilton and exhibit "high potential" to make use of existing road rights of way. MH considers this rationale to be reasonable and consistent with the stated objective of minimizing environmental impact, social disturbance and costs.

The Methodology Used to Evaluate Alternative Corridors:

The alternative corridors were evaluated on the basis of five (5) criteria that are outlined in Section 3.1.2 of the Report. These criteria were used to undertake a comparative evaluation of the alternatives so as to identify a preferred alternative that would, on balance: 1) minimize the overall length of the corridor; 2) maximize the potential to utilize existing road rights of way; 3) minimize potential aesthetic impacts by avoiding areas identified as outstanding, very attractive, attractive and average in a Study completed by the NEC in 1976 and titled "Landscape Evaluation Study"; 4) avoid urban and/or built-up areas; and 5) minimize spatial constraints at the Connection Point with the HONI transmission to ensure that alternative tap-in locations are available. The results of the comparative evaluation are presented in Section 3.1.3 of the Report. MH considers that the identified criteria and their application, together with the supporting information, to be reasonable and appropriate for the identification of a preferred alternative corridor subject to the following comments:

1. It may be more meaningful if criterion 3 would have been applied using more recent information such as if the Proponent had conducted a ground-truthing to confirm that the information had either remained valid or that a material change had occurred since the 1976 study was completed by the NEC. There is a question as to whether the results of the application of this specific criterion would change if more recent information was used and we recommend that the information used in its application

be updated. Notwithstanding our recommendation for updating the information, MH is of the opinion that the outcome of the comparative evaluation of alternative corridors would likely continue to identify Corridor 3 as the preferred alternative.

2. The matrices for the evaluation of Alternative Corridors are provided in Table C1 in Appendix C to the Report. There are inconsistencies between the information contained in these matrices and that presented in Section 3.1 of the Report. For example, only three out of the five identified criteria presented in the Report text are included in Table C1. Criteria 2 and 3 are missing either in whole or in part. Further, the criteria used to undertake the comparative evaluation of the alternative routes are included in Table C1. Finally, there is a Corridor 4 included in Table C1 that is not mentioned at all in the body of the Report. It is our opinion that, after examination of the results outlined in Table C1 as compared to the results documented in Section 3.1 of the Report, there are no fundamental differences in the documented results between these two sources. We recommend, however, that these two sources be consistent.

Objectives for the Selection of the Preferred Route for the Transmission Line:

The routing objectives for the identification and evaluation of a reasonable number of alternative routes are presented in Section 3.2.1 of the Report. These objectives form the basis for identifying the criteria that are used in the comparative evaluation of the alternative routes for the transmission line. Morrison Hershfield is of the opinion that this list presents a reasonable and appropriate set of objectives upon which to undertake the comparative evaluation of alternative routes.

The Identification of Alternative Routes:

The Proponent identified four (4) alternative routes for the proposed transmission line. Two additional routes were identified following consultations with the public, community groups and the NEC. These alternative routes are clearly depicted on figures 4, 5, 6 and 7 that are appended to the Report. MH is of the opinion that these six potential routes form a reasonable list of alternatives for the purpose of undertaking a comparative evaluation to identify a preferred alternative route for the proposed transmission line.

The Evaluation Methodology to Identify a Preferred Alternative Route:

The results of the comparative evaluation of alternative routes for the transmission line, including: the descriptions of the six alternatives; the summaries of the results of the application of the criteria in each of the identified categories; and the presentation of the preferred route are provided in Sections 3.2.4 and 3.2.5 of the Report. The Route Evaluation Matrices are provided in Table C2 in Appendix C to the Report. Morrison Hershfield is of the opinion that the identified

criteria and their application together with the supporting information are reasonable and appropriate for the identification of a preferred alternative route subject to following comment:

3. The criterion under Socio-economic considerations related to the classification of the aesthetics of areas within the NEP is based on the study completed by the NEC in 1976. As stated in Comment 1, above, it may be more meaningful if criterion 3 would have been applied using more recent information such as if the Proponent had conducted a ground-truthing to confirm that the information had either remained valid or that a material change had occurred within the 36-year period since the NEC study was completed. There is a question as to whether the results of the application of this specific criterion would change if more recent information was used and we recommend that the information used in its application be improved. Notwithstanding our recommendation for improving the information, Morrison Hershfield is of the opinion that the outcome of the comparative evaluation of alternative routes would continue to identify Route 2 as the preferred alternative.

Alternative Design and Construction Options:

This component is documented in Section 4.0 of the Report. It is stated on page 4.5 of the Report that even though the construction of the preferred design for the transmission line entails the above ground installation of the transmission line and local distribution system on a set of new joint-use poles, the Proponent agreed to bury the section of the preferred route that crosses the NEP area. This decision was reached in response to concerns raised by the NEC, the Mountainview Niagara Escarpment Community Association (MNECA) and the Town of Lincoln subsequent to the completion of the evaluation of transmission line design options by the Proponent. Morrison Hershfield has not, therefore, included comments concerning the adequacy of the evaluation methods used by the Proponent for the alternative design options from a REA planning process perspective.

Electrical Evaluation of Industry Best Practices

Transmission Line Corridor Options:

Three (3) corridor options are identified in the report. Electrical criteria indicated in the report for the selection of the corridor are:

- Length of the corridor which affects the construction cost and energy losses
- Potential to use existing road right of ways
- Avoid urban and/or built-up areas to the extent practical
- Available space at tap-in point for location of equipment and access road.

These criteria are consistent with electrical industry practices.

The evaluation used to identify Corridor No. 3, shortest length, numerous road-right-of-ways to utilize for crossing the NEP Area, primary rural area with much less density of residences and business, and multiple available locations for tap-in, as the preferred corridor, are consistent with the selection criteria.

Transmission Line Alternative Routes:

Six (6) Alternative Routes are identified in the Report. The criteria indicated in the Report for the evaluation and selection of the preferred route are in Section 3.2.1. These criteria are also consistent with electrical industry practices.

The installation of an overhead 115 kV transmission line entirely within a municipal road rights-of-way is unusual as overhead transmission lines are typically installed within their own rights-of-way, however underground installations are acceptable and standard electrical industry practices.

Design and Construction Options:

Four (4) design and construction options are identified in the report. These are:

- Joint use poles
- Dual pole structures
- Underground transmission line
- Pole for new transmission line and bury local distribution lines.

The installation of the transmission line with distribution line on joint-use poles in Option 1 is not a usual electrical industry practice. Transmission and distribution lines are normally installed on separate poles for safety and security reasons. The Report however does mention that approval will be required by the local distribution company (LDC) for this option.

Installation of the transmission line on a separate pole as identified in Option 2 and installing the transmission line underground are standard electrical industry practices.

In Option 4, as mentioned previously, the installation of an overhead transmission line within municipal rights-of-way is not a standard industry practice.

The evaluation of the options based on cost, constructability and maintenance, environmental impacts, and socio-economic impacts are valid and adequate.

The following is noted in the evaluation:

- Various references to the underground installation use the terms concrete conduit and a conduit. The actual installation will be a concrete encased duct bank which consists of a number of rigid PVC ducts/conduits encased in concrete as shown in Figure 2 of the

Report. The installation cannot be accomplished via trenchless horizontal directional drilling as indicated in Sections 4.3.2 and 4.3.3 of the Report.

- Section 7.0 of Appendix E recommends the use of steel poles for the proposed transmission line. There should however, be a comparison made between concrete, steel and wood poles. Also in Section 4.3.4, contrary to Section 7.0, wood poles are proposed.

- We recommend that further explanations be provided on the number of cable runs, pole configuration, pole height, conductor material shown in Figure 2 and the visual assessment in Appendix E.

- In Table 4.1, it is recommended that ranking 3 should be less preferred instead of no preference. In section 4.3.2, it appears from the evaluation that the least preferred option in terms of constructability and maintenance is Option 4, not Option 3 as identified in the Table.

- In Section 4.3.4, there is no comparison made on disturbance during construction and maintenance for the various options. If the underground duct bank is to be constructed under the paved area of the road allowance as shown in Figure 2, it may cause a disruption to traffic.

- We recommend that Figure 2 show the location of the underground concrete chambers that will be required for pulling/splicing of the cables. In addition, spare ducts may need to be provided in the event that any of the cables need to be replaced and the duct it is in is blocked or collapsed.

Opinions and Recommendations

Morrison Hershfield is of the opinion that the evaluation methods used by the Proponent are adequate and that the supporting information is sufficient for the selection of a preferred alternative corridor subject to the following comments:

1. It may be more meaningful if criterion 3 would have been applied using more recent information such as if the Proponent had conducted a ground-truthing to confirm that the information had either remained valid or that a material change had occurred since the 1976 study was completed by the NEC. There is a question as to whether the results of the application of this specific criterion would change if more recent information was used and we recommend that the information used in its application be updated. Notwithstanding our recommendation for updating the information, MH is of the opinion that the outcome of the comparative evaluation of alternative corridors would likely continue to identify Corridor 3 as the preferred alternative.

2. The matrices for the evaluation of Alternative Corridors are provided in Table C1 in Appendix C to the Report. There are inconsistencies between the information contained in these matrices and that presented in Section 3.1 of the Report. For example, only three out of the five identified criteria presented in the Report text are included in Table C1. Criteria 2 and 3 are missing either in whole or in part. Further, the criteria used to undertake the comparative evaluation of the alternative routes are included in Table C1. Finally, there is a Corridor 4 included in Table C1 that is not mentioned at all in the body of the Report. It is our opinion that, after examination of the results outlined in Table C1 as compared to the results documented in Section 3.1 of the Report, there are no fundamental differences in the documented results between these two sources. We recommend, however, that these two sources be consistent.

Morrison Hershfield is of the opinion that the evaluation methods used by the Proponent is adequate and that the supporting information is sufficient for the selection of a preferred alternative route subject to the following comments:

1. The criterion under Socio-economic considerations related to the classification of the aesthetics of areas within the NEP is based on the study completed by the NEC in 1976. It may be more meaningful if criterion 3 would have been applied using more recent information such as if the Proponent had conducted a ground-truthing to confirm that the information had either remained valid or that a material change had occurred within the 36-year period since the NEC study was completed. There is a question as to whether the results of the application of this specific criterion would change if more recent information was used and we recommend that the information used in its application be improved. Notwithstanding our recommendation for improving the information, Morrison Hershfield is of the opinion that the outcome of the comparative evaluation of alternative routes would likely continue to identify Route 2 as the preferred alternative.

MH is of the opinion that the installation of an underground transmission line within municipal rights-of-way is a standard industry practice, however, we provide the following comments:

1. In Section 4.3.4, there is no comparison made on disturbance during construction and maintenance for the various options. If the underground duct bank is to be constructed under the paved area of the road allowance as shown in Figure 2, it may cause disruption to traffic during construction.

2. We recommend that Figure 2 show the location of the underground concrete chambers that will be required for pulling/splicing of the cables. In addition, spare ducts may need to be provided in the event that any of the cables need to be replaced and the duct it is in is blocked or collapsed.

3. Various references to the underground installation use the terms concrete conduit and a conduit. The actual installation will be a concrete encased duct bank which consists of a number of rigid PVC ducts/conduits encased in concrete as shown in Figure 2 of the Report. If the transmission line is to be encased in concrete the entire length of the preferred alternative route we question how trenchless horizontal directional drilling could be used in this application as indicated in Section 4.3.2 and 4.3.3 of the Report. Further details on construction methodology should be provided by the Proponent.

Should you have any questions or wish to discuss the contents of this letter in further detail please contact us.

Yours Truly,

Morrison Hershfield Limited

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