Parks Canada Parcs Canada

May 10, 2010

Allan Ehrlich
Senior Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
#200 Scotia Centre
5102 – 50th Avenue
Yellowknife, NT X1A 2N7 Via email: aehrlich@reviewboard.ca

Dear Mr. Ehrlich:

Re: EA0708-007 Taltson Hydroelectric Expansion Project:
Parks Canada Final Submission

Parks Canada is pleased to provide the Mackenzie Valley Environmental Impact Review Board with our final submission regarding the Dezé Energy Taltson Hydroelectric Expansion Project.

If you have any questions, please feel free to contact Wendy Botkin at (204) 984-1152.

Sincerely,

Katherine Cumming
A/ Resource Conservation Manager
Parks Canada

cc. Gordon Hamre, Sr. Advisor, Northern Parks, Parks Canada

Canada

Parks Canada Agency
Final Submission:
Mackenzie Valley Review Board EA0708-007
Taltson Hydroelectric Expansion Project – Dezé Energy Corp.
May 10, 2010

Introduction

Parks Canada Agency's mandate states:

> On behalf of the people of Canada, we protect and present nationally significant examples of Canada's natural and cultural heritage and foster public understanding, appreciation and enjoyment in ways that ensure their ecological and commemorative integrity for present and future generations.

Parks Canada has an interest in the environmental assessment of the proposed Taltson Hydroelectric Expansion Project by Dezé Energy Corporation (Dezé) because the transmission line component of the proposed development crosses the land withdrawals for the proposed Thaidene Nene National Park Reserve on the East Arm of Great Slave Lake.

Parks Canada's role in this assessment is as responsible minister and expert advisor. Our initial technical report (December 2009) focused on issues where the proposed transmission line associated with the Taltson Hydroelectric Development may affect the:

- Ecological integrity of the national park reserve on the East Arm of Great Slave Lake, at such time as it may be established, and
- Aesthetic and wilderness experience of visitors within the proposed park study area.

Our final submission supplements our initial technical report with respect to the proposed transmission line route (Inland Crossing of the Lockhart River) and the subsequent information on this route provided by Dezé on April 26, 2010. Parks Canada has also considered the Reliance Adjustment route (marine cable from Maufelly Point to Fairchild Point). Although not the proposed option, this is still before the Board as a potential mitigation measure for adverse cultural and spiritual impacts. This supplementary report will consider potential effects to:

- Visitor aesthetic and wilderness experience,
- Commemorative integrity of Old Fort Reliance National Historic Site.

In addition to the effects analysis for the two above-noted routes, our submission will also briefly discuss:

- Current status on the Thaidene Nene National Park Reserve establishment process,
- Wilderness experience values.

Thaidene Nene National Park Reserve Establishment Process: Current Status

As noted in our earlier submission, Canada has identified land for a study area for the establishment of a national park reserve on the East Arm of Great Slave Lake. Through withdrawal orders in 1970 and in 2007, lands were removed from consideration for disposal, with the exception of a disposition of "interests in land to be used for transmission lines and ancillary facilities for power generated at any hydroelectric project on the Taltson River " in the 2007 interim land withdrawal.

Parks Canada, in cooperation with its partners and stakeholders, continues to pursue the development of a national park reserve on the East Arm of Great Slave Lake. On April 7th, 2010, the Lutsel K'e Dene First Nation and Parks Canada signed a *Framework Agreement to Negotiate Protection of Thaidene Nene*, agreeing to work to negotiate a park establishment agreement. An establishment agreement, along with other measures that may be required by Canada, will allow the Minister to recommend to Parliament protection of the lands and waters under the *Canada National Parks Act.* Parks Canada and the Northwest Territory Métis Nation are pursuing a similar framework agreement.

The proposed route for the transmission line bisects the land identified in the Framework Agreement. Upon establishment of a national park reserve, such a transmission line would be located within the park reserve, and would be subject to any applicable requirements of the *Canada National Parks Act* and Regulations pursuant to the *Act.* The *Act* does not allow new power lines in national parks. If a new national park reserve is established before a line is built, only Parliament could make an exception to allow a transmission line to be built.

Wilderness and Aesthetic Experiences and Transmission Line Impacts

Wilderness character is perceptual, and individuals may perceive it differently.[1] There are however, some commonalities in definition, especially in relation to wilderness areas protected within a national park. Valued characteristics of "wilderness" typically include a feeling of solitude[2], a sense that wilderness is "untrammeled" and "free from modern human control or manipulation"; "natural" and "substantially free from the effects of modern civilization"; and "undeveloped", without "permanent improvements or modern human occupation". Wilderness provides the opportunity for people to experience this solitude or sense of unconfined recreation.[3] Many definitions unapologetically appeal to the subjective human response to wilderness; valued wilderness characteristics, even in legislation, are described in language that reaches to inspire, and not simply to inform. The notion of wilderness is often valued even by those who will never directly experience a

specific wilderness for themselves, but who take pleasure in knowing that these resources are protected.[4]

The *Canada National Parks Act* prohibition on new transmission lines is consistent with the key characteristics of wilderness noted above, for a transmission line is an essentially permanent reminder of "human occupation" and "modern human control."

Visual or aesthetic experiences are closely tied to the wilderness experience, for the visitor's experience of the wilderness typically begins with what he or she sees. There are two aspects to evaluate in linking visual experience and visitor's experience:

1) how does the transmission line fit with the rest of what a visitor sees, and
2) how does the transmission line fit with what the visitor *expects* to see in a national park or national historic site.

Adverse impacts are likely if the visual elements are not compatible with the landscape (they don't fit in color, form, line or texture), if they contrast in scale with the landscape, or if they dominate the landscape spatially. [5] Adverse impacts are also likely if the object doesn't fit the visitor's expectation of how a protected area should be preserved and managed. Negative impacts are expected "when lines are visible in areas officially designated for the preservation of scenic values." [6]

Parks Canada and its partners have worked towards a national park reserve on the East Arm of Great Slave Lake for some time. In order to protect and present the Thaidene Nene area as "a nationally significant example of Canada's natural and cultural heritage," it is important to mitigate adverse effects to the wilderness and aesthetic experiences of visitors to the proposed park that may arise from a transmission line in the park.

Specific Comments

Visitor wilderness and aesthetic experience: Viewshed Analyses for Inland Crossing and Reliance Adjustment

Reference: Terms of Reference: Section 5.3.3. *Impacts on Tourism Potential and Wilderness Character*
Letter: *Dezé Energy Response to April 14th Information Requests* (April 26, 2010)

Developer's Information:
Dezé repeated the viewshed analysis for the inland crossing, for points within the study area for the proposed Thaidene Nene National Park Reserve, and added the additional viewpoints provided by Parks Canada in its Information Request (April 8, 2010). The analysis indicated that the transmission line would be visible from the Lockhart River outflow, Old Fort Reliance National Historic Site, and from Great Slave Lake (north of Reliance). The analysis indicated that the transmission line would not be within the line of sight from either end of Pikes Portage, Parry Falls, Tyrrell Falls, or Trophy Lodge. Dezé presented this information in a tabular form (as in the DAR) and graphically, on a map.

Dezé did not conduct a similar viewshed analysis for the Reliance Adjustment, noting that the alignment illustrated in earlier information to the Board was conceptual in nature, and an analysis may produce misleading results. Dezé did note that the Reliance Adjustment would be much more exposed, and the aesthetic effects would likely be greater, even if low profile or low visibility towers were used.

Comments and Analysis:
Parks Canada conducted an analysis focusing on how the transmission line would fit with what a visitor to the park would see. Using the GIS information provided by Dezé in its response to our Information Request, and using agreed-upon points for the additional viewpoints, Parks Canada conducted an analysis of the visibility of the line for the identified route, using similar assumptions (tower height of 25 m; viewer height 2 m). Although Parks Canada understands that the Reliance Adjustment route is conceptual in nature, we conducted a viewshed analysis of this route as well, to further understand the potential effects of this routing relative to the proposed Inland Route. We used the same assumptions regarding tower and viewer height, and assumed an underwater crossing between Maufelly Point and Fairchild Point.

As with the analysis conducted by Dezé, our analysis does not consider the effect of trees in reducing visibility, and is also limited by the detail of the topographic information available for the East Arm area. Nevertheless, we believe the analysis is useful, especially in comparing the two routes.

Results are presented in Table 1, and correspond with Dezé's analysis for the Inland Route with respect to distance to the transmission line, and whether or not the line is visible from the identified viewpoints. Parks Canada's estimation of the length of line that will be visible from key viewpoints tends to be greater, but within a reasonable approximation of Dezé's results. This comparative analysis also indicates that the Reliance Adjustment would be visible at more key viewpoint locations than the Inland Route, and at shorter distances for all but two of the key viewpoints (Lockhart River outflow; Pike's Portage at Great Slave Lake).

In addition to the above analysis, Parks Canada further analyzed the routes using a methodology that examined the extent to which an object fills an observer's field of view.[7] The results are presented in Maps 1 and 2, illustrating the relative impact of the route alternatives in the proposed Thaidene Nene National Park Reserve. The maps identify where the line may be expected to be visible in the background, where the line would be visible in the middle-ground to foreground, and where the line would be visually prominent in the foreground. This information is also incorporated into Table 1 for the key viewpoints considered in the earlier analysis.

The maps illustrate that the adverse visual impacts of the Reliance Adjustment are greater than for the proposed Inland Route at key viewpoints. For the Inland Route, the line is visually prominent (seen in the middle-ground to foreground) at only one location (Pike's Portage at Great Slave Lake), and is visible in the background at four viewpoints. A line following the Reliance Adjustment would be visually prominent at five locations (Old Fort

Reliance NHS, Trophy Lodge, Charlton Bay, North of Reliance, and Reliance Camp) and in the background at Pike's Portage at Great Slave Lake.

It should also be noted that almost all visitors to the proposed Thaidene Nene National Park Reserve will likely approach and enter the park via Great Slave Lake. The maps illustrate that a transmission line that crossed from Maufelly to Fairchild Point, even where the crossing was underwater, would at one time or another be in the foreground of the field of view for essentially all visitors. Although a transmission line following the Inland Route would also be visible from Great Slave Lake, it would be much less prominent in the visitor's field of view.

The maps also illustrate that small changes in the transmission line routing, or in location of a viewpoint, could mean the difference between no visual impact and a moderate or even high impact. Note for instance, that for the Inland Route, no towers are visible at Parry Falls or Trophy Lodge. A close look at the map, however, indicates that a relatively small change in observer location could bring the line back into view. Final route selection must take this into careful consideration.

Based on this analysis, Parks Canada considers that the adverse impacts to the aesthetic and wilderness experience for visitors to the proposed Thaidene Nene National Park Reserve are greater for the Reliance Adjustment than for the Inland Route. This is due to the greater prominence of the line at key viewpoints, the greater percentage of potential visitors to the park affected by the line, and the expectations of Canadians for protected areas such as national parks. Because of the prominence in the field of view, impacts from the Reliance Adjustment cannot be meaningfully mitigated through low profile or low visibility transmission towers.

Commemorative Integrity of Fort Reliance National Historic Site
Reference: Terms of Reference: Section 5.3.3. *Impacts on Tourism Potential and Wilderness Character*

Parks Canada aims to ensure that the commemorative integrity of National Historic Sites is preserved. This includes preserving the elements that contribute to the reasons why the site has been designated in the first place. Within the area under consideration, Old Fort Reliance has been designated as a National Historic Site. The key elements that contribute to the heritage character of the site include "the viewscapes from the site across Great Slave Lake."[8]

The visual analysis indicates that the Reliance Adjustment route of the transmission line is located in the "foreground to middle-ground" of an observer's field of view at Fort Reliance National Historic Site. This would have an adverse effect on the commemorative integrity of the site, disturbing the view across the Lake. Though there is also an adverse visual effect on Fort Reliance NHS from the Inland Route, this would appear in the background. It is also in the east, and away from Great Slave Lake, with no consequential impact to the commemorative integrity of the site.

Conclusion:
Parks Canada concludes that both routes are predicted to have adverse effects to the wilderness and aesthetic experiences of future visitors to the proposed Thaidene Nene National Park Reserve. Parks Canada agrees with the developer's conclusion that visual effects from the Reliance Adjustment route are greater than for the proposed Inland Route. Parks Canada does not believe that these effects can be adequately mitigated through tower profile, or tower type. Parks Canada is of the opinion that the effects to aesthetic and wilderness experiences from the Reliance Adjustment route are likely to be significant.

Effects to wilderness and aesthetic experiences from the Inland Route can be mitigated, but not eliminated, through consideration of final route selection, tower profile, and tower types.

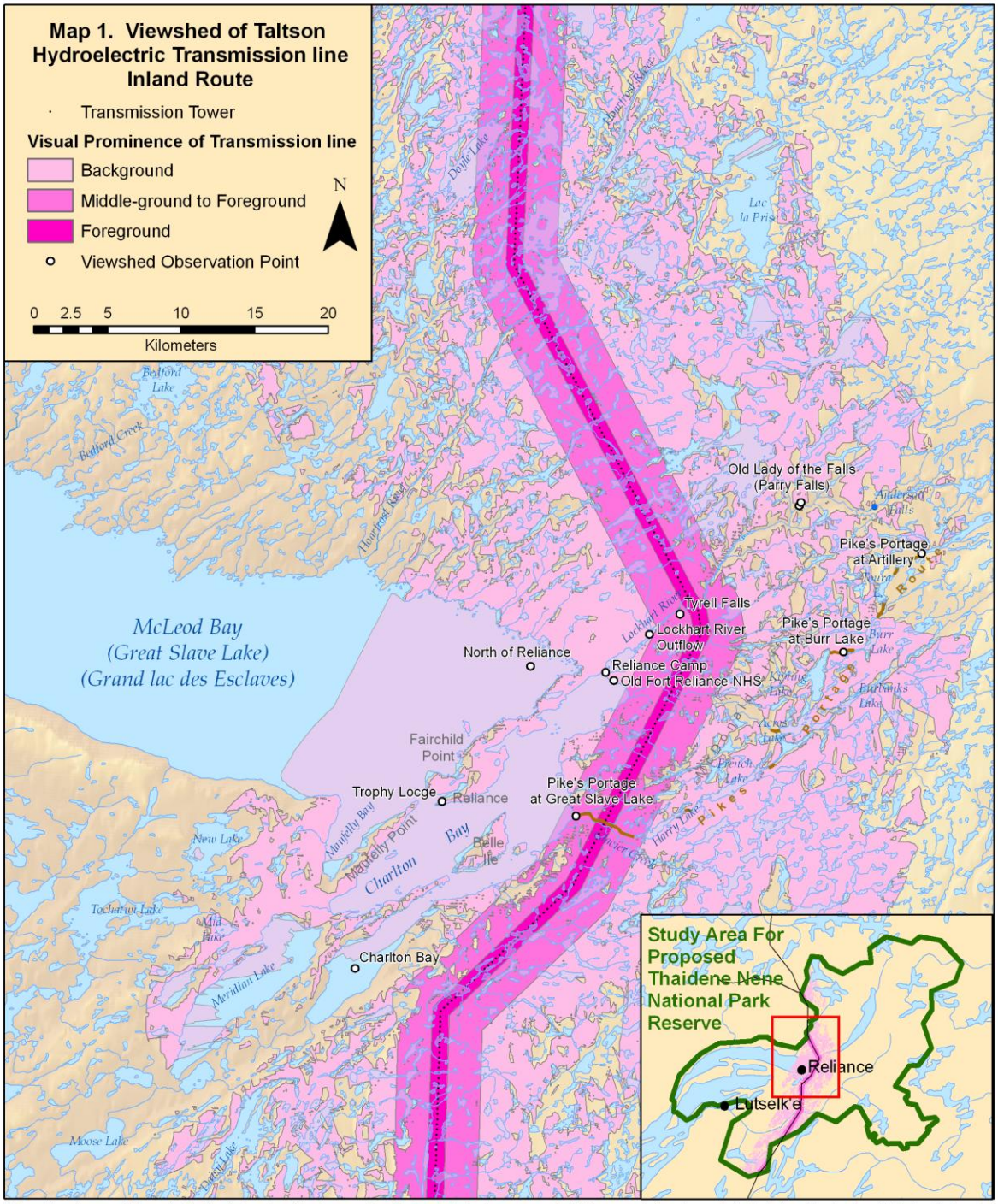
Recommendations:

(1) Parks Canada recommends that Dezé include Parks Canada in a routing committee and in any other discussions with respect to final route selection.
(2) Parks Canada recommends that Dezé implement all proposed mitigating measures as outlined in the Developer's Assessment Report, and in other commitments made throughout the review of the proposed project.
(3) Parks Canada recommends that the Reliance Adjustment route not be pursued.

Table 1. Parks Canada Viewshed Analysis Results for Inland Route and Reliance Adjustment

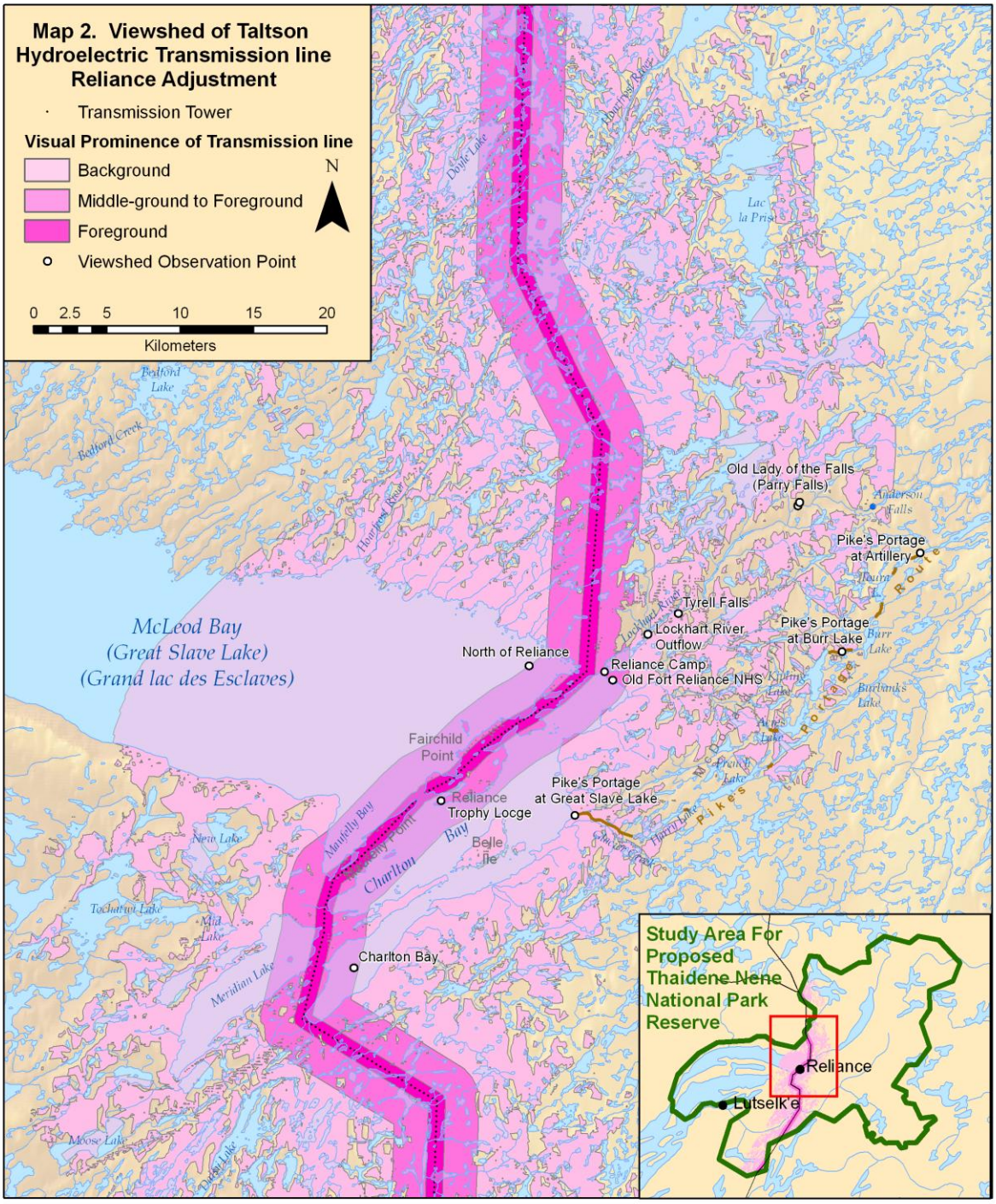
Viewshed Observation Point	Inland Route				Reliance Adjustment (Marine cable crossing between Maufelly Point and Fairchild Point)			
	Visual Prominence	Visible Line (km)	Number of Towers Visible	Distance to Power Line (km)	Visual Prominence	Visible Line (km)	Number of Towers Visible	Distance to Power Line(km)
Charlton Bay	Not Visible	0.0	0	6.5	Middle-ground to Foreground	4.9	13	2.5
North of Reliance	Background	15.5	45	9.3	Middle-ground to Foreground	14.5	45	2.9
Reliance Camp	Background	10.1	29	4.6	Middle-ground to Foreground	5.9	18	1.2
Lockhart River Outflow	Background	2.3	6	3.1	Not Visible	0.0	0	4.0
Pike's Portage at Great Slave Lake	Foreground to Middle-ground	0.2	1	1.9	Background	4.8	15	7.4
Parry Falls	Not Visible	0.0	0	9.6	Not Visible	0.0	0	13.6
Pike's Portage at Artillery	Not Visible	0.0	0	15.7	Not Visible	0.0	0	22.1
100m from Parry Falls	Not Visible	0.0	0	9.8	Not Visible	0.0	0	13.7
Tyrell Falls	Not Visible	0.0	0	1.1	Not Visible	0.0	0	6.0
Old Fort Reliance NHS	Background	9.3	34	3.8	Middle-ground to Foreground	11.8	27	1.9
Pike's Portage at Burr Lake	Not Visible	0.0	0	9.7	Not Visible	0.0	0	17.3
Trophy Lodge	Not Visible	0.0	0	10.3	Middle-ground to Foreground	6.1	19	1.0

Viewshed analysis based on 1:50 000 scale Canadian Digital Elevation Data (CDED). Assumed an observer height of 2m and transmission line height of 25m.



* Visual Prominence of Transmission line is based on the degrees of vertical angle that a tower can potentially occupy in the observer's field of view. Greater than 2.5° of vertical angle is expected to result in the tower being in the foreground of an observer's field of view (0 - 573 m); 0.5°-2.5° is expected to result in the line being in the middle-ground to foreground (574-2864 m); Less than 0.5° is expected to result in the line being in the background (2865 - 20000 m).
Viewshed is based on 1:250 000 scale Canadian Digital Elevation Data (CDED). Transmission towers are spaced at 350m (approximate locations) with a height of 25m. Observer height is assumed to be 2m. The viewshed was calculated for a radius of 20km around each tower.

Map produced by Parks Canada, SWNWT Field Unit. 4 May 2010. The names, boundaries, and other features of the map are not authoritative.
Parks Canada Agency shall assume no liability for any errors, omissions, or inaccuracies in the information provided regardless of how caused.



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[1] Alan E. Watson, "Human relationships with wilderness: the Fundamental Definition of Wilderness Character," *International Journal of Wilderness* 10, no. 3 (December 2004): 7.
[2] Canada. Parks Canada. *Nahanni National Park Reserve Management Plan.* Ottawa: Parks Canada, 2004.
[3] Peter Landres, "Developing Indicators to Monitor the 'Outstanding Opportunities' Quality of Wilderness Character." *International Journal of Wilderness* 10, no. 3 (December 2004): 9.
[4] Robert D. Rowe and Lauraine G. Chestnut, eds. *Managing Air Quality and Scenic Resources at National Parks and Wilderness Areas*. (Westview Press, Boulder,1983), p. 314.
[5] Richard C. Smardon et al., "Assessing the Reliability, Validity, and Generalizability of Observer-based Visual Impact Assessment Methods for the Western United States," in *Managing Air Quality and Scenic Resources at National Parks and Wilderness Areas,"* Ed. Robert D. Rowe and Lauraine G. Chestnut *(*Westview Press, Boulder, 1983), p. 99.
[6] *Visual Impact Analysis Methodology for Transmission Line Planning Corridors*. prepared by EDAW, Inc. for the Pacific Gas and Electric Company (1975)
[7] This method is outlined in an assessment of a wind tower project in Australia. *Parameters of Human Vision and Viewshed Definition*, for the Stockyard Hill Wind Farm. accessed on May 5, 2010. http://www.stockyardhillwindfarm.com.au/pdf/PPAR_Annexes/ATS/Annexes/Annex_J/AnnexJ-LVA_PART_12.pdf .
The methodology was applied in the context of a man-modified landscape, for a row of wind turbines. The assessors estimated distances at which the line would be prominent in an observer's field of view. At distances where the vertical angle was <0.5 of the field of view, the impact was described as "insignificant," At distances where the vertical angle ranged from 0.5 to 2.5; and greater than 2.5, the impact was described as "potentially noticeable" and "visually evident", respectively. For the current analysis, we have used the same vertical angles to approximate prominence in the landscape, and aimed to correlate these with information from a visual assessment for the Ontario HydroOne Bruce to Milton Transmission Reinforcement Project (http://www.hydroone.com/Projects/BrucetoMilton/Documents/Final%20EA/Appendix_J/Appendix_J_Landscape_Visual_Assessment_Report_Part1.pdf accessed on May 5, 2010). This assessment established "zone of influence" (foreground through Background and 'distant views') based on a consensus decision between trained observers, rather than on angle of view. We considered both studies to assist in predicting prominence for the Dezé transmission line and identified the line as likely to be in the "Background", "Middle-ground to Foreground" and "Foreground." For the current proposal, we believe the adverse impact is greater at similar distances than for the Australian and Bruce-Milton projects (where the wind towers and transmission line were proposed for an area already man-modified), due to the location in an area that is primarily a wilderness, especially when coupled with the increased expectations that people have regarding the nature of a protected area such as a national park.
[8] As cited in www.historicplaces.ca (accessed on May 5, 2010)