

Appendix D:
Archaeological Resource Impact Assessment

HILLSIDE BOULARDERIE WIND PROJECT: ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT

Heritage Research Permit A2012NS126



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HILLSIDE BOULARDERIE WIND PROJECT:
ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT

Heritage Research Permit A2012NS126
Category C

Davis MacIntyre & Associates Limited
Project No.: 12-056.1NFO

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Submitted to:

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Cover: The Bras d'Or Lake and landscape surrounding the proposed wind farm site, looking south from the main branch in the proposed access roads.

TABLE OF CONTENTS

LIST OF FIGURES.....	II
LIST OF PLATES.....	II
1.0 INTRODUCTION.....	1
2.0 STUDY AREA.....	1
3.0 METHODOLOGY.....	3
3.1 MARITIME ARCHAEOLOGICAL RESOURCE INVENTORY.....	4
3.2 HISTORICAL BACKGROUND.....	4
3.2.1 The Precontact Period.....	4
3.2.2 European Settlement.....	5
3.3 FIELD RECONNAISSANCE.....	10
4.0 RESULTS AND DISCUSSION.....	11
5.0 RECOMMENDATIONS AND CONCLUSIONS.....	11
6.0 REFERENCES CITED.....	12
PLATES.....	13
APPENDIX A: HERITAGE RESEARCH PERMIT.....	17

LIST OF FIGURES

Figure 2.0-1: A map showing the three turbine locations and access roads.	2
Figure 2.0-2: A map showing the Sydney Coalfields Natural Theme Region (#531, highlighted). After Davis and Browne 1996.....	3
Figure 3.2-1: Map of the Mi'kmaq districts.....	5
Figure 3.2.2: A map of Cape Breton surveyed in 1831 and completed in 1848 shows that the shore nearest to the study area (red) was an unsurveyed road (dotted line) in an area predominantly settled by English inhabitants (blue shading). ...	8
Figure 3.2-3: Ambrose Church's map shows that settlement near the study area (red) was limited to the coastal road.	9
Figure 3.2-4: An 1899 geological survey map shows the study area (red), with "plaster pits" or gypsum mines positioned on the lower stratum near the water (blue).	9

LIST OF PLATES

Plate 1: Stones resulting from field clearing north of the access road to Turbine 1. Looking north.	14
Plate 2: Looking north across the field where the proposed Turbine 1 will be located. The transmission line is also faintly visible along the horizon.	14
Plate 3: The forested location of Turbine 2, looking west.....	15
Plate 4: A field of mixed clover and weeds at the proposed site of Turbine 3, looking southwest.	15
Plate 5: The tree line at Turbine 3, looking northeast.....	16
Plate 6: The data collector located between turbine sites 2 and 3, looking east.	16

EXECUTIVE SUMMARY

In August 2012, Davis MacIntyre & Associates Ltd. was contracted by Natural Forces to conduct an archaeological resource impact assessment of the proposed Hillside Boularderie Community Wind Farm. The assessment consisted of a historic background study and a field reconnaissance. The local landowner was also consulted during the field reconnaissance.

The results of the assessment indicated that although Boularderie Island is the site of significant early European colonization, very little cultural activity has taken place on the hills surrounding the proposed wind farm. All current cultural activity dates to the mid-1970s at the earliest, when the landowner began to clear and farm the land. Currently, the fields are harvested for horse hay, but are not being ploughed, fertilized, or otherwise maintained. No major watercourses, or even evidence of seasonal watercourses, were encountered within the study area.

No active mitigation has been recommended. Should development plans change, it is recommended that an archaeologist be contracted to review the changes.

1.0 INTRODUCTION

In August 2012, Davis MacIntyre & Associates Ltd. was contracted by Natural Forces to conduct an archaeological resource impact assessment of the proposed Hillside Boularderie Community Wind Farm on Boularderie Island, Cape Breton. The purpose of the archaeological assessment is to determine the potential for archaeological resources within the study area and to provide recommendations for mitigation, if necessary.

The assessment was conducted under Heritage Research Permit A2012NS126. This report conforms to the standards required by the Department of Communities, Culture and Heritage as specified under the guidelines of the Special Places Protection Act (*R.S., c. 438, s. 1.*).

2.0 STUDY AREA

Natural Forces and the Wind4All Communities are proposing to construct a 3-turbine, 5.6MW wind farm on Boularderie Island, northeast of Hillside Boularderie and south of Millville Boularderie. It is expected that this development will provide power for 1,680 homes. The proposed layout consists of a single access road leading north from Hillside Boularderie Road before branching to three turbine sites (Figure 2.0-1).

The study area is located within the Sydney Coalfield Natural Theme Region (#531) (Figure 2.0-2). The coalfield lies within a Pictou-Morien Group area of sandstones and siltstones, mantled with sandy to stony till. Coal seams are exposed from Point Aconi to Port Morien, 12 of which are productive seams averaging at 1-2m in thickness.

Along the coast on flat terrain, imperfectly drained Springhill soils and poorly drained Economy soils have developed. Farther inland, the undulating landscape features well-drained Shulie soils over stony, sandy loam tills.

The annual average fog occurrence is 80 days, happening most frequently between May and July. No major rivers are found in this Unit, though short streams and brooks connect numerous small lakes.

Loucks' Sugar Maple-Hemlock, Pine Zone encompasses the Unit, but repeated disturbance has modified the vegetation. The result is forests dominated by conifers, including White Spruce, Black Spruce, Balsam Fir, and Larch. Burnt areas have regrown with maple, aspen, and birch, while shade-intolerant species are found on ridges within the coniferous forests.

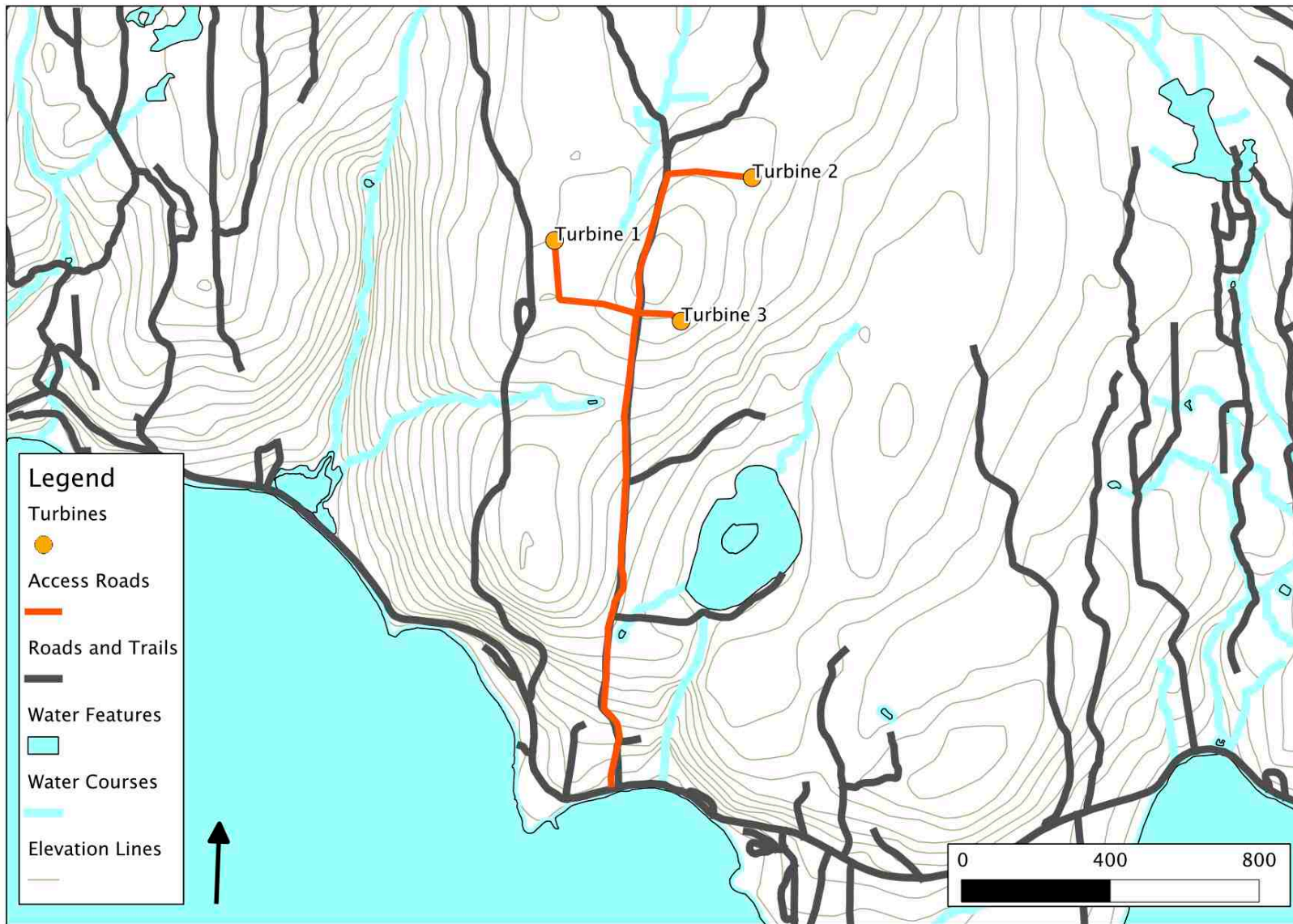


Figure 2.0-1: A map showing the three turbine locations and access roads.

Urban development in this Unit has resulted in strong populations of mammals typically found in proximity to developed areas. These include deer, coyote, Red Squirrel, Snowshoe Hare, and Red-backed Vole. Bald Eagle nesting habitats can be found, as can seabird nesting sites. Ciboux and Hertford (Bird Islands) are considered to be of national importance as hosts to nesting Razorbill, Atlantic Puffin, Leach’s Storm-petrel, and Black-legged Kittiwakes.¹

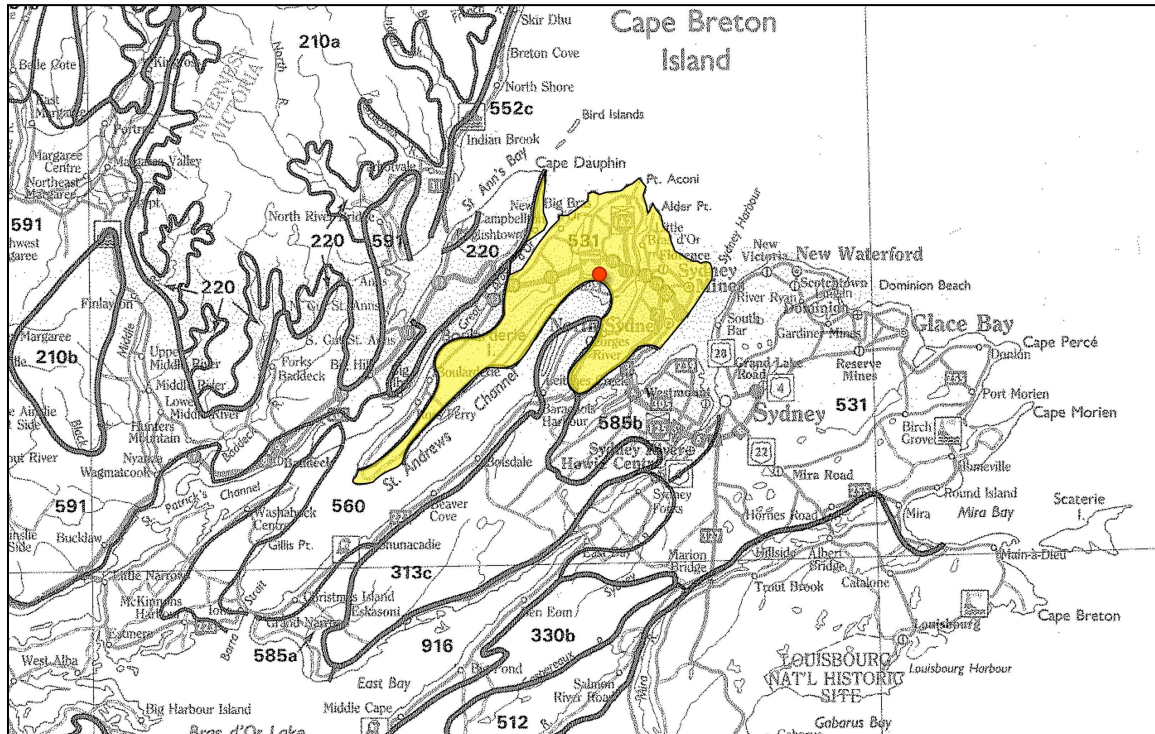


Figure 2.0-2: A map showing the Sydney Coalfields Natural Theme Region (#531, highlighted). After Davis and Browne 1996.

3.0 METHODOLOGY

A historic background study was conducted by Davis MacIntyre & Associates Limited in September 2012. Historical maps and manuscripts and published literature were consulted at the Nova Scotia Archives in Halifax. The Maritime Archaeological Resource Inventory, held at the Department of Communities, Culture and Heritage, was searched to understand prior archaeological research and known archaeological resources neighboring the study area. A preliminary field reconnaissance of the proposed impact areas was conducted.

¹ Davis and Browne 1996:116-118.

3.1 Maritime Archaeological Resource Inventory

The Maritime Archaeological Resource Inventory, managed by the Nova Scotia Heritage Division, was consulted in September 2012 to determine if known archaeological resources exist within or near the study area.

The site of Boularderie's settlement is known at Little Bras d'Or (CbCb-01). A series of stone foundations and depressions are known on this site.

Two sites consisting of earthen features are known at Edwardsville near Sydney (CbCb-02 and CbCb-03). Both are thought to be associated with the earliest wave of Loyalist settlers from 1784 onwards.

Nineteenth and twentieth century structures relating to the settlement at Englishtown are also known (CbCc-01).

There are no known First Nations sites recorded in proximity to the study area.

3.2 Historical Background

3.2.1 The Precontact Period

The history of human occupation in Nova Scotia has been traced back approximately 11,000 years ago, to the Palaeo-Indian period or *Sa'qewe'k L'nu'k* (11,000 – 9,000 years BP). The only significant archaeological evidence of Palaeo-Indian settlement in the province exists at Debert/Belmont in Colchester County.

The *Saqiwe'k Lnu'k* period was followed by the *Mu Awsami Kejikawe'k L'nu'k* (Archaic period) (9,000 – 2,500 years BP) which included several traditions of subsistence strategy. The Maritime Archaic people exploited mainly marine resources while the Shield Archaic concentrated on interior resources such as caribou and salmon. The Laurentian Archaic is generally considered to be a more diverse hunting and gathering population.

The Archaic period was succeeded by the Woodland/Ceramic period or *Kejikawek L'nu'k* (2,500 – 500 years BP). Much of the Archaic way of subsistence remained although it was during this period that the first exploitation of marine molluscs is seen in the archaeological record. It was also during this time that ceramic technology was first introduced.

The Woodland period ended with the arrival of Europeans and the beginning of recorded history. The initial phase of contact between First Nations people and Europeans, known as the Protohistoric period, was met with various alliances particularly between the Mi'kmaq and French.

The Mi'kmaq inhabited the territory known as *Mi'kma'ki* or *Megumaage*, which included all of Nova Scotia including Cape Breton, Prince Edward Island, New Brunswick (north of the Saint John River), the Gaspé region of Quebec, part of Maine and southwestern Newfoundland (Figure 3.2-1).

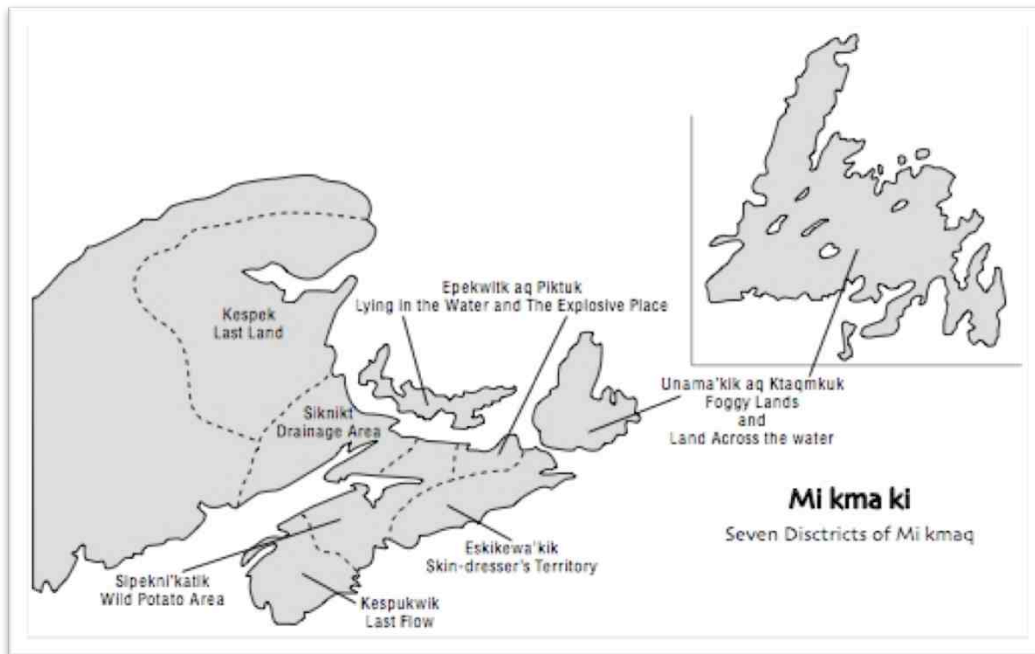


Figure 3.2-1: Map of the Mi'kmaq districts.²

3.2.2 European Settlement

The island of Boularderie was given its name for Louis-Simon Le Poupet De La Boularderie. In 1719, Boularderie voyaged to Cape Breton under the protection of the Count of Toulouse in order to “examine and determine the value of all lands on Cape Breton.” His conclusions indicated that the entire island was heavily forested, and only great expense would allow for a profitable settlement. He did, however, propose to establish an agricultural colony on the Ile de Verderonne (now Boularderie Island), if the land were granted to him.³ Boularderie was awarded his grant by royal brevet on 15

² Confederacy of Mainland Mi'kmaq, 2007:11.

³ Fergusson 1963:165.

February 1719. In addition, he was soon holding a complete monopoly on fishing operations at Niganiche, another coastal outpost.⁴

A good crop of wheat was sold at Louisbourg in 1734, indicating that the settlement at Little Bras d'Or was beginning to take off, and by Boularderie's death in 1738 a small and reasonably stable settlement was known there, incorporating fishing, farming, lumbering, and coal mining. Boularderie was heavily in debt when he died, with newly-ordered milling machinery destined for his settlement still waiting on the docks at Louisbourg.⁵

After Boularderie's death, his son Antoine Le Poupet De La Boularderie came to Cape Breton with "a retinue of Norman peasants and artisans" to continue his father's work. The year 1740 saw him market 140 bushels of wheat at Louisbourg. Five years later, Louisbourg came under attack by English forces. The younger Boularderie hurried to the fortress in an open boat, but was captured while leading an attack on the New England troops who were landing on the shores. He was later released, after being held in Boston for some time. He received commendation from Governor Shirley, who sent him back to France with a certificate stating that he was a gentleman, and was of great service to his fellow prisoners.⁶

In 1747, continuing conflicts between French and English forces in the New World prompted the French to burn the Boularderie settlement at Little Bras d'Or, "to annoy the English" who would have been benefitting from the settlement's coal coming into English-occupied Louisbourg.⁷ The destruction of the settlement was reportedly also the destruction of the younger Boularderie's private fortune.

By 1752 ruins of old homesteads could be "seen at many places in the woods on both sides of the strait, and a large burying ground on the northern shore, where, a few years ago, the sites of the graves, designated by wooden crosses, were covered by a dense growth of spruce trees." However, the area of Little Bras d'Or or "Labrador" was at the time the most populous part of the island. A cod fishery could be found at Niganischew, but the vessels "were obliged by King's ordinance to retire at Port Dauphin (St. Anne's) towards the 15th August, because of the storms that rage in that season."⁸

The settlement must have been substantially rebuilt, as reports state that in 1758 Little Bras d'Or was "again ravaged," with most of the settlers fleeing to Isle Madame. The

⁴ Fergusson 1963:166.

⁵ Fergusson 1963:166.

⁶ Fergusson 1963:166-167.

⁷ Fergusson 1963:166.

⁸ Gow 1893:234-235, summarizing the writings of "Pichon" in 1752.

coal mines were shut down, and settlement in the area was actively discouraged until the arrival of the Loyalists in 1784.⁹

However, such discouragement does not appear to have left the land completely abandoned. A survey conducted between 1765 and 1767 reveals that five Acadian families and a few Englishmen were still living at Little Bras d'Or, and several sawmills were in operation on Boularderie Island.¹⁰

The known archaeological site at Little Bras d'Or includes the "Establishment of Mr. de la Boularderie," his barns and stables, a concession given by Boularderie to a labourer in 1742, multiple fishermen's homes, a small "Indian village" as indicated on historic mapping, and a church. Unfortunately, none of the consulted sources provided further information regarding the "Indian village."¹¹

A short gap in recorded settlement on the island ends in 1820, when settler Donald McDonald and his family arrived from Gairloch, Rosshire. Over the next two years only three more settlers joined them, and the first winter was reportedly very hard. 1823 saw a large influx of immigrants from Gairloch and Loch Carron, Rosshire. Soon, Boularderie was once again one of the most populous districts in Cape Breton. The land in comparison with the rest of the region was fertile and more easily cultivated, and the island was easily accessible to Sydney and other settlements. Codfish were still abundant, providing an ample resource for fishermen.¹²

In 1832, the island was described as follows:

"Boularderie Island is rather populously inhabited by Scotch Highlanders and numbers of Irish fishermen who were formerly employed at Newfoundland, and who now carry on boat fishing near the great entrance [Great Bras d'Or].¹³ A map from this period indicates that a road existed along the shore near the study area, and that settlement during this time was chiefly English (British) rather than French (Figure 3.2-2).

Late nineteenth century maps indicate that this pattern of coastal settlement continued for some time (Figures 3.2-3 and 3.2-4). Some small-scale gypsum mining along the coast appears to have been the closest mapped cultural activity, as indicated by the notation "plaster pits" (Figure 3.2-4, blue).

⁹ Fergusson 1963:167.

¹⁰ Fergusson 1963:167.

¹¹ Fergusson 1963:164-165.

¹² MacDonald 1978:74.

¹³ McGregor 1832:401.

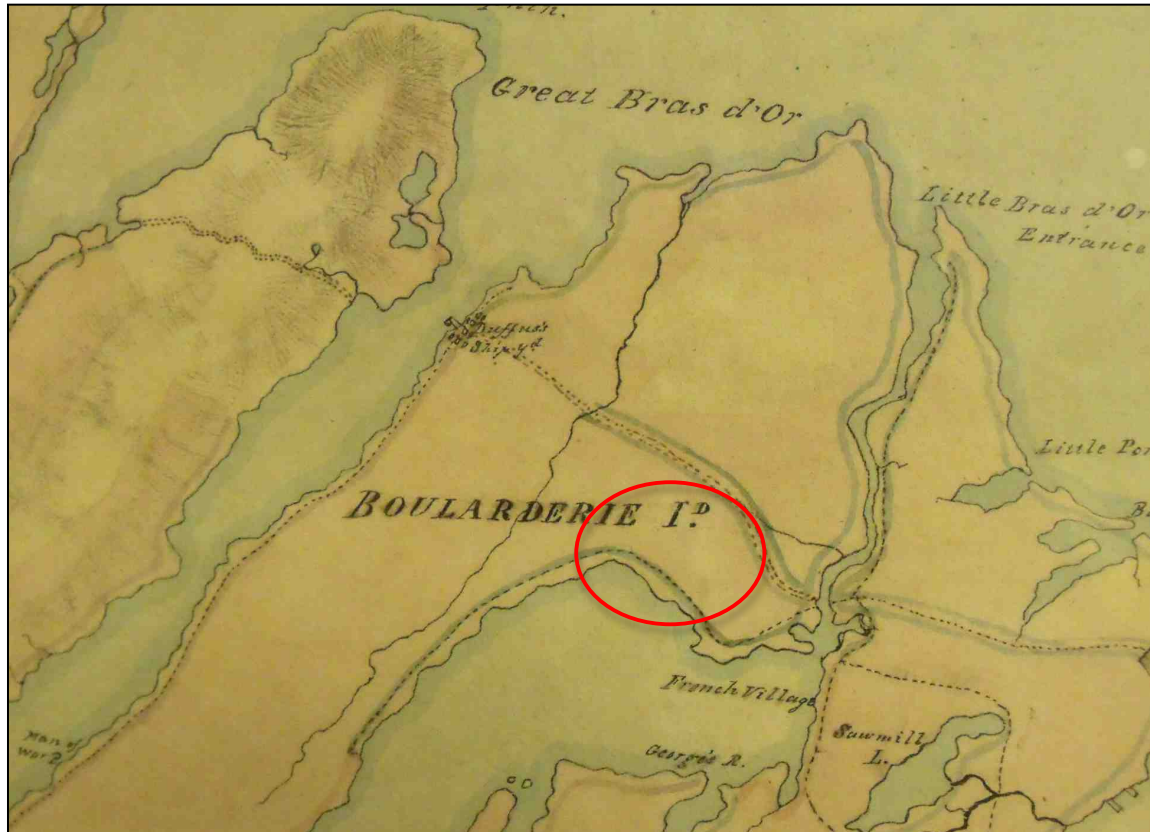


Figure 3-2.2: A map of Cape Breton surveyed in 1831 and completed in 1848 shows that the shore nearest to the study area (red) was an unsurveyed road (dotted line) in an area predominantly settled by English inhabitants (blue shading).¹⁴

¹⁴ Keating 1841.

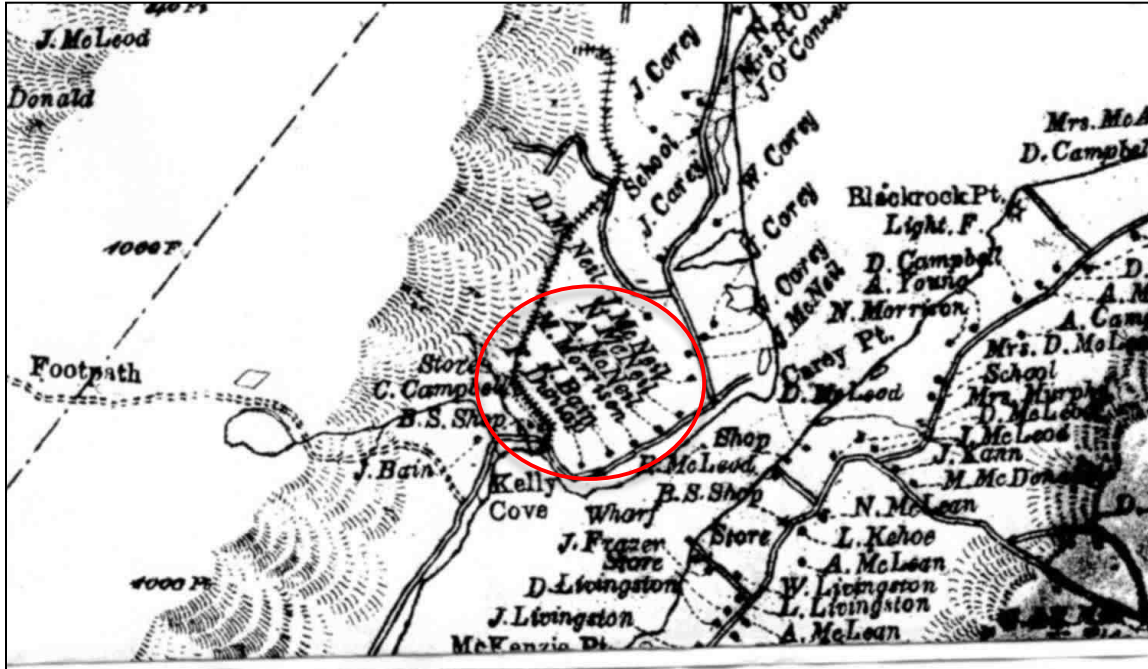


Figure 3.2-3: Ambrose Church’s map shows that settlement near the study area (red) was limited to the coastal road.¹⁵

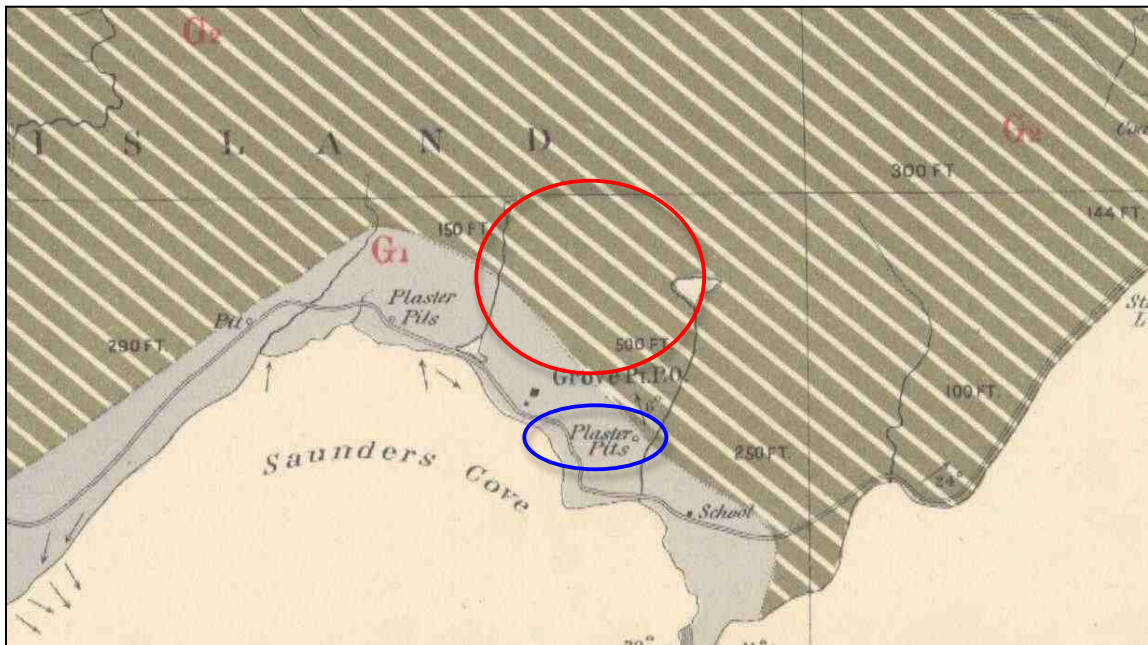


Figure 3.2-4: An 1899 geological survey map shows the study area (red), with “plaster pits” or gypsum mines positioned on the lower stratum near the water (blue).¹⁶

¹⁵ Church 1886.

¹⁶ Robb and Fletcher 1899.

3.3 Field Reconnaissance

A field reconnaissance was conducted on 25 September 2012 by Stephen Davis and Laura de Boer. The site was accessed by car via a rough farm road that leads steeply uphill from the coast, and the team proceeded on foot from the proposed branch of the access road into the three turbine sites.

The proposed access road for Turbine 1 runs west and then north, passing along the edge of a hayfield with a young mixed wood forest to the north. The treeline also conceals many piles of stones resulting from field clearing (Plate 1). Although consistent with historic field clearing patterns, a lack of moss or other vegetation growing over the stones suggests the field clearing has occurred recently, perhaps within the last decade. Earth is mixed with the stones in some areas, suggesting the field was leveled with a bulldozer before being further cleared of stones by hand.

The turbine site itself is located in an open field of mixed ragweed and other plants, with some low, wet areas and a scattering of young spruce trees (Plate 2). To the north is a power transmission line, presumably where the power from the turbines will be connected to the grid.

Turbine 2 was accessed by the team from the north, after following the power transmission line east from the first turbine site. This turbine is positioned in a mixed hardwood forest consisting mostly of beech and maple (Plate 3). The forest floor is undulating under a ferny understorey, and does not appear to have been utilized for agriculture. There were no stumps or skidder trails to indicate twentieth century logging activity, with some of the oldest trees being approximately 80 years old. The upper storey of the forest is very dense despite wide spacing of the tree trunks, producing a very murky light below.

From the site of Turbine 2 the team followed the proposed access road west and then south. The access road emerged from the forest and skirted another hayfield. At this point the team encountered the local landowner, who spoke with the archaeologists for a short time. He indicated that the fields in which the turbines are to be placed are all part of his own land improvements, and that when he purchased the land in the mid-1970s nothing had been cleared and the land was untouched. The fields are elevated very steeply from the shore below, and he acknowledged that he knew of several of the “plaster pits” or gypsum mines farther downhill. He did not know of any archaeological material having been found on his land, particularly in the vicinity of the turbines where there appeared to have been little or no historic activity.

The access road to Turbine 3 runs through a field of clover mixed with grasses (Plate 4), terminating at the turbine site just inside a line of young spruce and birch trees (Plate 5).

Like the other field-forest borders, rocks and earth indicate this field was recently cleared with heavy equipment and finished with rock picking by hand. A data collector tower was noted above the proposed turbine site, located in an open field (Plate 6).

4.0 RESULTS AND DISCUSSION

Both the historic background study and the field reconnaissance, as well as discussions with the present land owner, indicate that very little cultural activity has taken place on the hills surrounding the proposed wind farm. All current cultural activity dates to the mid-1970s at the earliest, when the landowner began to clear and farm the land. Currently, the fields are harvested for horse hay, but are not being ploughed, fertilized, or otherwise maintained. No major watercourses, or even evidence of seasonal watercourses, were encountered within the study area.

5.0 RECOMMENDATIONS AND CONCLUSIONS

The results of this impact assessment indicate that little or no cultural activity has taken place in the hills that comprise the study area. All proposed impact areas are considered to be of extremely low archaeological potential. As a result, no active mitigation has been recommended.

In the unlikely event that any archaeological resources are encountered during ground disturbance activities, all activity should cease and the Coordinator of Special Places, Laura Bennett (902-424-6475) should be contacted immediately to determine a suitable method of mitigation.

Should development plans change, it is recommended that an archaeologist be contracted to review the changes.

6.0 REFERENCES CITED

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PLATES



Plate 1: Stones resulting from field clearing north of the access road to Turbine 1. Looking north.



Plate 2: Looking north across the field where the proposed Turbine 1 will be located. The transmission line is also faintly visible along the horizon.



Plate 3: The forested location of Turbine 2, looking west.



Plate 4: A field of mixed clover and weeds at the proposed site of Turbine 3, looking southwest.



Plate 5: The tree line at Turbine 3, looking northeast.



Plate 6: The data collector located between turbine sites 2 and 3, looking east.

APPENDIX A: HERITAGE RESEARCH PERMIT



Tourism, Culture and Heritage

Heritage Division

Special Places Protection Act, R.S.N.S. 1989

Heritage Research Permit (Archaeology)

(Original becomes Permit when approved by the Executive Director of the Heritage Division)

Office Use Only

Permit Number:

A2012NS126

<i>Greyed out fields will be made publically available. Please choose your project name accordingly</i>	
Surname de Boer	First Name Laura
Project Name Hillside Boularderie Wind Farm	
Name of Organization Davis MacIntyre & Associates Limited	
Representing (if applicable)	
Permit Start Date 16 August 2012	Permit End Date 31 December 2012
General Location: Hillside Boularderie, Cape Breton County	
Specific Location: <i>(cite Borden numbers and UTM designations where appropriate and as described separately in accordance with the attached Project Description. Please refer to the appropriate Archaeological Heritage Research Permit Guidelines for the appropriate Project Description format)</i> 20 T 5124875.41643 N 704382.07393 E	
Permit Category: Please choose one: <input type="checkbox"/> Category A - Archaeological Reconnaissance <input type="checkbox"/> Category B - Archaeological Research <input checked="" type="checkbox"/> Category C - Archaeological Resource Impact Assessment <input checked="" type="checkbox"/> I certify that I am familiar with the provisions of the <i>Special Places Protection Act</i> of Nova Scotia and that I have read, understand and will abide by the terms and conditions listed in the Heritage Research Permit Guidelines for the above noted category. <input type="checkbox"/> I currently hold a treasure trove license or pending application for a licence related to this Heritage Research Permit.	
Signature of applicant <i>for Laura de Boer</i> <i>Anna Intyre de Boer</i>	Date 02 October 2012
Approved by <i>[Signature]</i> Executive Director	Date <i>Oct 11 12</i>