

APPENDIX J

Archaeological Resources Impact Assessment



SYDNEY HARBOUR MARINE FACILITY, PHASE II: ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT

Heritage Research Permit A2008NS78



November 2008

Submitted by:
Davis Archaeological Consultants Limited
109 John Stewart Drive
Cole Harbour, Nova Scotia
B2w 4J7

Submitted to:
Sydney Ports Corporation Inc.
60 Esplanade
Sydney, Nova Scotia
B1P 6H2

**SYDNEY HARBOUR MARINE FACILITY:
ARCHAEOLOGICAL RESOURCE IMPACT ASSESSMENT**

**Heritage Research Permit A2008NS78
Category C**

November 2008

Davis Archaeological Consultants Limited

Principal Investigator: Stephen A. Davis
Report Compiled by: Matt J. Munro and April D. MacIntyre

Cover: Edwardsville coastline on Sydney Harbour

TABLE OF CONTENTS

	Page
LIST OF FIGURES	ii
LIST OF PLATES	ii
EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	2
2.0 DEVELOPMENT AREA	2
3.0 METHODOLOGY	6
3.1 Historical Background	6
3.2 Archaeological Reconnaissance and Testing.....	7
3.2.1 Area 1: The Shoreline region of Edwardsville	7
3.2.2 Area 2: The Inland region of Edwardsville.....	9
3.2.3 Area 3: The Barachois	11
4.0 RESOURCE INVENTORY	13
5.0 CONCLUSIONS AND RECOMMENDATIONS	14
6.0 REFERENCES	15
PLATES.....	16
APPENDIX A: HERITAGE RESEARCH PERMIT	24

LIST OF FIGURES

	Page
Figure 2.0-1: Location of the proposed Sydney Marine Terminal in Sydney Harbour.....	3
Figure 2.0-2: Sydney Terminal Detailed Plan.	4
Figure 2.0-3: A portion of the Nova Scotia Natural Theme Regions map showing sub- Unit 585b: Sydney River, Iona Uplands Region.	5
Figure 3.2-1: Sydney Marine Terminal Development and areas of archaeological reconnaissance	8
Figure 3.2.2-1: Archaeological Sites and other areas of interest in Area 2.	9
Figure 3.2.2-2: Pasture boundaries overlaid on late-19th century Crown land grants	10
Figure 3.2.3-1: Archaeological reconnaissance and testing on the Barachois.....	12
Figure 4.0-1: Sydney Harbour circa 1940.....	13

LIST OF PLATES

	Page
Plate 1: Eroding sand on the Sydney Harbour shoreline near Hospital Road.	17
Plate 2: Shoreline erosion showing underlying bedrock. Near the centre of the shoreline impact area.....	17
Plate 3: Shoreline of Edwardsville showing the height of the cliffs and eroding bedrock.....	18
Plate 4: Examining tree-throws for artifacts near the Barachois.	18
Plate 5: East side of Concrete Foundation 1.	19
Plate 6: West side of Concrete Foundation 1.....	19
Plate 7: South end of Concrete Foundation 2.	20
Plate 8: West end of Concrete Foundation 2.	20
Plate 9: West side of rectangular earthen feature.....	21
Plate 10: East side of the circular earthen depression.....	21
Plate 11: South side of circular earthen depression.	22
Plate 12: Testing near the Barachois Creek.	22
Plate 13: Railway crossing test pits.	23

EXECUTIVE SUMMARY

Davis Archaeological Consultants (DAC) Limited conducted an archaeological resource impact assessment of the proposed Sydney Marine Facility for the Sydney Ports Corporation in July and August 2008. The purpose of the assessment was to determine the potential for archaeological resources both on land and under water. The proposed development includes components which require disturbance relating to dredging, infilling, and possible excavation activities which may impact on archaeological resources. DAC conducted historic research which included archival documentary research, access to Provincial databases, assessment of past environments, and a review of relevant reports and surveys including a bathymetric survey of Sydney Harbour as well as a video survey of a shipwreck.

The area was determined to be of elevated potential for both First Nations and historic period resources on land and under water. One submerged shipwreck was identified during the video survey of the seabed by Scuba Tech Ltd. Therefore, it is recommended that the area be subjected to a field survey prior to any ground disturbance and that relevant protocols for mitigation be in place to address the potential for disturbance to submerged resources.

1.0 INTRODUCTION

In July 2008, Davis Archaeological Consultants (DAC) Limited was contracted by Sydney Ports Corporation Inc. to conduct a phase I archaeological resource impact assessment of the proposed Sydney Marine Facility in Cape Breton County. The purpose of the assessment was to determine the potential for terrestrial and submarine-based archaeological resources within the development area, and to provide recommendations for further mitigation if necessary.

The phase I archaeological impact assessment provided evidence for the presence of cultural resources within the impact area, resulting in a phase II investigation, including further archaeological surface reconnaissance and subsurface testing, which was conducted in October 2008.

The assessment was conducted under Category C Heritage Research Permit A2008NS60 (Appendix A) issued by the Nova Scotia Heritage Division. This report details the results of the archaeological reconnaissance which was conducted in October 2008 and conforms to the standards required by the NSDTCH Heritage Division under the Special Places program.

2.0 DEVELOPMENT AREA

The proposed development is located in the Sydney Marine Industrial Park near Edwardsville, Cape Breton County and includes both terrestrial and submarine areas in and along Sydney Harbour (Figure 2.0-1). The Industrial Park includes approximately 250 acres of developed heavy industrial and commercial property and an additional 450 acres along the Sydney Harbour waterfront which is zoned for industrial port development. The developed area includes a marine wharf consisting of a main jetty, an inner quay and an outer quay that comprise 1274 m of berthing space. The entire Sydney Marine Industrial Park property was purchased by Laurentian Energy Corporation in 1999. The proposed development requires several components including:

- Dredging of a 140-metre-wide channel running approximately 9,950 metres in length which provides access to the South Arm. The channel will be dredged to a uniform depth of approximately 17 metres producing approximately 3.5 million cubic metres of dredged material. The current maximum depth of the channel is 11.8 metres;
- Construction of a confined disposal facility near the head of the South Arm that will serve as the marine footprint for the new terminal;
- Dredging at the proposed terminal berth line to approximately 16 metres depth;
- Infilling of approximately 60 acres or 24 hectares at the confined disposal facility;
- Completion of a two berth, 750 to 800-metre-long section of wharf within the new terminal footprint including construction of container storage facilities and an on dock Intermodal Container Transfer Facility (rail yard) on approximately 100 acres of land; and

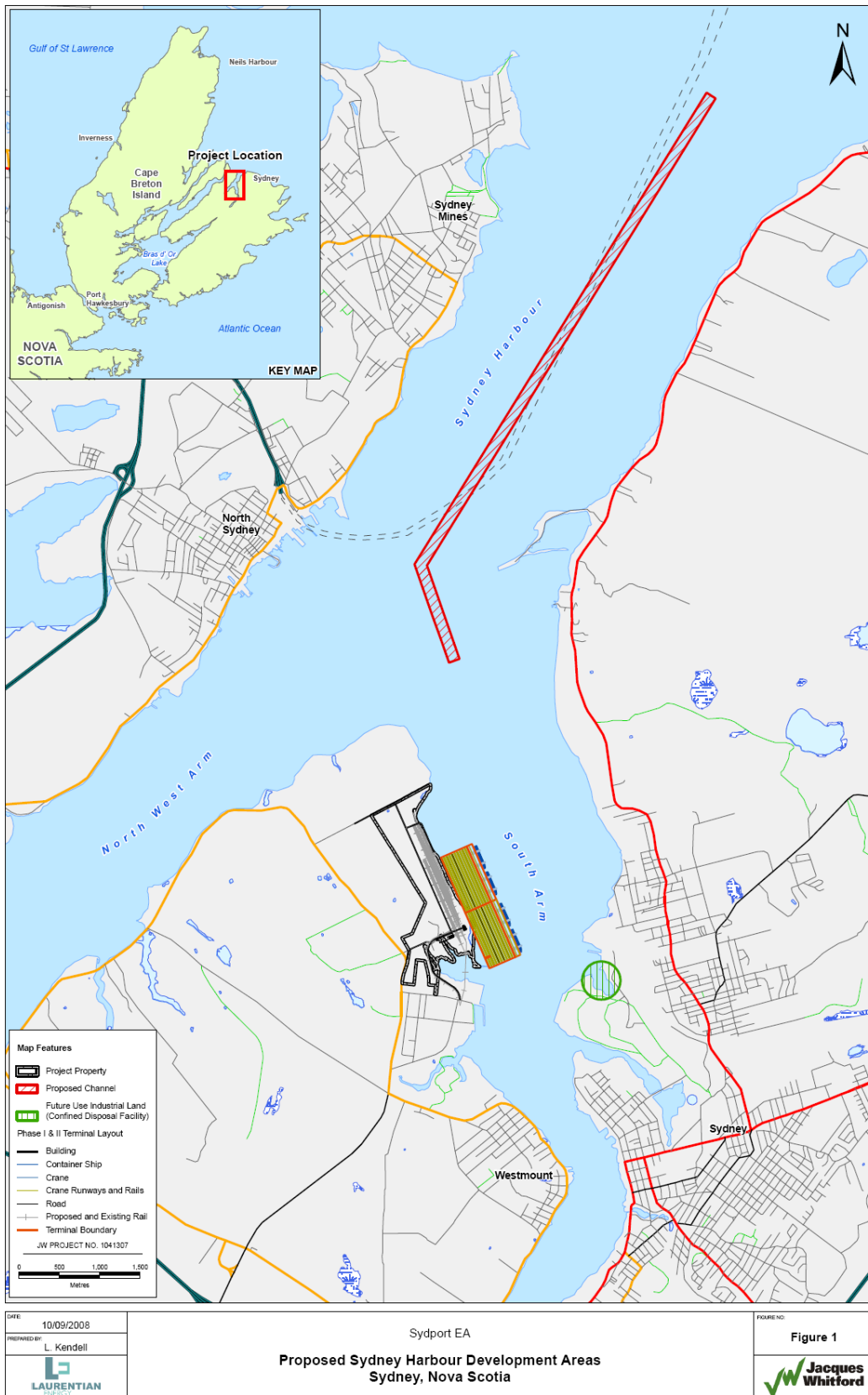


Figure 2.0-1: Location of the proposed Sydney Marine Terminal in Sydney Harbour (courtesy Jacques Whittford Environment Limited).

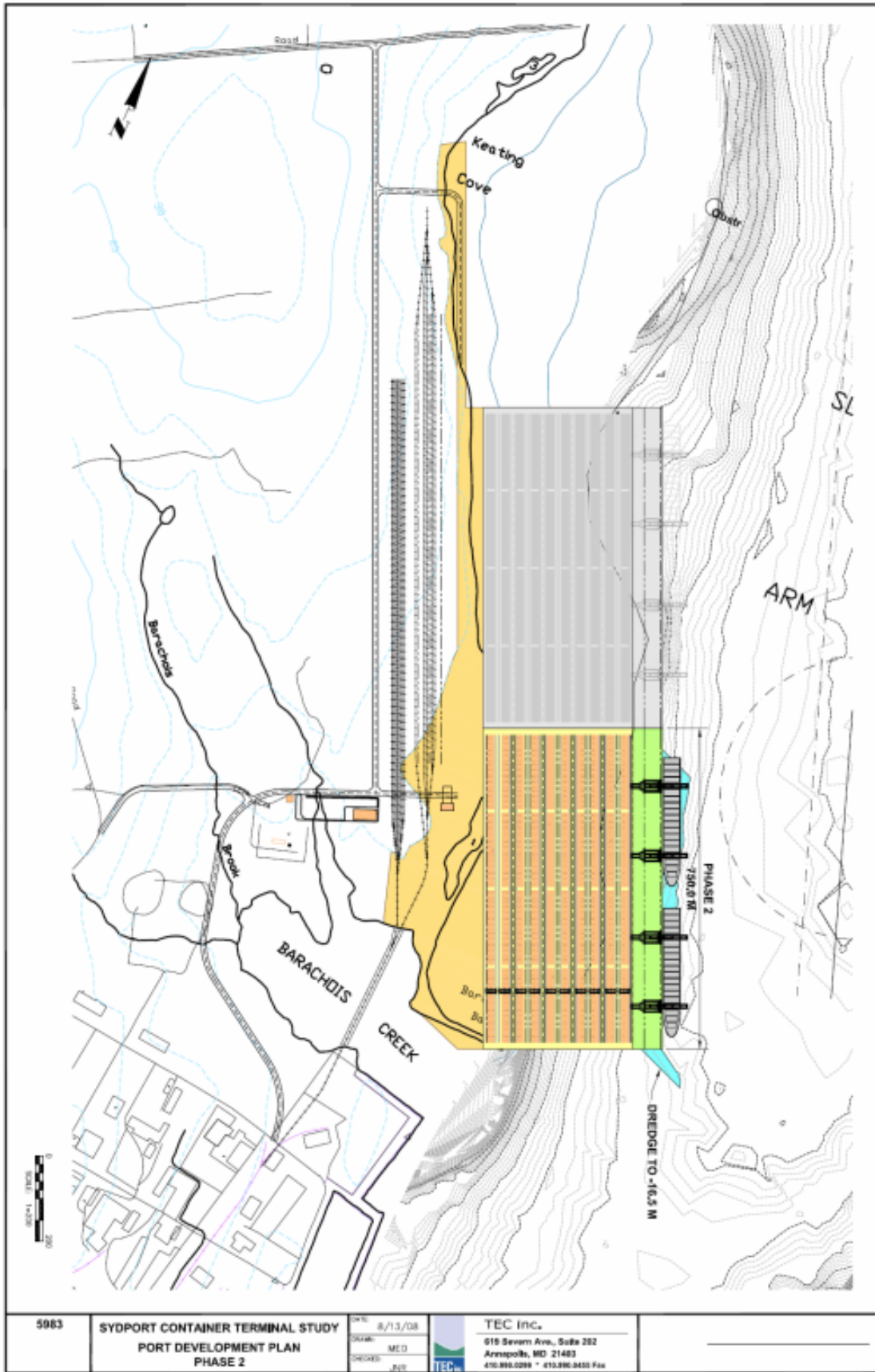


Figure 2.0-2: Sydney Terminal Detailed Plan (courtesy Sydney Ports Corporation).

- A minor extension of the existing Sydport on dock rail spur to connect to the Truro rail line.

Alternatively, the rail yard and container storage facility may be constructed on an upland site northwest of the proposed marine facility near Point Edward.

The development area is located within the Iona Uplands region of Nova Scotia, which is subdivided into the Grand Narrows (#585a) and Sydney River (#585b) sub-Units, the latter of which encompasses the development area (Figure 2.0-2). Thick glacial deposits, kames, eskers, and outwash gravels characterize the surface of the Sydney River sub-Unit. These deposits partially fill the river valley and create a series of shallow interconnected lakes and are evidence of an ancient lobe of ice in East Bay during the last ice age. Areas of imperfectly-drained Debort soils (silty loam), often with a cemented (hard pan) layer, are typical of the sub-Unit. Clay loam is found at Point Edward. Forests are largely disturbed and have turned over to coniferous forests with White Spruce, Balsam Fir, and Eastern Hemlock dominating. Deciduous trees are found on better drained slopes. Oldfields and former pastures have regenerated in pure stands of White Spruce or in spruce and fir varieties. Black Spruce and Larch occur in wetter areas. The sub-Unit is now largely industrial and residential.¹

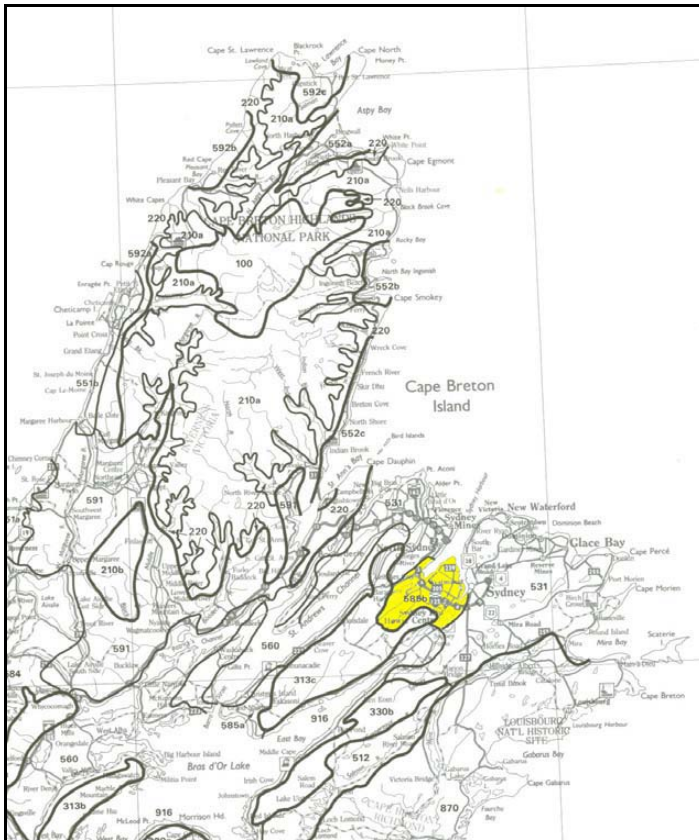


Figure 2.0-3: A portion of the Nova Scotia Natural Theme Regions map showing sub-Unit 585b: Sydney River, Iona Uplands Region.

¹ Davis and Browne, 1996:129, 146-147.

3.0 METHODOLOGY

A field reconnaissance was conducted by Stephen Davis and Matt Munro in October 2008. The impact area of the Sydney Marine Terminal was surveyed using GPS data provided by CBCL Limited Consulting Engineers. The footprint of the proposed development area and all subsequent impact areas were extensively investigated on foot while select areas, based on the presence of cultural resources and/or their potential to contain such resources, underwent archaeological subsurface testing. Where applicable, negative evidence for cultural resources within the impact area were noted, including evidence for historical and First Nations activity.

3.1 Historical Background

One previous archaeological desktop study was conducted for the area and has been reported by Davis Archaeological Consultants Limited (A2008NS60).² This background study of the development area included a search of the Maritime Archaeological Resource Inventory (MARI), a database of known archaeological sites, held at the Nova Scotia Museum of Natural History. The marine heritage database of the Nova Scotia Heritage Division was also accessed by Heritage Division staff and a report made available to Davis Archaeological Consultants Limited. Historic maps and manuscripts, land records, and published literature were consulted at the Public Archives of Nova Scotia (Halifax), Parks Canada (Fortress Louisbourg), Beaton Institute (Sydney), Maritime Museum of the Atlantic (Halifax), and at the Canadian Coast Guard College library (Sydney). Historians at the Old Sydney Society were consulted regarding knowledge of potential archaeological resources in the area. Nova Scotia Heritage Division Assistant Curator, Ethnology, Mr. Roger Lewis, was consulted regarding his knowledge of historic First Nations land use and potential archaeological resources in the vicinity of the development area. Finally, the bathymetric seabed survey report by McGregor GeoScience was reviewed for evidence of potential shipwrecks and other archaeological resources in the harbour channel and local diver Ken Jardine was consulted regarding his video survey of the harbour, which was prepared for the environmental assessment of this development.

The results from the initial desktop phase of investigation for the development of the Sydney Marine Terminal had identified several types of cultural resources which may be present in and around Edwardsville. While the MARI search had no results and thus no record of any sites in the area, research into the potential underwater resources of Sydney Harbour including shipwreck records, a bathymetric survey, and reconnaissance diving by Mr. Ken Jardine identified several anomalies which required further investigation.

Concerning potential First Nations resources, Mr. Roger Lewis, Assistant Curator of Ethnology at the Nova Scotia Museum, was not aware of any known archaeological

² Davis Archaeological Consultants Limited, 2008.

resources associated with First Nations occupation in the development area. However, local knowledge of several pre-contact and historic period land use exists in nearby surrounding areas including Portage, Point Aconi, Boularderie, McCreadyville, George's River, Little Bras D'Or, and Alder Point, not to mention Kings Road.³ Considering that Nova Scotia's First Nations occupation stretches back 11,000 to 9,000 years BP, Cape Breton's prominence in the Mi'kmaq creation legend of Kluskap (or Glooscap), and the location of the First Nations reserve of Membertou, the region falls within a moderate to high potential for containing First Nations cultural resources.

Likewise, the historical record offers evidence for cultural resources within the impact area. Letters and correspondence dating to the 16th century detail Sydney Harbour⁴, while Norse legend may prove the first European visitors arrived around the year 1000⁵. Extensive historical evidence for occupation around Sydney Harbour generally, and Edwardsville specifically, can be dated throughout the 18th, 19th, and 20th centuries. These include, among many others, a suspected Spanish occupation near the Barachois which has never been authenticated, a history of ties with Fortress Louisbourg, and 1940s wartime defense networks within Sydney Harbour.

3.2 Archaeological Reconnaissance and Testing

The archaeological reconnaissance of the Sydney Marine Terminal focused on three areas within and around the impact area. These included the shoreline of Edwardsville on Sydney Harbour, the inland region of Edwardsville near the coast, and the lands around the Barachois creek, through which all rivers and streams in the area flow into Sydney Harbour (Figure 3.2-1).

3.2.1 Area 1: The Shoreline region of Edwardsville

DAC Ltd. archaeologists walked the shoreline of Edwardsville on Sydney Harbour four separate times, looking for signs of First Nations and historical cultural resources. Within Area 1, aside from modern garbage, no such resources were found.

The first and last 500 metres of the shoreline consisted mainly of 1 to 2 metre high cliffs or eroding sand (Plate 1), while the interior 1.5 kilometres were made of approximately 7 to 10 metre high cliffs of which the bottom 2 to 3 metres is eroding bedrock and similar geological elements (Plates 2 and 3).

The significant amount of erosion along the shoreline erases any hope of finding First Nations habitation. Had any sites existed in the past, they would likely have been eroded

³ Personal Communication, R. Lewis, 30 July 2008.

⁴ Account of Capt. Leigh given in Hakluyt 1907:107.

⁵ Fergusson, 1958: 13.

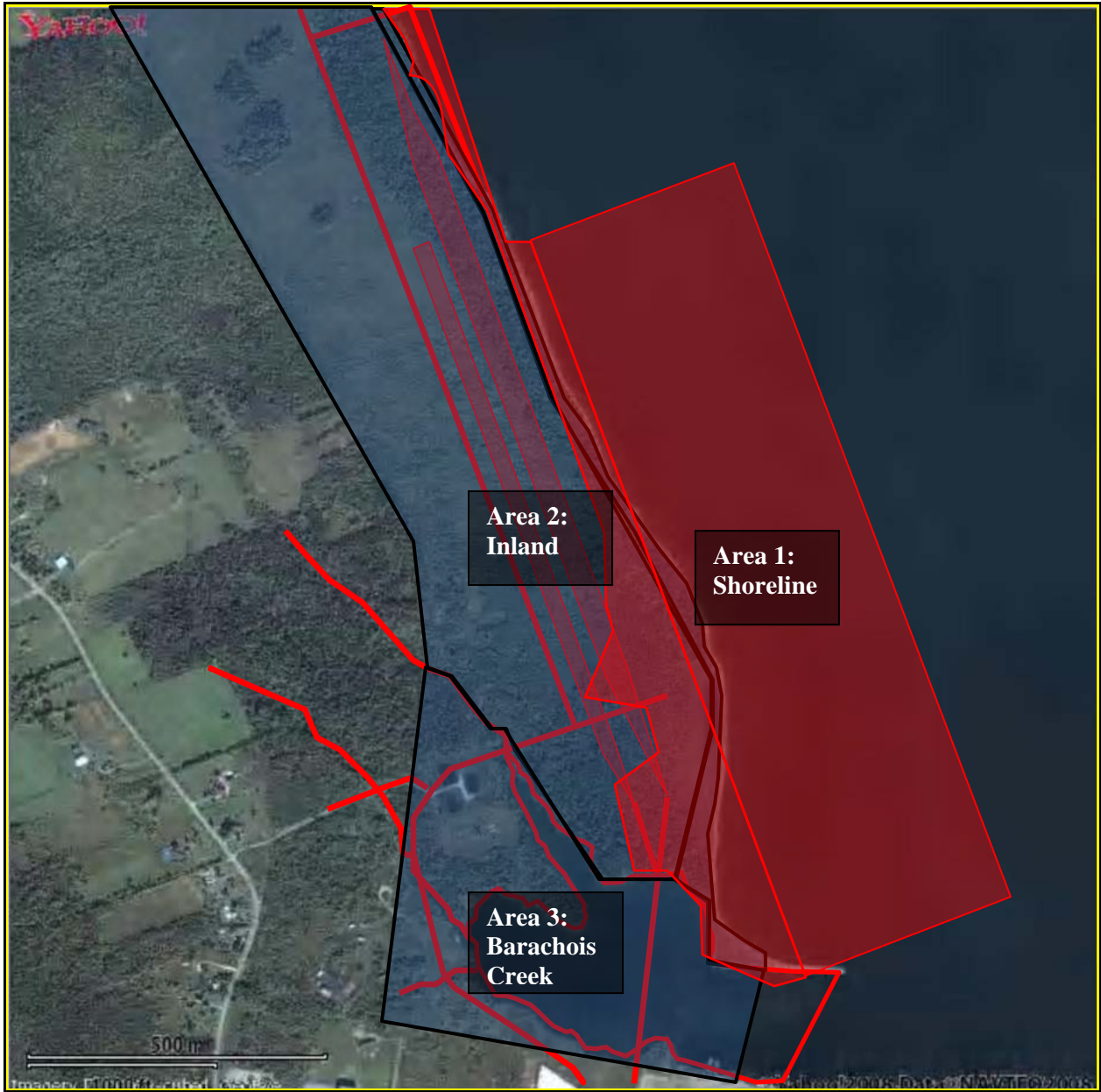


Figure 3.2-1: Sydney Marine Terminal Development and areas of archaeological reconnaissance

into Sydney Harbour. Due to the sandy soil, fallen trees were abundant along the shoreline. As they fell, perhaps due to wind or even gravity, their roots exposed the soil beneath. Each of these trees can therefore represent a random subsurface test, of which many were examined during the reconnaissance in Area 1 (Plate 1). Each of these proved negative, add further weight to the notion that all First Nations resources, had they been on the shoreline at one time, have since been naturally destroyed. Concerning historical cultural resources, an historic road was thought to have been located within the impact area, but it has seen heavy traffic by ATV enthusiasts and is deemed insignificant.

3.2.2 Area 2: The Inland region of Edwardsville

If the current construction plans of the proposed Sydney Marine Terminal remain unchanged, the inland region of the development area will receive relatively minimal impact. During archaeological reconnaissance of this area, cultural resources were encountered and archaeological subsurface testing was conducted (Figure 3.2.2-1).

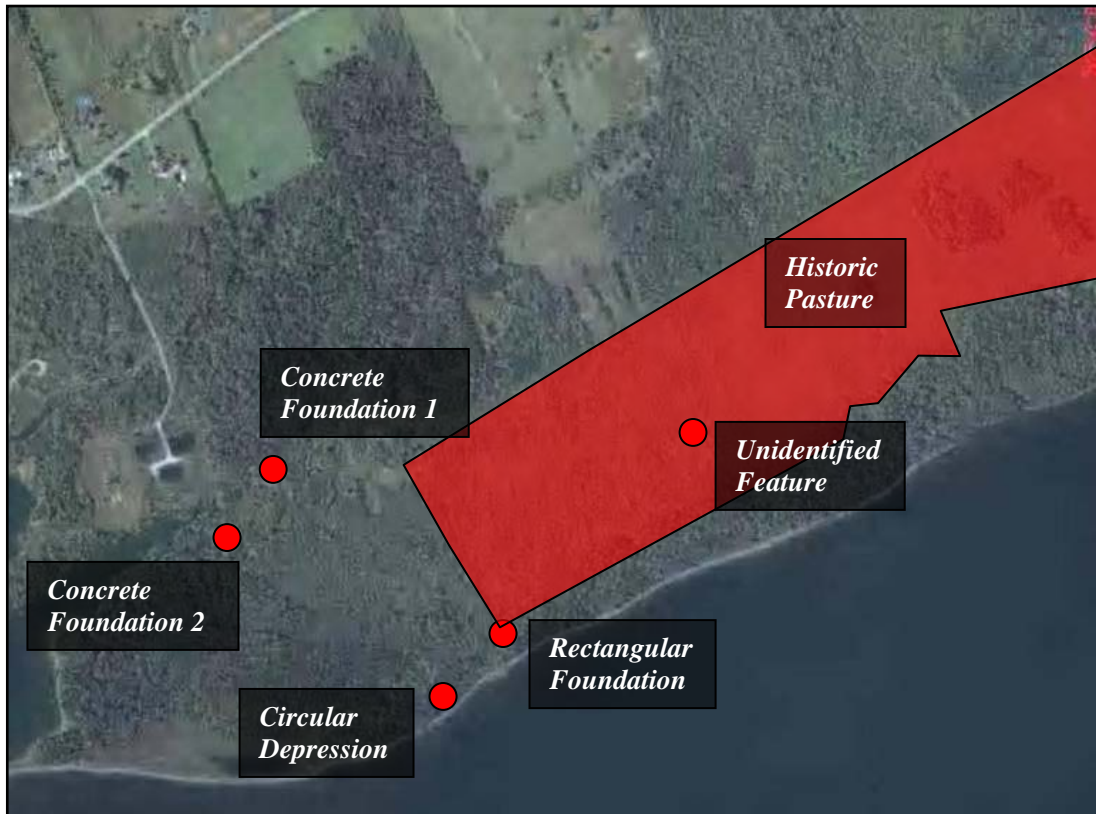


Figure 3.2.2-1: Archaeological Sites and other areas of interest in Area 2.

The inland portion of the development area was extensively surveyed by DAC Ltd. archaeologists by making use of ATV trails, historic roads, and surveyed cut lines, separated by approximately 50 metres and situated throughout the most directly impacted areas.

The northern three quarters of the inland area represent a complex series of pastures which, known through local tradition, were used for cattle grazing in the 1950s and 1960s. The fields are characterized by large expanses of tall grasses with occasional groupings of hardwoods. A significantly high proportion of apple trees are scattered generously throughout the field and in certain areas it is not uncommon to find dozens of trees in one small area. Further history on these specific properties can be pieced together using historic maps, which place this pasture under the ownership of at least eight landowners during the mid to late 19th century (Figure 3.2.2-2). While it would not be unreasonable to find eight foundations from the eight landowners, not all landowners would have done so, and during the archaeological reconnaissance, none were located.

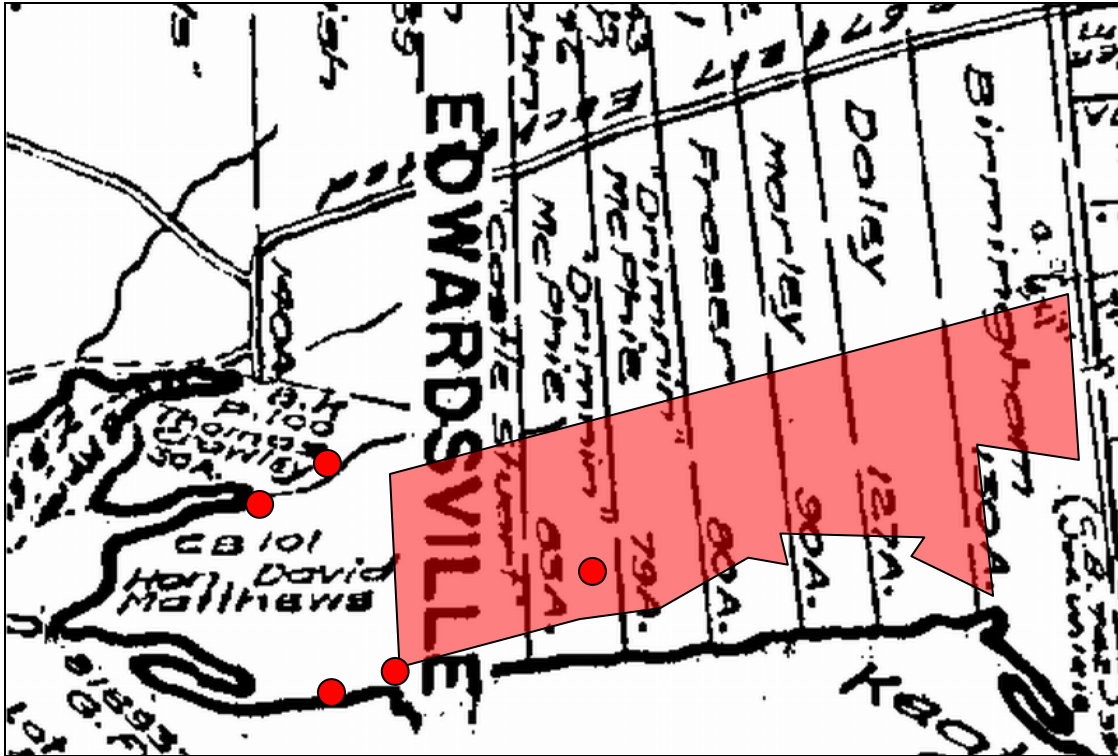


Figure 3.2.2-2: Pasture boundaries overlaid on late-19th century Crown land grants

One possible feature was discovered within the boundaries of the pasture. It consisted of a man-made terrace which may have supported a light wooden structure like a barn since no significant stone was visible on the surface. Since it was outside the impact area and of low significance, it did not undergo further archaeological testing.

The southern quarter of the inland development area was heavily forested, including young poplar, birch, and spruce in dry, uncultivated soils. A black spruce swamp bounds the northern region of the impact area, on average, 100 metres from the coast and outside the impact area. During the surveying of the impact area, surveyors cut lines through this area and beyond into the pasture. All of these lines, spaced on average 50 metres apart, were inspected until they reached the swamp, through which both no habitation is likely and there will be minimal impact from the terminal construction. A series of ATV trails run throughout the area, and coupled with more uprooted trees, provides an excellent example of random testing, which all provided negative results (Plate 4).

In total, four separate cultural resources were located, two concrete foundations near the Barachois, and two earthen features near the coast (Figure 3.2.2-2). The first concrete foundation was the largest at 14.1x7.3 metres with a 10.2x7.3 metre cellar (Plates 5 and 6). Its walls were made of a mixture of concrete and stone, indicating it is age to be late 19th to early 20th century. The second concrete foundation was smaller at 6.5x7 metres with a 7x3 metre cellar. Its walls consisted of more stone than the previous cellar, indicating it was either built earlier or it was built contemporaneously by a poorer landowner. It is also possible that the cellar corridor, which is clearly concrete, was added

to a stone foundation after the original structure was built (Plates 7 and 8). One test pit was excavated near the concrete cellar entrance and no artifacts were found.

The rectangular earthen feature likely represents a cellar depression (Plate 9), dug beneath a structure whose presence was not confirmed, suggesting it was likely made of wood and perhaps built for temporary use. To gather more information on this feature for a more accurate assessment on its significance, subsurface testing was conducted. Three test pits were planned for excavation but only two were completed. The test pit on the north side of the feature, extending to a depth of 60 centimetres, produced sherds of what appears to be creamware, giving the feature a temporary date range of 1780 – 1820. The circular depression on the coast of Sydney Harbour (Plates 10 and 11), like the rectangular feature, has no identifying aspects which could date its construction. Six test pits were planned but only 5 excavated since one was located on the edge of the circular mound and would not likely produce any diagnostic material. One pit was excavated in the middle of the feature and, while it did not produce any artifacts, at a depth of 24 centimetres it contained a 12-centimetre-thick layer of dark black organic soil with a grease-like texture.

3.2.3 Area 3: *The Barachois*

Like the previous two areas, archaeological reconnaissance along the Barachois consisted of fieldwalking to locate any visual indications of cultural resources. While historic cultural resources would not be uncommon considering their proximity to the two concrete foundations in Area 2 (Figure 3.2.3-1), a specific focus on First Nations resources was taken considering the ecological benefits of the Barachois and Sydney Harbour in general. Much of the shoreline along the Barachois bay is considered high-energy since it is littered with marine animals including crabs, three types of clams, and oysters. This gives the entire region a moderate to high potential of containing First Nations resources.

Despite the huge amount of resources, many of the shores around the Barachois are at very steep angles and could not support any long-term occupation. In an effort to test regions which will be impacted and which have the highest chance of containing cultural resources, several areas were noted during field reconnaissance including a small terrace near the mouth of the smallest tributary to the Barachois, a line of relatively young forest along a ridge above the Barachois Creek, and the shoreline location where a proposed railway line runs over the bay (Figure 3.2.3-1). An historic period midden was also found on the shoreline below the Barachois ridge and a qualitative sample of artifacts was recovered. These artifacts are awaiting analysis.

Ten test pits, two rows of five dug at 5 metre intervals, were placed on a low terrace near the Barachois. The five metre interval was decided because this area was considered to be of high potential for First Nations resources (Plate 12). The soils near the water were made from more clays while the ones 20 metres away had much more sand. The soil horizons were also intact, indicating that the area had not undergone any significant



Figure 3.2.3-1: Archaeological reconnaissance and testing on the Barachois

impact from modern disturbances. No artifacts were recovered from these test pits. Three test pits were also placed on a terrace which will be the northern connection for a railway line running over the Barachois. The southern connection was not tested because much of the southeast Barachois shoreline has been buried under modern stone fill. The three test pits, dug at 5 metre intervals in a triangular form, had undisturbed soil horizons and yielded no artifacts (Plate 13). Finally, the ridge above the Barachois was determined to be of low potential due to its height over the water, therefore test pits were dug every 20 metres for a total of 300 metres, ending at Concrete Foundation 2. No artifacts were recovered from the ridge.

4.0 RESOURCE INVENTORY

Six archaeological features were found in the development area. The two concrete foundations, based on their construction, were likely built in the late 19th or early 20th century. An aerial photo show both houses standing in 1940 (Figure 4.0-1), indicating they were abandoned sometime in the last 68 years.

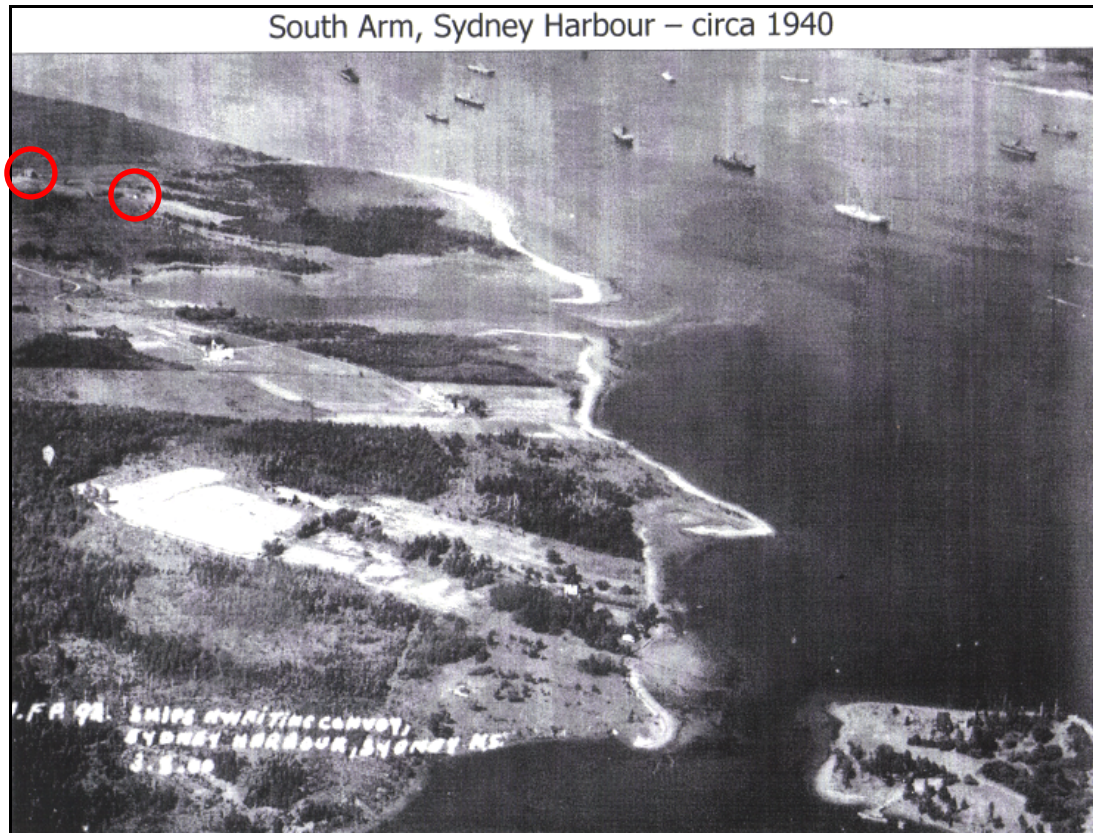


Figure 4.0-1: Sydney Harbour circa 1940.

The unidentified feature was not tested and therefore nothing can be said of its function, but its significance is deemed to be low. The historic midden on the Barachois shoreline, when analyzed, will help date the period of occupation in the area and help outline the events which occurred there. The circular earthen feature is of indeterminable function, but many theories exist, including a military origin. Due to the lack of concrete in its design and the absence of the feature in military maps for the region in 1941 to 1945, if it is of military origin, it is associated with the First World War or earlier. Because of the ceramics associated with the rectangular earthen feature, a current theory suggests it may be a temporary loyalist habitation.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The historic background study for the Sydney Harbour Marine Facility indicated that the area was of elevated potential for historic and First Nations archaeological resources. While no First Nations resources were found, one historic resource lies within the impact area and three are nearby. For all features, avoidance is recommended. If this is not possible, full-scale excavation of the two earthen features should be undertaken to better understand their function and determine their significance. This is most easily done by excavating two intersecting trenches through each feature, effectively learning the architectural history of the feature and collecting enough artifacts to help ascertain cultural affinity. The two concrete foundations are not determined to be significant but should be avoided if possible. The testing around the Barachois shorelines was an affective process which signifies the potential for First Nations resources in the area as low. However, should any resources be encountered during development, professional archaeologists should be contacted to design a mitigation strategy. Finally, should the plan for the Sydney Harbour Marine Facility change, it may affect the conclusions and recommendations of DAC Ltd. concerning these cultural resources. If changes do occur, DAC Ltd. should be consulted to ensure the original archaeological reconnaissance and testing methodology are sufficient for continued development. During the archaeological testing, the proposed footprint for the terminal changed slightly from the original plan by which the archaeological testing methodology was designed (Figure 5.0-1). This new plan does not affect the conclusions and recommendations of this report.

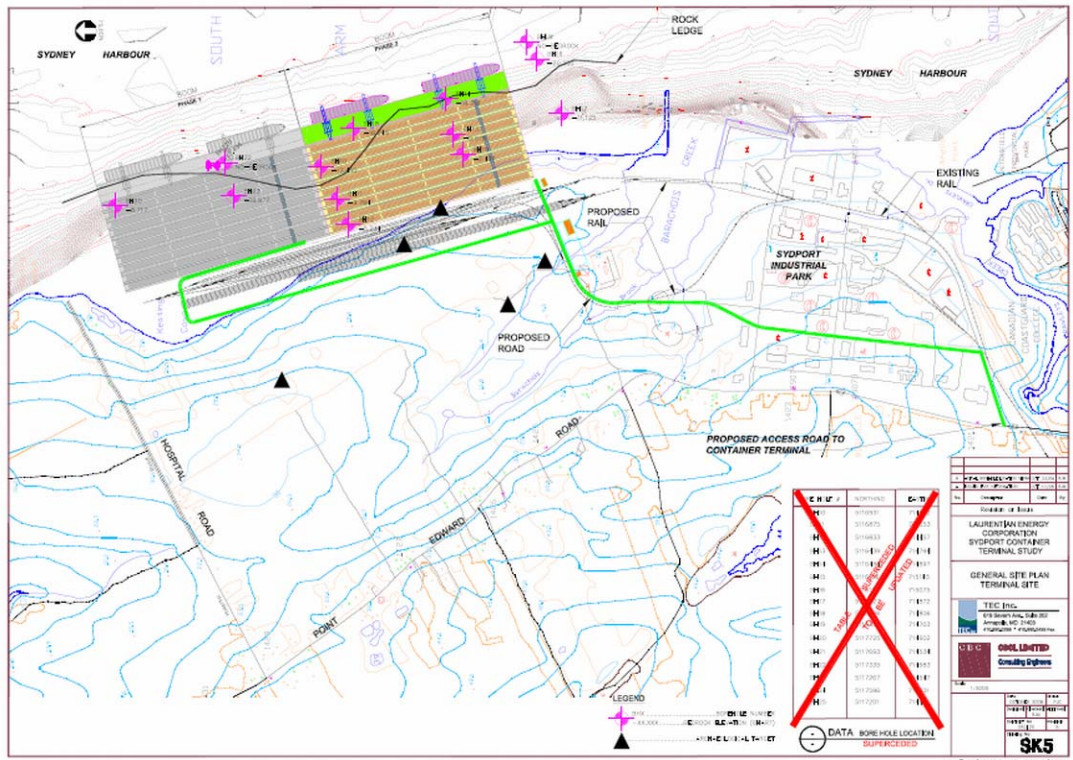


Figure 5.0-1: New Plan for the Sydney Terminal development (courtesy Sydney Ports Corporation).

6.0 REFERENCES

Davis Archaeological Consultants Limited. February 2008. *Critchett Point: Archaeological Resource Impact Assessment*. Heritage Research Permit A2008NS40. Manuscript on file, Nova Scotia Museum.

Davis, Derek and Sue Browne. 1996. *Natural History of Nova Scotia, Volume II: Theme Regions*. Halifax, Nimbus Publishing and Nova Scotia Museum.

Dawson, Joan. 1988. *The Mapmaker's Eye: Nova Scotia Through Early Maps*. Nimbus Publishing Limited and Nova Scotia Museum, Halifax.

PLATES



Plate 1: Eroding sand on the Sydney Harbour shoreline near Hospital Road.



Plate 2: Shoreline erosion showing underlying bedrock. Near the centre of the shoreline impact area.



Plate 3: Shoreline of Edwardsville showing the height of the cliffs and eroding bedrock.



Plate 4: Examining tree-throws for artifacts near the Barachois.



Plate 5: East side of Concrete Foundation 1.



Plate 6: West side of Concrete Foundation 1.



Plate 7: South end of Concrete Foundation 2.



Plate 8: West end of Concrete Foundation 2.



Plate 9: West side of rectangular earthen feature



Plate 10: East side of the circular earthen depression.



Plate 11: South side of circular earthen depression.



Plate 12: Testing near the Barachois Creek.



Plate 13: Railway crossing test pits.

**APPENDIX A:
HERITAGE RESEARCH PERMIT**



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

Application for Heritage Research Permit (Archaeology)

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

Permit No. A2008NS78

The undersigned April MacIntyre of 109 John Stewart Drive, Cole Harbour, NS B2W 4J7 representing (institution) Davis Archaeological Consultants Limited

hereby applies for a permit under Section 8 of the Special Places Protection Act to carry out archaeological investigations during the period:

from 6 October 2008 to 31 December 2008

at Sydney Marine Terminal

general location Edwardsville, Cape Breton

specific location(s) (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 certify that I am familiar with the provisions of the Special Places Protection Act of Nova Scotia, and that I will abide by the terms and conditions listed in the Heritage Research Permit Guidelines for the category (check one).

- Category A - Archaeological Reconnaissance
Category B - Archaeological Research
Category C - Archaeological Resource Impact Assessment

Signature of applicant [Signature] Date 24 September 2008

Approved: Executive Director [Signature] Date Sept 30, 2008