

# **GEM Health Care Group**

## **Expansion of Retirement Care Facility**

### **Class 1 Environmental Assessment Report**

Date: July 2012  
Ref. N°: 13145

**GEM Health Care Group**  
**Expansion of Retirement Care Facility**  
**Middleton, NS**

Class 1 Environmental Assessment Report

Prepared by:



---

**Andrew McIntosh**

Project Manger

Approved by :



---

**Doreen Chenard**

Manager, Environmental Engineering

## TABLE OF CONTENTS

<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1NAME OF UNDERTAKING .....	1
1.2LOCATION OF UNDERTAKING .....	1
1.3LAND OWNERSHIP AND PROJECT FUNDING .....	2
1.4PROPONENT INFORMATION .....	2
<b>2 INTRODUCTION</b> .....	<b>5</b>
2.1NEED FOR UNDERTAKING .....	5
2.2DESCRIPTION OF UNDERTAKING .....	5
2.3PROJECT DESCRIPTION .....	5
2.4PROJECT SCHEDULE .....	6
2.5REGULATORY FRAMEWORK .....	7
<b>3 EXISTING ENVIRONMENT</b> .....	<b>10</b>
<b>3.1BIOPHYSICAL ENVIRONMENT</b> .....	<b>10</b>
3.1.1 Vegetation and Habitat .....	10
3.1.2 Wildlife and Habitat .....	12
3.1.3 Wetlands .....	12
3.1.4 Surface Water and Aquatic Resources .....	13
3.1.5 Geology and Hydrology .....	14
3.1.6 Species at Risk .....	15
<b>3.2SOCIO-ECONOMIC ENVIRONMENT</b> .....	<b>16</b>
3.2.1 Archaeological and Heritage Resources .....	16
3.2.2 Aboriginal .....	16
3.2.3 Land Use .....	16
3.2.4 Economics .....	17
<b>4 SCOPE OF THE ASSESSMENT</b> .....	<b>18</b>
<b>4.1IMPACT ASSESSMENT METHODOLOGY</b> .....	<b>18</b>
<b>4.2DETERMINATION OF VALUED ENVIRONMENTAL COMPONENTS (VECS)</b> .....	<b>18</b>
4.2.1 Residual Environmental Effects Determination and Characterization .....	19

## TABLE OF CONTENTS

4.2.2	Significance of Residual Environmental Effects .....	19
<b>4.3</b>	<b>PROJECT–ENVIRONMENT INTERACTIONS AND VALUED ENVIRONMENTAL COMPONENTS (VECS).....</b>	<b>20</b>
<b>5</b>	<b>POTENTIAL IMPACTS, MITIGATION AND MONITORING .....</b>	<b>21</b>
<b>5.1</b>	<b>BIO-PHYSICAL VECS .....</b>	<b>21</b>
5.1.1	Air Quality.....	21
5.1.2	Noise .....	23
5.1.3	Vegetation and Wildlife .....	23
5.1.4	Species at Risk .....	25
5.1.5	Surface Water .....	26
5.1.6	Groundwater .....	27
5.1.7	Wetlands .....	27
<b>5.2</b>	<b>SOCIO-ECONOMIC VECS .....</b>	<b>27</b>
5.2.1	Land Use.....	27
5.2.2	Heritage and Aboriginal Resources .....	28
<b>5.3</b>	<b>SUMMARY OF IMPACT ASSESSMENT AND MITIGATION MEASURES .....</b>	<b>28</b>
<b>6</b>	<b>WETLAND COMPENSATION .....</b>	<b>32</b>
<b>7</b>	<b>EFFECTS OF THE ENVIRONMENT ON THE PROJECT .....</b>	<b>33</b>
<b>8</b>	<b>ACCIDENTS AND MALFUNCTIONS .....</b>	<b>34</b>
<b>8.1</b>	<b>SPILLS .....</b>	<b>34</b>
<b>8.2</b>	<b>TRANSPORTATION .....</b>	<b>34</b>
<b>9</b>	<b>ENVIRONMENTAL MONITORING.....</b>	<b>36</b>
<b>10</b>	<b>CONSULTATION .....</b>	<b>37</b>
<b>10.1</b>	<b>PUBLIC CONSULTATION .....</b>	<b>37</b>
<b>10.2</b>	<b>ABORIGINAL CONSULTATION.....</b>	<b>37</b>
<b>11</b>	<b>REFERENCES .....</b>	<b>38</b>

## TABLE OF CONTENTS

### Tables

Table 1 Summary of Project Regulatory Requirements .....	7
Table 2 Fauna Species in the Study Area Observations (7 October 2011).....	12
Table 3 Summary of wetland Water Quality Data for 2009 and 2010. ....	15
Table 4 Residual Impacts Rating Criteria.....	19
Table 5 Rating System for the Significance of Identified Adverse Environmental Effects .....	20
Table 6 Summary of Valued Ecosystem Components and Interactions.....	21
Table 7 Summary of Impacts and Mitigation on Valued Ecosystem Components .....	29

### Figures

Figure 1 Site Location .....	4
Figure 2 Site Plan.....	8
Figure 3 Site Wetland Delineation.....	9
Figure 4 Site Forest and Wetland Classification .....	11

### Appendices

Appendix 1	Environmental Assessment Concordance Table
Appendix 2	Wetland Alteration Application Information Table
Appendix 3	Fauna Assessment and Additional Information Report
Appendix 4	Atlantic Canada Conservation Data Centre Report
Appendix 5	Davis and MacIntyre Desktop Archaeological Study
Appendix 6	Davis and MacIntyre Field Reconnaissance Study
Appendix 7	Ducks Unlimited Canada Letter
Appendix 8	Kwilmu'kw Maw-klusuaqn Negotiation Office Letter

**Property and Confidentiality**

---

"This engineering document is the work and property of LVM Maritime Testing and, as such, is protected under Copyright Law. It can only be used for the purposes mentioned herein. Any reproduction or adaptation, whether partial or total, is strictly prohibited without having obtained LVM Maritime Testing's and its client's prior written authorization to do so.

Test results mentioned herein are only valid for the sample(s) stated in this report.

LVM Maritime Testing's subcontractors who may have accomplished work either on site or in laboratory are duly qualified as stated in our Quality Manual's procurement procedure. Should you require any further information, please contact your Project Manager."

<b>REVISION AND PUBLICATION REGISTER</b>		
<b>Revision N°</b>	<b>Date</b>	<b>Modification And/Or Publication Details</b>
0	2012-0-12	Submittal to NSE

# 1 INTRODUCTION

GEM Health Care Group of Halifax, Nova Scotia (the Proponent) is proposing to expand the existing Heart of the Valley long-term care facility to include a 35 bed assisted living facility and 33 retirement villas in Middleton, Nova Scotia. To proceed with this Project, a Class 1 Environmental Assessment (EA) is required, pursuant to the Environment Act as identified in Schedule A of the Environmental Assessment Regulations, Section F - Other (2), "An undertaking that disrupts a total of 2 ha or more of any wetland."

This Project is part of the Nova Scotia Department of Health's (NSDOH) "Continuing Care Strategy" for the replacement of nine continuing care facilities throughout the province to continue to provide a safe environment where residents of such facilities can enjoy a high quality of life. These facilities will service residents primarily from the Annapolis Valley.

A draft EA was reviewed by the NSE and other regulatory agencies. Comments were forwarded to the Proponent and have been incorporated into the report where possible. A concordance table with the comments and responses to the comments has been included in Appendix 1.

This EA document also serves as a support document for the Wetland Alteration Permit Application. Appendix 2 outlines the section of the EA report that provides the information for the items of a wetland assessment as required by the permit application.

## 1.1 Name of Undertaking

GEM Health Care Group proposes to construct and operate the expansion of the Heart of the Valley facility to include an assisted facility and retirement villas in addition to the existing long term care facility. This Project is referred to as the Expansion of a Retirement Care Facility.

## 1.2 Location of Undertaking

The Project site is located adjacent to the Heart of the Valley facility on the North Street Extension in Middleton, Nova Scotia, as shown on Figure 1. The proposed Project property is on PID 05297122 (ATS77 MTM Zone 5, 54.55449 E, 4979187 N).

The NSDOH identified Middleton as the location for the replacement long term care facility to replace the North Hills Long Term Care Centre. The Proponent went through a site selection process that included identifying locations that met the NSDOH requirements and zoning constraints within the Town of Middleton.

The property is zoned as residential by the Annapolis District Planning Commission. The surrounding properties consist of an abandoned rail corridor to the south, with recreational land

on the south side of the rail corridor, residential to the west, and undeveloped forested land to the north and east (Figure 1).

The nearest resident is approximately 217 m to the east on North Street and 210 m south on far side of the abandoned rail line and adjacent to the recreational area (Figure 1). The nearest businesses to the facility are located approximately 420 m east of the site on the south side of North Street with the exception of the existing Heart of the Valley Long Term Care Facility located adjacent to the east of the proposed facility expansion.

### 1.3 Land Ownership and Project Funding

The 2.02 hectare (ha) property is wholly owned by the Proponent and will become part of the Heart of the Valley facility. The Project will be privately funded by the Proponent that will not include any funding from either provincial or federal agencies.

### 1.4 Proponent Information

<b>Name of Undertaking:</b>	Expansion of Retirement Care Facility
<b>Proponent:</b>	GEM Health Care Group
<b>Proponent Contact:</b>	George Oickle Manager Engineering Department
<b>Location of Undertaking:</b>	North Street Extension Middleton, NS
<b>Proponent Mailing Address:</b>	1046 Barrington Street, 3rd floor Halifax, NS B3H 2R1
<b>Phone:</b>	(902) 429-6227
<b>Fax:</b>	(902) 429-6375
<b>Email:</b>	<a href="mailto:george.oickle@gemhc.com">george.oickle@gemhc.com</a>
<b>EA Contact Person</b>	Andrew McIntosh
	Maritime Testing (1985) Limited 97 Troop Avenue Dartmouth, NS B3B 2A7
<b>Phone:</b>	(902) 468-6486
<b>Fax:</b>	(902) 468-4919
<b>Email:</b>	<a href="mailto:amcintosh@maritimetesting.ca">amcintosh@maritimetesting.ca</a>

**Signature of Proponent Signing Officer:**

  
\_\_\_\_\_  
George Oickle

Manager Engineering Department  
GEM Health Care Group

12-july-2012  
\_\_\_\_\_  
Date

**Signature of EA Preparer:**

  
\_\_\_\_\_  
Andrew McIntosh,

Project Manager - Environmental  
Assessments  
LVM Maritime Testing

11 July 2012  
\_\_\_\_\_  
Date



**LVM** | MARITIME TESTING

Site Location  
PID No. 05297122  
Middleton, Nova Scotia

DATE: July 2012

SCALE: NTS

DRAWN BY: JJ

CKD BY: AM

JOB No. 13145

FIGURE 1

## 2 INTRODUCTION

### 2.1 Need for Undertaking

Across the province there are a number of long term care facilities that are getting older. To ensure that residents continue to live in a safe environment where they can enjoy a high quality of life, the province is beginning to replace these facilities through the Nova Scotia Department of Health's Continuing Care Strategy. GEM Health Care Group is constructing expanding the existing Heart of the Valley Long Term Care Centre to include both an assisted living facility and retirement villas to meet the provinces long term care requirements.

### 2.2 Description of Undertaking

Located in Middleton in Annapolis County, the existing 50 bed Heart of the Valley facility was constructed to replace the former North Hills Nursing Home in Granville Ferry as part of the Department of Health's (DOH) Continuing Care Initiative to replace the province's aging long term care facilities. The Heart of the Valley is a state-of-the-art long term care facility catering to those who require supervision or assistance in performing their activities of daily living.

To meet the needs of the retired population within the surrounding communities, GEM Health Care Group is expanding its Heart of the Valley facility to include a 35 bed assisted living facility and 33 retirement villas. The proposed assisted living and retirement villas will be constructed on land adjacent to the existing facility in Middleton, NS (Figure 2).

The Project will require the infilling of 1.28 ha of an existing wetland that covers the majority of the site. When this wetland area is combined with the 1.68 ha previously impacted for the construction of the original long term care facility, it totals 2.96 ha which is greater than the 2 ha provincial EA trigger (Figure 3).

### 2.3 Project Description

The proposed Project components include:

- An assisted living building with a 35 bed capacity;
- 33 individual residential retirement villa units;
- Outdoor activity and seating areas;
- Emergency vehicle access; and
- Parking for staff, visitors and residents.

**Construction**

The general Project Construction activities will include the following:

- Implementation of a project specific Erosion and Sediment Control (ESC) Plan;
- Clearing and grubbing of the construction area;
- Excavation of the material and placement of suitable fill;
- Installation of water, sewer and storm sewer services;
- Installation of aboveground utilities (Electric utilities)
- Construction of main assisted living building and retirement villa units; and
- Grounds landscaping.

**Operaitons and Maintenance**

The operations of the facility will include vehicle traffic for staff working at the facility as well as from visitors and delivery vehicles. Regular grounds maintenance operations may include lawn care during the summer and road clearing and ice management during the winter months. These activities will be coordinated with the operations of the existing Heart of the Valley long term care facility.

**Decommissioning**

Decommissioning of the proposed Project site is not likely to occur for at least 20 years, and the building and structures could be expected to stay in service for 50 years or more. As the site facilities age, the electrical and mechanical systems will likely require upgrades. With such an expected lifespan, and as part of their commitment to environmental stewardship, plans for decommissioning of the proposed Project are currently not planned. Once a date for decommissioning has been established, consultation with the proper authorities will help to develop an official site decommissioning plan that meets all regulatory requirements.

**2.4 Project Schedule**

The schedule for the Project is anticipated to be as follows:

Clearing and Grubbing	Fall 2012
Site Infrastructure	Winter 2012
Building Construction	Spring / Summer 2013

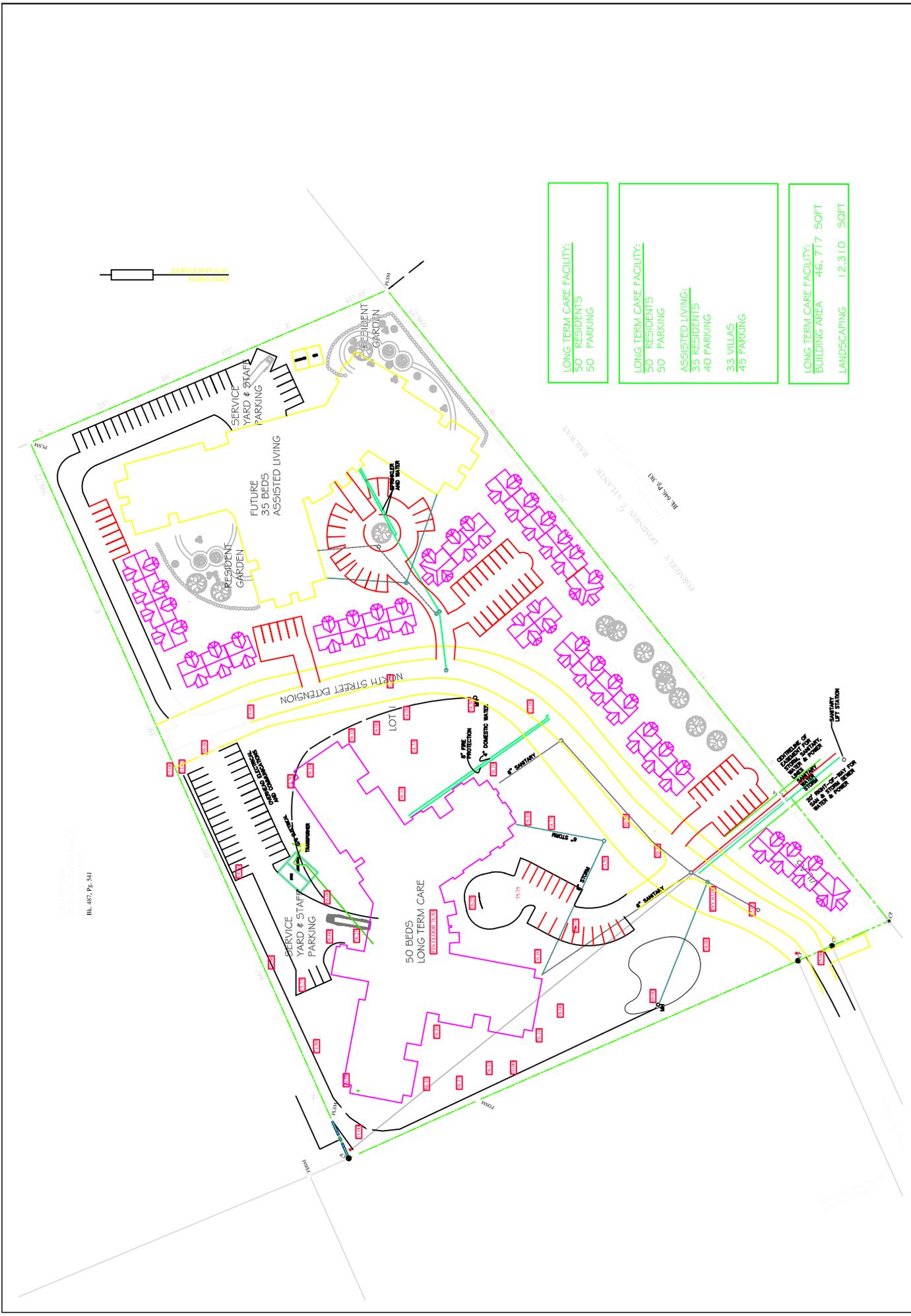
## 2.5 Regulatory Framework

The proposed alteration of the existing wetland will require completing a Class 1 Provincial Environmental Assessment. The Proponent is also required to obtain a Wetland Alteration Approval as it will result in an alteration to the existing wetland. An alteration means the filling, draining, flooding or excavating of a wetland. A summary of the environmental and other regulatory requirements is presented in Table 1.

This EA document has been prepared to provide the required wetland information to support the Wetland Alteration Approval application.

Table 1 Summary of Project Regulatory Requirements

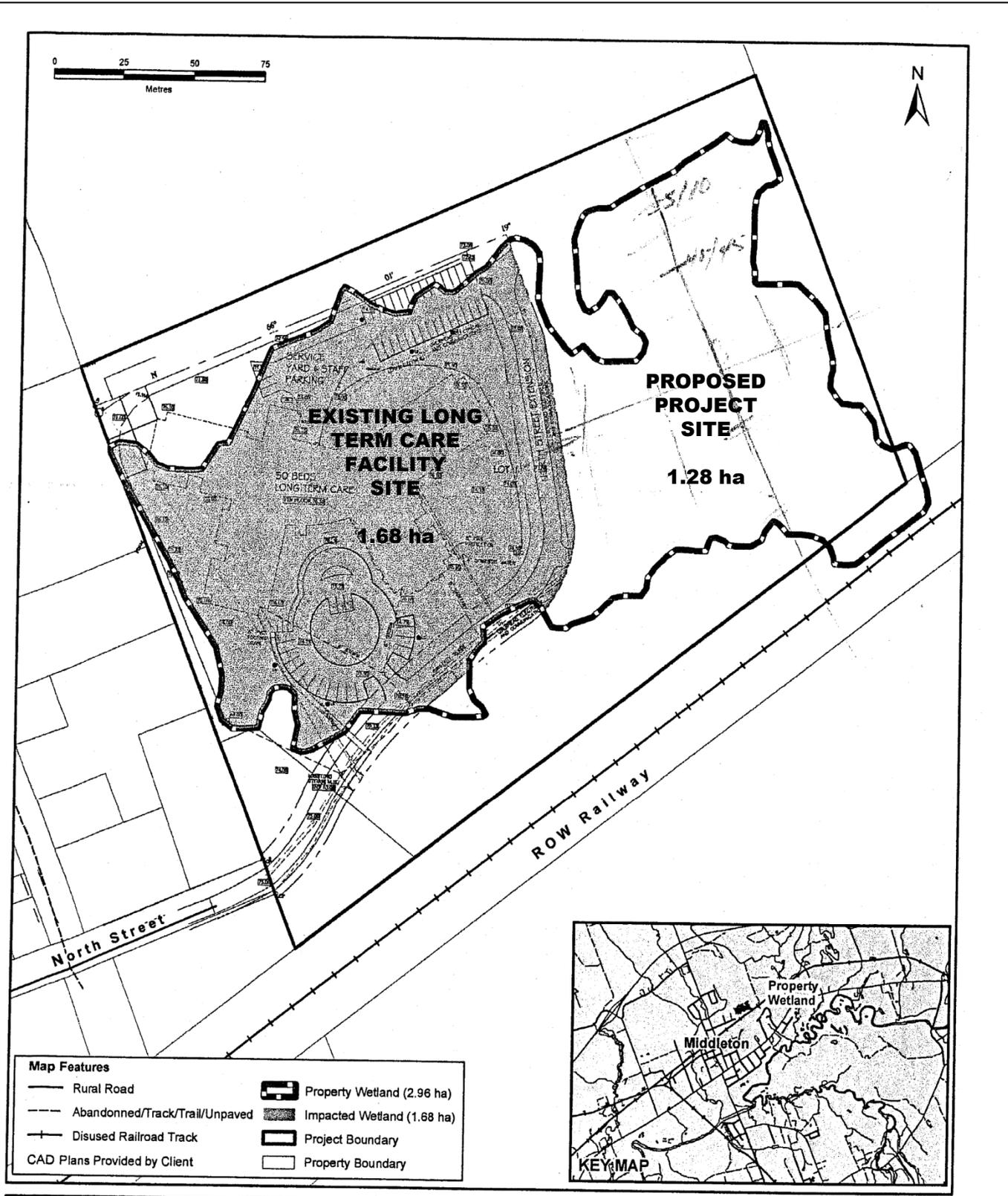
DEPARTMENT / AGENCY	ACT / REGULATION	DESCRIPTION
Nova Scotia Environment	Environmental Assessment Regulations – Class 1 Environmental Assessment	An undertaking that disrupts a total of 2 ha or more of any wetland.
	Wetland Alteration	An alteration meaning the filling, draining, flooding or excavating of a wetland.
Federal	Not Applicable	Federal Regulators will review the EA as part of the EA provincial EA review process.
Municipal – Town of Middleton	Development Agreement	Outlines the agreement between the Proponent and the Town for type of development and service needs.
	Building Permit	Required to construct any structure on the Project site.



Rev. 407, Pg. 541

LONG TERM CARE FACILITY: 50 RESIDENTS 50 PARKING	LONG TERM CARE FACILITY: 50 RESIDENTS 50 PARKING ASSISTED LIVING: 35 RESIDENTS 40 PARKING 33 VILLAS 45 PARKING	LONG TERM CARE FACILITY: BUILDING AREA 46,717 SQFT LANDSCAPING 12,310 SQFT
--	---	--

	MARITIME TESTING		Site Layout Plan	
	DATE: July 2012	SCALE: NTS	DRAWN BY: JU	CKD BY: AM
			JOB No. 13145	FIGURE 2



### 3 EXISTING ENVIRONMENT

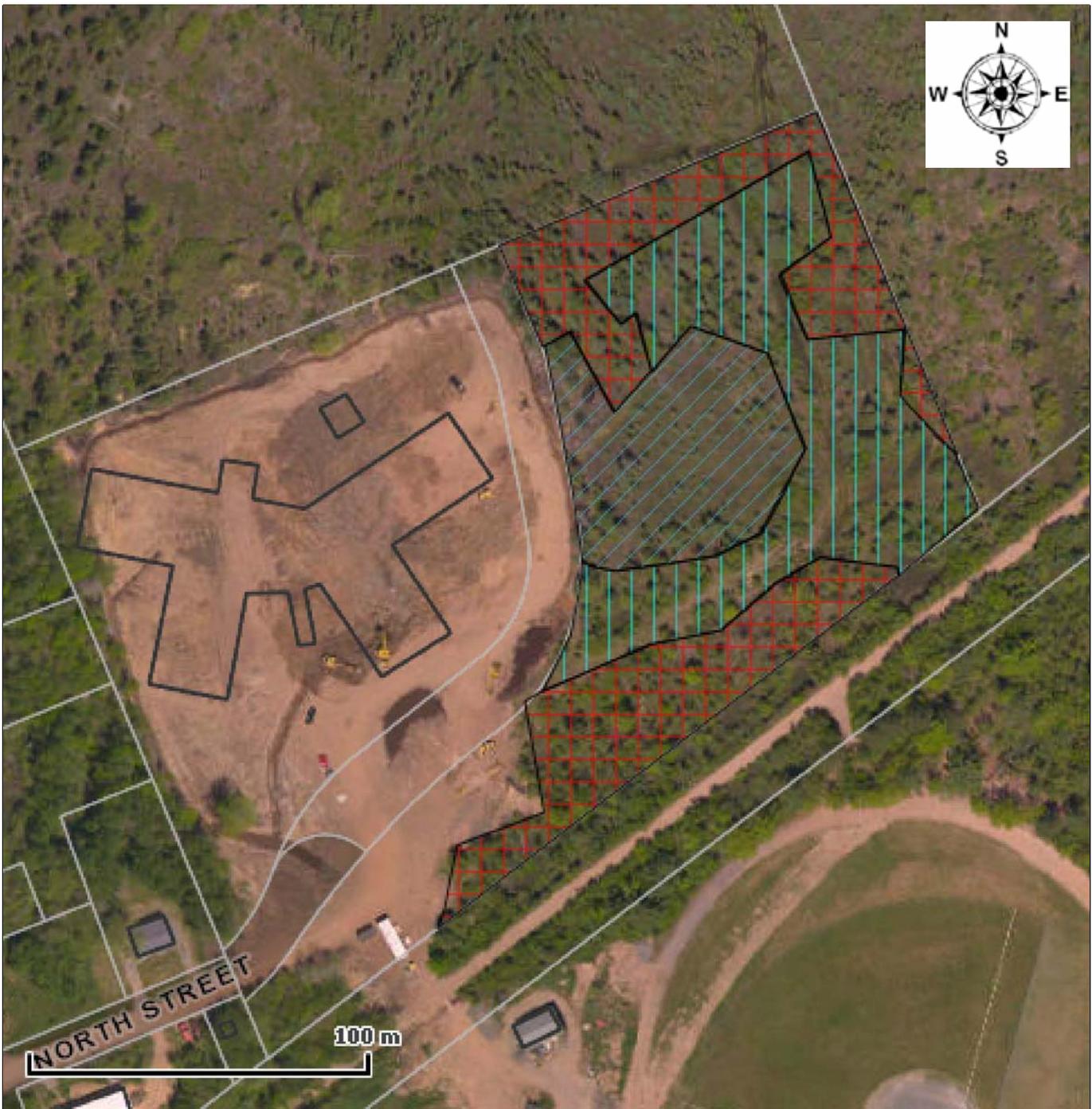
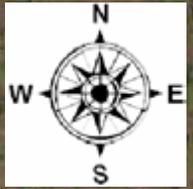
#### 3.1 Biophysical Environment

##### 3.1.1 Vegetation and Habitat

The wetland is found within the Annapolis Valley Natural Landscape # 2 (NSEL 2002). Most of this landscape has been altered over time through agricultural production or forestry operations, but this specific area north of Middleton contains a fairly large block of forest land. The treed swamp is connected to a larger forest block and therefore may be used by terrestrial fauna as part of a larger habitat range.

The wetland is dominated by sphagnum moss, low shrubs and scattered trees, mainly Black Spruce (*Picea mariana*) (Wile 2011). The wetland incorporates upland islands which are dominated by a diversity of upland, non-wetland species. Areas including former geotechnical test pits near the abandoned rail line and near the property line have a distributed plant community. Jacques Whitford (2008) identified two main vegetation communities over the Project site as treed bog and low shrub bog (Figure 4). However, a 2011 field survey by Wile (Appendix 3) of the Project site noted that the organic peat accumulation that partially defines a bog was not excessive. Therefore, the state of vegetation progression may indicate the wetland to be in a relatively young stage of bog development. Slight topography changes within the wetland result in shrub or tree communities growing in shallow organics over mineral soil, suggesting that the wetland contains the characteristics of both treed and shrub swamp. Near the railway / trail line there are areas of shallow marsh containing only herbaceous plants, indicating permanent surface water or moist soil conditions. These shallow marsh areas may actually be remnants of former excavated ditches created during the construction of the railway bed.

Stantec's 2010 Wetland Monitoring Report noted that the Project area was dominated by obligate and facultative wetland species. Over a two year monitoring period conditions within the study area, ie. The present Project site, have been maintained for the area to function as a wetland and not impacted by the adjacent long term care facility development. Two distance intervals were monitored from the eastern edge of the Project site; near interval consisting of 5 to 10 meters from the site and far interval consisting of 75 to 80 m from the site and within the proposed Project boundary. The dominant species in the near interval consisted mainly of shrubs (85%) and moss including rhodora (*Rhododendron canadense*) and Mountain holly (*Nemopanthus mucronatus*). The far interval consisted mainly of shrubs (63%) and trees (24%) with a high percentage of moss and was dominated by rhodora, leatherleaf (*Chamaedaphne calyculata*), soft rush (*Juncus effuses*) and American larch (*Larix laricina*) (Stantec 2010).



LEGEND

-  Tamarack / Black Spruce Forest
-  Treed Bog
-  Low Shrub bog

**LVM** | MARITIME TESTING

Site Forest and Wetland Classification  
(Source: Annapolis District Planning Commission)

DATE: July 2012	SCALE: NTS	DRAWN BY: AM	CKD BY:	JOB No. 13145	FIGURE 4
--------------------	---------------	--------------	---------	---------------	----------

The main forest habitat consists of tamarack / black spruce and is located primarily along the north, east and southern edges of the Project site (Figure 4). The tree canopy is fairly open and consists primarily of American larch (*Larix Laricina*), Black Spruce (*Picea mariana*), Red Maple (*Acer rubrum*) and Grey Birch (*Betula populifolia*). The ground cover mainly consists of Sphagnum moss (*Sphagnum spp.*) with some black-girdle bulrush (*Scirpus cyperinus*).

### 3.1.2 Wildlife and Habitat

A Wildlife and Habitat field survey was undertaken by Mr. John Wile on 7 October 2011 (Appendix 3). The field survey used the information gathered in the Atlantic Canada Conservation Data Centre (ACCDC) report (Appendix 4) for directing the work. None of the species observed during the 7 October 2011 field survey were either federal (COEWIC) or provincially (NSDNR) species of conservation concern (Table 3-1). All of the mammals listed in Table 3-1 were not observed directly during the field survey but signs of their presence within the study and surrounding area were found. No reptiles or amphibians were observed during the survey.

Table 2 Fauna Species in the Study Area Observations (7 October 2011).

COMMON NAME	SCIENTIFIC NAME	NUMBER OF OBSERVATIONS
<b>BIRDS</b>		
Black-capped Chickadee	<i>Poecile atricapillus</i>	6
Cedar Waxwing	<i>Bombycilla cedrorum</i>	5
Northern Flicker	<i>Colaptes auratus</i>	2
American Robin	<i>Turdus migratorius</i>	3
Blue Jay	<i>Cyanocitta cristata</i>	3
Hermit Thrush	<i>Catharus guttatus</i>	1
<b>MAMMALS</b>		
Raccoon	<i>Procyon lotor</i>	0
Coyote	<i>Canis latrans</i>	0
Snowshoe Hare	<i>Lepus americanus</i>	0
White-tailed deer	<i>Odocoileus virginianus</i>	0

### 3.1.3 Wetlands

In July and August 2008, Stantec (formerly Jacques Whitford) conducted a delineation and characterization of the 2.96 hectare wetland in support of a 1.68 hectare wetland alteration application. A further functional assessment was conducted by John Wile in 2011, in conjunction with a fauna assessment. At select locations throughout the wetland, up to 0.4 metre (16 inches) of organic peat was present at the surface. Underlying strata consist of a

silty-sandy gravel deposit and a deeper clay deposit that acts as a shallow confining layer. Shallow perched groundwater in the wetland was at, or near the ground surface. Stantec (2008) characterized the wetland as a basin bog with tree and shrub vegetation. However, given the shallow and inconsistent presence of organic peat, the wetland does not completely exhibit characteristics normally associated with many large bogs in Nova Scotia (e.g. thick deposits of organic peat), and may more closely be characterized as swamp (Wile 2011).

The site had two distinct vegetation communities present; a treed habitat and a lower shrub habitat. There have been 72 species of vegetation identified during field surveys of the site (Stantec 2010). None of the plant species identified are considered rare in either Nova Scotia or Canada. The vegetation primarily consists of grey birch, American larch, black spruce, leather leaf, rhodora and sphagnum, although other minor tree, shrub and vascular plant species were present.

In 2008, the wetland was not used for any specific purpose (e.g. recreational, agricultural, cultural, or business) and was not a part of a protected area. Stantec (2008) summarized that key functions of the wetland were:

- Carbon storage and possible carbon sink
- Possible groundwater recharge zone

Wile (2011) further assessed the ecological function and concluded that considering the wetland's size, connectivity, habitat diversity, and location within the ecological landscape, it has low to moderate ecological function relating to its potential to filter and trap sediment and nutrients, control flooding, recharge groundwater and sequester carbon.

No watercourse inputs have been identified for the wetland (Stantec 2008). The existing North Street Extension acts as a barrier to surface runoff entering the Project site from the west. All water within the wetland is, therefore, a result of precipitation. The majority of the water contained within the wetland leaves through evaporation. However, during a field survey after a heavy rain event by Wile (2011), water was seen overflowing from the site and discharging through a culvert that runs under the railway at the southeast corner of the site.

Since the initial characterization in 2008, 1.68 hectares of the wetland were removed for the development of the long term health care facility. The proposed Project will disturb nearly all of the remaining 1.28 ha of wetland on the site with the exception of a minimal amount, approximately 0.06 ha, located in the railway right of way on the southeast corner of the site (Figure 3).

### 3.1.4 **Surface Water and Aquatic Resources**

The nearest major watercourse to the Project site is the Annapolis River, located 770 m to the south. There is also an unnamed stream located 370 southeast of the site that empties into

the Annapolis River and an unnamed stream is located approximately 240 m north of the Project site. No watercourses travel directly adjacent or through the Project site. Surface water intermittently does drain from the site through a culvert on the southeast corner of the site that travels under the adjacent abandoned railway bed and drains into an underground storm sewer.

Stormwater is prevented from entering the site from the existing long term care facility due to the construction of the North Street Extension that separates the two sites. The roadway acts as a barrier to surface water flows to the Project site.

Stantec has conducted annual wetland alteration monitoring since 2009. In the 2010 annual monitoring report Stantec noted that the difference between the groundwater and surface water level fluctuations indicate that they are not hydrologically connected. The groundwater fluctuations were significantly greater than the surface water fluctuations.

The water chemistry of the site is indicative of a bog wetland based on the pH range and dissolved calcium and manganese concentrations documented by the Jacques Whitford / Stantec water quality studies of the site between 2008 and 2010 and compared to published bog characteristics. A summary of the water quality data for 2009 and 2010 is presented in Table 3.

### 3.1.5 **Geology and Hydrology**

The site is located in the Valley region of the Triassic Lowlands of Nova Scotia and consists of well drained, coarse textured soil on smooth or flat terrain. The surficial geology consists of Winconsinan glacialfluvial deposits.

Stantec (2008) noted that the surficial soils on the adjacent long term care facility site contained a large silt content. A confining layer was observed close to the surface and separating the shallow peat layer from the underlying unsaturated, well sorted medium grained sands. The adjacent site consisted of peat near the surface across much of the site and all test pit sites during the geotechnical investigation encountered silty-sand with gravel, overlying sandy-silt with gravel varying in depth from 0.15m to 1.52 m. This layer was underlain by an elastic silt layer varying in depth from 0.60 m to 4.88 m. The total depth of the confining layer was not determined during the time of the geotechnical investigation but was found to be quite variable across the adjacent site during the construction of the long term care facility (G. Oickle, personal communication, 21 November 2011).

Subsequent hydrological monitoring of the Project site, as part of the long term care facility wetland alteration requirements, noted that the surface water and groundwater are not hydrologically connected (Stantec 2010) which is consistent with the findings on the adjacent site.

Table 3 Summary of wetland Water Quality Data for 2009 and 2010.

Monitoring Site	pH				Calcium		Manganese	
	< 4.3				< 2.0 mg/L			
	Avg = 3.96				Avg = 3.0 mg/L		Avg = 0.7 mg/L	
	2009		2010		2009	2010	2009	2010
	July	Aug	June	August	Aug	August	Aug	August
1			3.92	4.79				
2			3.97					
3			3.75					
4			3.86					
5			2.92					
6	5.25		5.02					
7			4.35					
8			3.15	5.24				
9	4.34	4.95	3.46	5.1	4.6	2	2.7	1.2
10	4.07	5.11	3.79	4.95	2	1.5	1.5	1.2
11	4.95	5.02	3.49	4.96	3.5	2.4	0.8	0.6
12	5		3.42	5.46				
13			4.45					
14	4.25	4.34	3.89	4.83	0.9	1.3	0.9	0.7
15	4.63	4.57	4.4	4.96				
16			4.32					
17	4.82	4.51	3.78	4.92	-	1.5	-	0.7
18	5.31		4.46					
19	4.62	4.33	4.33		4.6	-	1.1	-
20			3.88					

NOTE : Table developed from tables in Stantec (2010).

There are no groundwater wells near the project site as the Town of Middleton has a municipal water supply. There are three municipal supply wells located approximately 1 km southeast of the site between with Annapolis and Nictaux Rivers.

### 3.1.6 Species at Risk

Jacques Whitford (now Stantec) conducted a vegetation survey in 2008 of the Project site as part of the wetland monitoring program required by the NSE for the construction of the adjacent Heart of the Valley long term care facility in a wetland. The survey identified 72 plant species on the site. None of the species identified were considered species of conservation concern either provincially (NSDNR) or federally (COSEWIC and SARA).

Wile (2011) conducted a wildlife survey to supplement the Jacques Whitford vegetative survey and noted that the Wood turtle and Peregrine falcon were two species of conservation concern

identified in the ACCDC report that had potential to be present on or around the Project site. However, upon further assessment of the species' habitat requirements, it was noted that there is a low potential for Wood turtle to be present due to distance between the site and the Annapolis River, its potential habitat, and any connecting stream.

There is also a low potential for the Peregrine falcon use the site for nesting but the species may use it as part of its hunting range and observations on the site are expected to be rare.

## 3.2 Socio-Economic Environment

### 3.2.1 Archaeological and Heritage Resources

Davis MacIntyre and Associates Limited conducted an archaeological assessment of the Project site and surrounding area in 2012. There were indications of development near the site; however, there were no indications of previous development on the Project site. This, "is logical given that the area is wetland." (Davis 2012a). A copy of the complete Davis report is included in Appendix 5.

Davis(2012b) conducted a site reconnaissance in March 2012 and concluded that the study area had a low potential for both European and First Nations Resources (Appendix 6). Therefore, no additional mitigation for these resources was recommended.

### 3.2.2 Aboriginal

Davis MacIntyre and Associates (2012) developed a predictive model for First Nations resources within the Project site. The model indicated that the site had a low potential for First Nations resources to be present. There were no indications of Aboriginal resources on the adjacent site during the construction of the long term care facility. Therefore, the presence of Aboriginal resources on the Project site is not anticipated.

A copy of the draft EA has been forwarded in April 2012 to the Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) to permit the Mi'qmaq community to review the Project for any impact that it might have on the First Nations resources.

### 3.2.3 Land Use

The site has been selected based on its proximity to municipal services including water sewer and storm sewer as well as to the Town's amenities and fire hall. The site offers a relatively flat area for development. The site is zoned as residential which includes the use for Homes for Special Care. Land adjacent to the Project site is zoned as either Residential or Recreational.

### 3.2.4 **Economics**

The location of the facility and residential villas within the Town of Middleton will provide for an increase in the economic opportunities for the local community. The facilities will require full-time and part-time staff to service the facilities and provide services required by the residents. Also, there will be the need to provide local goods and services to maintain, operate and provide goods to the facility and residents. This will all add economic benefits to the Town of Middleton and Annapolis County.

## 4 SCOPE OF THE ASSESSMENT

### 4.1 Impact Assessment Methodology

The environmental impact assessment is a planning tool used in which the environmental effects of a proposed undertaking are predicted and evaluated and are given consideration prior to the undertaking. The environmental impact assessment includes identifying and describing those components of the proposed setting within the area of the study boundaries that will or could be affected by the Project. The process for an environmental impact assessment is a step-wise and transparent process. The steps in the process include:

- Determining the VECs
- Determining the Project activities that may interact with the VECs
- Determining the mitigation measure that can be used or implemented to reduce the impact
- Determining and characterizing the residual environmental effects and their significance
- Developing monitoring measures

### 4.2 Determination of Valued Environmental Components (VECs)

A list of potential VECs was determined using a standard environmental assessment methodology. Potential VECs were assessed to determine if they may be present within the study area. Based on this information a determination was made as to which of the VECs would be included in the assessment of this Project.

The identification of the Project activities that may interact with the VECs is completed by identifying the various Project components that may have a potential effect pathway to the receiving environment or component. The components are categorized to whether they occur during construction, operation or decommissioning phases of the Project. Project activities are compared to the list of VECs and the potential interactions are identified for further consideration in the impact assessment process.

Once the Project and VEC interaction have been identified, potential impacts can be identified. Information about the VECs and the knowledge of the Project activities are combined to determine and review potential adverse effects of the Project.

Mitigation measures, which can be used to reduce the potential impacts of the Project on the VECs, are identified. Mitigation measures can include both Project design, construction

practices or Project specific measures and are implemented by the Proponent to reduce the identified impacts.

#### 4.2.1 Residual Environmental Effects Determination and Characterization

Residual environmental effects are those effects that remain following the application of mitigation measures. They can be characterized based on their geographic extent, duration, frequency, reversibility and magnitude as outlined in Table 4.

Table 4 Residual Impacts Rating Criteria

CRITERIA	RATING TERM	DEFINITION
Magnitude	Negligible	No measurable impacts.
	Small	Impact likely to result in less than 1% change in regional resource.
	Medium	Impact likely to result in 1% to 10 % change in regional resource.
	Large	Impact likely to result in more than 10% change in regional resource.
Geographic Extent	Local	Effect is limited to the footprint of the Project site and immediate surrounding area.
	Regional	Effect is limited to the Regional Study Area of the VEC.
Frequency	Rarely	Less than once per year.
	Intermittent	Less than once per week.
	Daily	Greater than once a day.
Duration	Short-Term	Effects only occur during construction, decommissioning, or as an isolated event during the operation and maintenance phase.
	Medium-Term	Effect lasts for the duration of the Project, or during operation.
	Long-Term	Effect occurs for an undetermined time beyond Project decommissioning.
Reversibility	Reversible	Effect is reversed after the activity ceases.
	Partially-Reversible	Effect is partially reversed after the activity ceases.
	Non-Reversible	Effect will not be reversed when activity ceases.

#### 4.2.2 Significance of Residual Environmental Effects

Assigning residual impact significance is required to determine if a project has the potential to result in an adverse impact after implementing mitigation measures. A clear determination is made regarding whether or not the residual environmental effect is significant.

A rating system for describing the significance of adverse environmental effects was chosen, as presented in Table 5.

Table 5 Rating System for the Significance of Identified Adverse Environmental Effects

RATING TERM	DEFINITION
High	Potential impact could threaten sustainability of the resources and should be considered a management concern. Research, monitoring and / or recovery initiative should be considered.
Medium	Potential impact could result in a decline in resource to lower-than-baseline, but stable levels in a study area after Project closure and into the foreseeable future. Regional management actions such as research, monitoring, monitoring and/or recovery initiatives may be required.
Low	Potential impact may result in slight decline in resource in study area during the life of the Project. Research, monitoring and /or recovery initiatives would not normally be required.
Minimal	Potential impact may result in slight decline in resource in study are during the construction and decommissioning phase, but the resource should return to baseline levels.

#### 4.3 PROJECT-ENVIRONMENT INTERACTIONS AND VALUED ENVIRONMENTAL COMPONENTS (VECS)

Project pathways are determined by the assessor, based on experience and a firm understanding of the proposed Project. Understanding the pathways allows identification of possible impacts on environmental receptors (VECs). Interactions are described in the following sections for pathways which occur in the construction and operations phases.

##### Construction Phase

The construction phase can potentially affect a broad range of VECs. While the construction phase of the Project is generally short term in duration, impacts to VECs can be long term. The potential Project – VEC interactions are shown in Table 6.

##### Operations Phase

Once the construction phase of the Project is complete, the operations and maintenance phase will begin. Impacts in this phase are typically longer in duration than in the construction phase. The potential Project – VEC interactions are shown in Table 6.

## 5 POTENTIAL IMPACTS, MITIGATION AND MONITORING

A list of Valued Ecosystem Components considered for the assessment, and interactions with Project activities, is presented in Table 6.

Table 6 Summary of Valued Ecosystem Components and Interactions

PROJECT ACTIVITIES	VECS												
	BIO-PHYSICAL								SOCIO-ECONOMIC				
	AIR QUALITY	NOISE	VEGETATION	TERRESTRIAL BIRDS	WILDLIFE	WETLANDS	SURFACE WATER	SPECIES AT RISK	HERITAGE / ARCHAEOLOGY	ABORIGINAL	LAND USE	HUMAN HEALTH AND SAFETY	ECONOMIC
<b>Construction Phase</b>													
Site Preparation	X	X	X	X	X	X	X	X	X	X		X	X
Site Infrastructure	X	X	X	X	X	X	X		X	X		X	X
Building Construction		X		X	X		X					X	X
Accidents			X	X	X	X					X	X	
<b>Operations and Maintenance Phase</b>													
Vehicle Transport		X		X	X			X				X	X
Site Maintenance				X	X							X	X
Accidents			X	X	X						X	X	X

### 5.1 Bio-Physical VECs

#### 5.1.1 Air Quality

##### Potential Construction Impacts

There exists potential for negative air quality impacts due to emissions from construction equipment operating on-site during construction activities. It is estimated that there will be 30 emission sources or less at any one time at the site during the construction process,

including worker vehicles and heavy equipment. Vehicle and equipment exhaust emissions are anticipated to result in a potentially minor decrease in air quality on the site and a negligible decrease in air quality off the site. These negative impacts will be of short term duration, potentially occurring on a continuous basis during working hours of the construction period on a local scale.

Potential impacts to air quality may be caused due to airborne dust and particulates during construction activities from vehicle movement along site roads, from earthworks and from demolition activities. Dust has the potential to negatively impact air quality with subsequent potential impacts to human health and flora (dust deposition). As the disturbed area will be kept to a minimum as much as possible with the construction occurring in stages, impacts to air quality due to airborne dust and particulates will be negative, negligible in magnitude, occurring intermittently over the short term on a local scale.

### **Mitigation Measures**

To minimize the impacts to surface water from being impacted from construction activities, the following mitigation measures will be implemented:

- Use of a stabilized entrance/exit with crushed rock to reduce the tracking of mud and dirt on to public roads by construction vehicles
- Use of water to reduce dust levels during dry and/or windy weather conditions
- Maintain the equipment in good working condition
- Idling of equipment and vehicles will be kept to a minimum
- Restricting work during periods of high wind conditions
- Controlling vehicle speed on the Project site to control dust
- Re-vegetate exposed areas as soon as practical
- Cover stockpiled material or use dust suppression

### **Potential Operational Impacts**

During the operational phase of the Project there is potential for exhaust emissions from vehicles travelling around the site. The impact is expected to be of short duration, local in nature and reversible. Therefore, impacts from exhaust emissions are anticipated to be negligible.

## 5.1.2 Noise

### Potential Construction Impacts

Noise will be generated during the construction by the vehicles and heavy equipment used on site.

### Proposed Mitigation Measures

To minimize the impact to the wildlife and adjacent residents during construction, the construction equipment will be kept in good operating condition. Additionally, construction activities at the Project site will be limited to the daylight working hours (7:00 am – 7:00 pm). With the mitigation measures the impact is anticipated to be negligible.

### Potential Operation and Maintenance Impacts

Noise from the normal operations of the site will be of short duration and not in excess of the current traffic related noises currently experienced within the local area. The noise that is produced will be of short duration and minor in nature. Therefore, the impact is anticipated to be negligible during the operation phase.

## 5.1.3 Vegetation and Wildlife

### Potential Construction Impacts

The clearing of vegetation along with the associated habitat removal required for the construction of buildings and other structures are examples of effects related to the construction activities. The elimination of forest vegetation may also create new forest edges that expose the remaining vegetation to increased light, noise, and dust. In addition, the construction of the facilities may include the following adverse impacts:

- Soil disturbance and sedimentation to wetlands – the grading and disturbance of soils within the site may result in the erosion of exposed soils that could travel off the site and impact the surrounding wetlands or watercourses. This is a greater potential during rain events when intermittent drainage corridors may form in and around the site during construction activities.
- Modification of wildlife habitat – the quality of the habitat could be reduced and the existing habitat could be fragmented due to construction activities. This may be the result of the removal of vegetation that may provide nesting habitat for birds and other wildlife as well as feeding areas.
- Wildlife susceptibility/mortality – the use of heavy machinery and additional traffic related to construction activities may increase the potential for human/wildlife interactions that may result in injury to local wildlife species.

- Alterations in drainage patterns – surface water runoff and storage within the Project site will be impacted by the removal of the existing wetland. These changes may directly impact the local drainage patterns across and within the site.
- Accidental release of fuels or other contaminants in the surrounding environments.

### **Proposed Mitigation Measures**

To minimize the impacts to vegetation, wildlife and their respective habitats, and to protect the adjacent vegetation and habitat features from being impacted from construction activities, the following mitigation measures will be implemented:

- Implementation of the measures outlined in the NSE's Erosion and Sediment Control: Handbook for Construction Sites;
- Develop and implement a Project specific Erosion and Sediment control plan
- Areas to be cleared and grubbed should be clearly marked to minimize the area to be impacted as well as the areas to be utilized for stockpiling materials
- Re-vegetation plans will be developed for areas disturbed during construction activities
- All exposed areas will be re-established and re-vegetated as soon as possible after the completion of construction activities, using native vegetation and seed mixes
- Minimizing the extent of disturbance for Project construction
- All construction related debris will be appropriately contained during construction and disposed of at an approved facility
- No petroleum product storage, maintenance or refueling is permitted within 30 m of a watercourse.
- Petroleum product spill cleanup materials will be kept on site during construction activities
- Where feasible, timing constraints will be applied to schedule vegetation clearing outside of the bird breeding season (May 1 – July 31)
- If clearing is required within the breeding season, a nest survey will be conducted on the site by a trained biologist in the identification of birds and nests and eggs as well as assess and develop appropriate mitigation measures to address the presence of migratory birds during construction.

### **Potential Operational Impacts**

Potential impacts to vegetation and associated habitat and wildlife as a result of operational activities include:

- Generation of runoff contaminants;
- General wildlife disturbance from vehicle noise;
- Lighting disturbance to wildlife.

The main operation activities that may impact the surrounding environment include noise from the movement of staff, residential, visitor and delivery vehicle traffic; and, night lighting for the parking areas.

These impacts are normally predictable, temporary and limited in the extent, and therefore can be managed through the implementation of standard construction related mitigation measures. Wildlife within the local area will avoid the new Project site during the operational phase. Some of the wildlife will adapt to the new environment created from the construction of the Project structures and grounds.

#### **5.1.4 Species at Risk**

There is a low potential for the presence of Wood turtles on the Project site during construction. The impact to the Wood turtle relate to the clearing of the land during construction and subsequent injury due to interactions of the species with vehicles and equipment moving around the construction site.

#### **Mitigation Measures**

To minimize the impacts to the Wood turtle from being impacted from construction activities, the following mitigation measures will be implemented:

- Construction crews will be provided with environmental awareness training in identifying the Wood turtle within the construction area
- If Wood turtles are found during construction they will be moved off site, outside of the Project disturbed area along the same habitat corridor in the direction the turtle was originally travelling
- If a nesting area is found a herpetologist shall be contacted to develop a mitigation strategy to be implemented

### **Potential Operational Impacts**

There will remain the potential for interactions between Wood turtles travelling through the Project site during normal operations and vehicles as they move around within their normal

habitat. Care will be taken by all vehicles travelling on the facility roads and parking areas to prevent vehicle collisions with Wood turtles. As the site is not within the normal riparian habitat of the species, the potential for such interactions is low, and therefore, there is not anticipated to be a significant impact.

### 5.1.5 **Surface Water**

#### **Potential Construction Impacts**

During the construction activities stormwater containing sediment or silt has the potential to travel off the site, especially during rain events. Erosion from exposed soils during clearing activities or stockpiled material may be transferred from the site. There are, however, no watercourses running adjacent to the site. There is the potential of sediment leaving the site only after significant rain events.

Spills may result in POL and other contaminants leaving the Project site.

#### **Mitigation Measures**

To minimize the impacts to surface water from being impacted from construction activities, the following mitigation measures will be implemented:

- Direct all clean water away from the working areas and exposed soils.
- Store all petroleum, oils and lubricants (POL) and chemicals in accordance with all provincial regulations
- Refuel and maintain construction machinery only in designated areas and refuel more than 30 m from any watercourse or catchbasin
- Place silt controls within catchbasins
- Place silt fencing adjacent to slopes without sod or seed/mulch
- Install silt fencing, rock check dams and other necessary sedimentary control measures in ditches where required in accordance with the NSE's Erosion and Sediment Control: Handbook for Construction Sites
- Undertake regular maintenance of ditches and other erosion and sediment control measures to minimize sediment build-up
- Maintain an emergency spill kit on site during construction activities

#### **Potential Operational Impacts**

The surface flow patterns will change from the baseline conditions. Stormwater from the site will be collected by a site stormwater drainage system that will be connected to the municipal

stormwater system. Minimal surface water is anticipated to leave the site through the existing culvert that runs through the adjacent abandoned railway bed. Details on the Project site stormwater management will be included in the final site design.

The daily operations will include the movement of vehicles throughout the site which may result in spills or leakage of POL or other chemicals that may enter the surrounding watercourse. Surface water will be directed and collected by a new stormwater collection system throughout the Project site. Site stormwater plans will be developed during the site final design.

### 5.1.6 **Groundwater**

There are no impacts anticipated to groundwater resources due to construction activities.

### 5.1.7 **Wetlands**

#### **Potential Construction Impacts**

The construction of the assisted living facility and villas will impact nearly all of the remaining 1.28 ha of wetland on the Project site. Excavation of unsuitable material for the building structures will require that most of the wetland area to be removed and replaced with suitable material.

#### **Mitigation Measures**

The main mitigation measure for the remaining portion of wetland is similar to those for the protection of surface waters (Section 5.1.5). The main mitigation measure will be wetland compensation as outlined in Section 6 through an agreement between the Proponent and Ducks Unlimited Canada (Appendix 7).

#### **Potential Operational Impacts**

Due to the extent of the impacts to the wetland on the Project site, it is assumed that all of the wetland will be impacted during construction. This will be compensated for through the agreement with Ducks Unlimited Canada. However, during the operation of the site after construction has been completed stormwater will be collected through a stormwater drainage system and directed away from the surrounding environment through the municipal stormwater infrastructure. Therefore, the impact to any remaining wetland and surrounding environment is anticipated to be negligible and not significant.

## 5.2 **Socio-Economic VECs**

### 5.2.1 **Land Use**

The Project site is within the zone that has been designated as institutional by the Annapolis District Planning Commission and the Town of Middleton Land Use By-Law. As the proposed Project is an expansion of the adjacent existing long term care facility, no significant impacts on

the local land use are anticipated. Therefore there is no adverse effect anticipated from the Project land use.

## 5.2.2 Heritage and Aboriginal Resources

### Potential Construction Impacts

During the course of the clearing and excavation activities, artifacts and archaeological resources may be encountered. The archaeological assessment of the site indicated that there is a low potential for both archaeological and First Nations resources on the Project site.

### Proposed Mitigation Measures

In the event that a heritage or archaeological resource be uncovered during construction activities, the following mitigation measures shall be implemented:

- All work activities in the area shall be stopped;
- The potential area of the find shall be marked to prevent any further disturbance;
- The Nova Scotia Museum shall be contacted and notified of the discovery; and
- No further work at the site will be permitted until approval to proceed has been given by the Nova Scotia Museum.

### Potential Operation and Maintenance Impacts

During the normal operations at the Project site, there are not anticipated to be any activities to result in disturbance to heritage or archaeological artefacts. However, should such an artefact be discovered during the operation and maintenance activities on the Project site, the same mitigation measures used during the construction phase shall be implemented.

## 5.3 Summary of Impact Assessment and Mitigation Measures

As detailed in the previous sections, the proposed Project for the construction of the assisted living facility and villas will result in some bio-physical and socio-economic impacts during construction and during the operation of the facility. Table 7 summarizes the potential environmental issues associated with the Project, identifies the potential impacts during construction and recommends mitigation measures to minimize these potential impacts.

Table 7 Summary of Impacts and Mitigation on Valued Ecosystem Components

VEC	PROJECT ACTIVITY	POTENTIAL IMPACT	MITIGATION	SIGNIFICANCE AFTER MITIGATION
Air Quality – Dust and Noise	<ul style="list-style-type: none"> <li>- Clearing and grubbing of the site</li> <li>- Excavation for site services</li> <li>- Construction of building structures</li> </ul>	<ul style="list-style-type: none"> <li>- Generation of dust and exhaust emissions disturbing the natural environment and local residents</li> </ul>	<ul style="list-style-type: none"> <li>Use of a stabilized entrance/exit with crushed rock to reduce the tracking of mud and dirt on to public roads by construction vehicles</li> <li>Use of water to reduce dust levels during dry and/or windy weather conditions</li> <li>Maintain the equipment in good working condition</li> <li>Idling of equipment and vehicles will be kept to a minimum</li> <li>Restricting work during periods of high wind conditions</li> <li>Controlling vehicle speed on the Project site to control dust</li> <li>Re-vegetate exposed areas as soon as practical</li> <li>Cover stockpiled material or use dust suppression</li> <li>Limit site work to daylight hours</li> <li>Maintain equipment in good working condition</li> </ul>	Minimum, Not Significant
Surface Water	<ul style="list-style-type: none"> <li>- Clearing and grubbing of the site</li> <li>- Excavation for site services</li> </ul>	<ul style="list-style-type: none"> <li>- Erosion and sediment from exposed soil during construction</li> <li>- Accidental spills into adjacent drainage ditches</li> </ul>	<ul style="list-style-type: none"> <li>Direct all clean water away from the working areas and exposed soils.</li> <li>Store all petroleum, oils and lubricants (POL) and chemicals in accordance with all provincial regulations</li> <li>Refuel and maintain construction machinery only in designated areas and refuel more than 30 m from any watercourse or catchbasin</li> <li>Place silt controls within catchbasins</li> <li>Place silt fencing adjacent to slopes without sod or seed/mulch</li> <li>Install silt fencing, rock check dams and other necessary sedimentary control measures in ditches where required in accordance with the NSE's Erosion and Sediment Control: Handbook for Construction Sites</li> <li>Undertake regular maintenance of ditches and other erosion and sediment control measures to minimize sediment build-up</li> </ul>	Minimal, Not Significant

VEC	PROJECT ACTIVITY	POTENTIAL IMPACT	MITIGATION	SIGNIFICANCE AFTER MITIGATION
			Maintain an emergency spill kit on site during construction activities	
Vegetation	<ul style="list-style-type: none"> <li>- Modification of vegetation habitat from clearing and grubbing activities</li> <li>- Clearing and damage to vegetation beyond the Project site</li> <li>- Dust from construction activities settling on vegetation</li> </ul>	<ul style="list-style-type: none"> <li>- loss of vegetation species</li> <li>- loss of vegetative habitat</li> </ul>	<p>Implementation of the measures outlined in the NSE's Erosion and Sediment Control: Handbook for Construction Sites;</p> <p>Develop and implement a Project specific Erosion and Sediment control plan</p> <p>Areas to be cleared and grubbed should be clearly marked to minimize the area to be impacted as well as the areas to be utilized for stockpiling materials</p> <p>Re-vegetation plans will be developed for areas disturbed during construction activities</p> <p>All exposed areas will be re-established and re-vegetated as soon as possible after the completion of construction activities, using native vegetation and seed mixes</p> <p>Minimizing the extent of disturbance for Project construction</p>	Low, Not Significant
Wildlife	<ul style="list-style-type: none"> <li>- Modification of wildlife habitat from clearing and grubbing activities</li> <li>- Noise from vehicles moving around the site</li> </ul>	<ul style="list-style-type: none"> <li>- modification of wildlife habitat</li> <li>- restriction of wildlife movement</li> <li>-increased potential for wildlife mortality due to movement of vehicles and equipment during construction</li> <li>- Disturbance of birds in the construction site</li> </ul>	<p>All construction related debris will be appropriately contained during construction and disposed of at an approved facility</p> <p>No petroleum product storage, maintenance or refueling is permitted within 30 m of a watercourse.</p> <p>Petroleum product spill cleanup materials will be kept on site during construction activities</p> <p>Where feasible, timing constraints will be applied to schedule vegetation clearing outside of the bird breeding season (May 1 – July 31)</p> <p>If clearing is required within the breeding season, a nest survey will be conducted on the site by a trained biologist in the identification of birds and nests and eggs as well as assess and develop appropriate mitigation measures to address the presence of migratory birds during construction.</p>	Low, Not Significant
Species at Risk	<ul style="list-style-type: none"> <li>- Modification of habitat from clearing and grubbing</li> </ul>	<ul style="list-style-type: none"> <li>- disturbance to terrestrial species at</li> </ul>	<p>Construction crews will be provided with environmental awareness training in identifying the Wood turtle within the construction area</p>	Minimal,

VEC	PROJECT ACTIVITY	POTENTIAL IMPACT	MITIGATION	SIGNIFICANCE AFTER MITIGATION
	<p>activities</p> <ul style="list-style-type: none"> <li>- Noise from vehicles moving around the site</li> </ul>	<p>risk and/or their habitat (Wood turtle)</p>	<p>If Wood turtles are found during construction they will be moved off site, outside of the Project disturbed area along the same habitat corridor in the direction the turtle was originally travelling</p> <p>If a nesting area is found a herpetologist shall be contacted to develop a mitigation strategy to be implemented</p>	<p>Not Significant</p>
Wetlands	<ul style="list-style-type: none"> <li>- Modification of vegetation habitat from clearing and grubbing activities</li> <li>- Clearing and damage to vegetation beyond the Project site</li> </ul>	<ul style="list-style-type: none"> <li>- loss of wetland habitat from removal of the habitat</li> <li>- soil disturbance and sediment to designated wetland features</li> </ul>	<p>Wetland compensation through Ducks Unlimited Canada</p>	<p>Minimal, Not Significant</p>
Heritage Resources	<ul style="list-style-type: none"> <li>- Clearing and grubbing</li> <li>- Excavation</li> </ul>	<ul style="list-style-type: none"> <li>- Unearth archaeological resources during construction activities</li> </ul>	<p>All work activities in the area shall be stopped</p> <p>The potential area of the find shall be marked to prevent any further disturbance</p> <p>The Nova Scotia Museum shall be contacted and notified of the discovery</p> <p>No further work at the site will be permitted until approval to proceed has been given by the Nova Scotia Museum</p>	<p>Low, Not Significant</p>
Aboriginal Resources	<ul style="list-style-type: none"> <li>- Clearing and grubbing</li> <li>- Excavation</li> </ul>	<ul style="list-style-type: none"> <li>- Unearth aboriginal resources during construction activities</li> </ul>	<p>All work activities in the area shall be stopped</p> <p>The potential area of the find shall be marked to prevent any further disturbance</p> <p>The Nova Scotia Museum shall be contacted and notified of the discovery</p> <p>No further work at the site will be permitted until approval to proceed has been given by the Nova Scotia Museum</p>	<p>Low, Not Significant</p>

## 6 WETLAND COMPENSATION

The Proponent intends to compensate for the wetland alteration through an arrangement with Ducks Unlimited Canada (DUC). DUC had previously entered into a Letter of Understanding to undertake the development of a wetland compensation project on behalf of GEM Healthcare Group for the prior development of the existing long term care facility on the adjacent lot (89 North Street). Through the previous agreement DUC agreed to, “develop and implement a plan to restore a wetland, approved by Nova Scotia Environment.” GEM Health Care Group intends to enter into a similar arrangement with DUC. DUC has committed in writing to undertaking the wetland compensation for this Project (Appendix 7) and enter into a Letter of Understanding and Professional Service Agreement.

## 7 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The environment can have an impact during both the construction and operational phases of the Project. Heavy rain events during construction can result in the release of sediment from the site into the adjacent watercourse or into the nearby stormwater collection system. To accommodate heavy rainfall during the operational phase, the design of the stormwater collection system will take into account the impact of climate change and the resultant increased frequency and intensity of rain events.

The increased occurrence of heavy wind or snowfall events can also impact the construction phase of the Project. Design and construction considerations for these events will be considered for the facilities.

## 8 ACCIDENTS AND MALFUNCTIONS

Even though there will be measures implemented at the Project site to protect the environment, there is still the potential for accidents and malfunctions to occur during the construction and operation phases of the Project. These are unplanned events that may result in a release to the environment and result in impacts to the environment.

Specific accidents and malfunctions that have a reasonable probability of occurring during the Project are summarized below. These scenarios are not a comprehensive list but address those incidents that have a reasonable probability of occurring.

The accidents and malfunctions that have been identified and assessed for both the construction and operation phases of the Project are accidental spills from the operation of heavy equipment and vehicles and interaction between vehicles with local residents and wildlife.

### 8.1 Spills

During the construction phase no unusual accidents or malfunctions are anticipated other than those that are typically experienced during general civil construction. However there is the potential for petroleum, oil and lubricant (POL) or other chemical spills from the heavy equipment used during construction. A spill of POLs or other chemicals into the water will generally occur from the improper handling of the materials, an accident or from heavy equipment that is not kept in proper working order. The impact of these materials during such an event is dependent on the type of material and its volume released. Minor spills will typically be cleaned up efficiently and effectively and long-term impacts are not anticipated. Major spills are not anticipated based on quantities anticipated to be on site during construction.

An Environmental Protection Plan that includes a Spill Contingency Plan for clean-up procedures for various substances anticipated to be on site during the construction and operations activities will be developed. Additionally, any fuelling of heavy equipment will be conducted at a minimum distance of 30 m from any watercourse or catch basin.

Spills and leaks during the operation phase of the Project will occur from vehicles travelling around the site. Minor spills may be dealt with by the facility maintenance staff for containing any spill and preventing it from entering the stormwater sewer system. Major spills will be dealt with by the local fire department in accordance with the operating procedures.

### 8.2 Transportation

During the course of the early construction activities, there will be several pieces of heavy equipment moving material around the site as well as performing the construction activities.

The potential for accidents will be high. However, this probability will decrease during the operational phase due to the reduced amount of equipment and vehicles travelling around the Project site.

The potential for construction phase accidents will be reduced through the implementation of weekly tool box meetings for civil construction personnel and assignment of a foreman to supervise vehicle routes through the site. The potential for construction and operation phase transportation accidents will be reduced through the incorporation of road design features such as speed limits and directional signage.

## 9 ENVIRONMENTAL MONITORING

A monitoring program will be developed for both the surface water and dust. The surface water leaving the site will be monitored for sediment and water quality parameters (total suspended solids, total petroleum hydrocarbons, pH, dissolved oxygen and temperature) to minimize any impacts from construction activities. These will be monitored at the culvert that travels under the railway on the southeast corner of the Project site and other surface water drainage ditches discharging from the site. Monitoring of surface water leaving the site will be required when the amount of rain is anticipated being greater than 10 mm over a 24-hour period.

Dust resulting from construction will be visually monitored to determine when dust suppression is required. Dust monitoring is especially important during dry and/or windy conditions during construction and prior to final stabilization of all exposed soils on the Project site.

## 10 CONSULTATION

### 10.1 Public Consultation

Public consultation is an integral part of the environmental assessment process. It provides the opportunity for interested stakeholders to receive information from project planners and, in return, it allows the proponents to gain input about public concerns. Public consultation can also provide an opportunity to actively involve stakeholders in the early stages of a project which, in turn, delivers a sense of transparency in the assessment and planning process.

GEM Health Care Group has been in consultation with the following agencies, contacts regarding the Project since the original Heart of the Valley Long Term Care Centre was constructed in 2007:

- Nova Scotia Department of Health
- Nova Scotia Environment
- Town of Middleton
- Annapolis District Planning Commission

Each of these agencies provided input to the projects requirements as well as in providing information and assistance in selecting the facility location within Middleton.

The Proponent held an open house meeting in May 2007 to discuss the plans for the overall retirement facility prior to the construction of the first phase of the project, i.e. the current Long Term Care facility. Representative from GEM Health Care, including Syed Hussain, CEA, James Balcom, Project Director, George Oickle, Construction Manager, Colin Bagnell, Business Manager, and Chris Burns, Administrator for the North Hills Nursing Home, were in attendance and met with the general public to discuss the project and address any concerns.

No additional public consultation has been undertaken outside of the 30 day legislated comment period during the EA process since the site is currently designated for the type of use of the project and constructed adjacent to a similar existing facility. As such, the Project is anticipated to have a low potential to impact the public interests.

### 10.2 Aboriginal Consultation

A Project review request was submitted to the KMKNO for consideration of aboriginal concerns. Based on the KMKNO's review of the Project documents, it was indicated that there are no aboriginal concerns with the project as there are no traditional or current uses of the project site or surrounding areas (Appendix 8).

## 11 REFERENCES

Atlantic Canada Conservation Data Centre (ACCDC). 2011. Data Search Request to Stefen Gerriets.

Davis MacIntyre and Associates Limited. 2012a. Middleton Long Term Care Facility: Archaeological Resource Impact Assessment (Desktop Study).

Davis MacIntyre and Associates Limited. 2012b. Middleton Long Term Care Facility: Archaeological Resource Impact Assessment (Field Reconnaissance).

Jacques Whitford. 2006. Results of hydrochemical investigation of North Street wetland, in support of Wetland Alteration Proposal, GEM Health Care Group Long Term Care Facility, Middleton, Nova Scotia. Prepared for the Nova Scotia Environment.

Jacques Whitford. 2008. Wetland Alteration Study: Proposed Long Term Care Facility, North Street, Middleton, NS. Prepared for GEM Health Care Group, c/o Costello Fit Group.

Nova Scotia Department of Environment and Labour (NSEL). 2002. Natural Landscapes of Nova Scotia: Summary Descriptions. Prepared by Protected Areas Branch.

Stantec. 2009. Year One Monitoring Report: Wetland Alteration Monitoring. Prepared for GEM Health Care Group Ltd., c/o Costello Fit Limited.

Stantec. 2010. Year Two Monitoring Report: Wetland Alteration Monitoring. Prepared for GEM Health Care Group Ltd., c/o Costello Fit Limited.

Wile, John. 2011. Fauna Assessment and Additional Ecological Characterization Observations of a Wetland on PID 05297122, North Street, Middleton, Nova Scotia.

**Appendix 1   Environmental  
Assessment  
Concordance  
Table**

**Appendix 2 Wetland  
Alteration  
Application  
Information  
Table**

**Appendix 3 Fauna  
Assessment and  
Additional  
Information  
Report**

**Appendix 4 Atlantic Canada  
Conservation  
Data Centre  
Report**

**Appendix 5 Davis and  
MacIntyre  
Desktop  
Archaeological  
Study**

**Appendix 6 Davis and  
MacIntyre Field  
Reconnaissance  
Study**

**Appendix 7 Ducks Unlimited  
Canada Letter**

**Appendix 8 Kwilmu'kw Maw-  
klusuaqn  
Negotiation  
Office Letter**