SECTION TWO

Project Site Inventory

Physical and Ecological Characteristics

One of the primary objectives of the Greenway is to preserve the ecological integrity of this scarce natural landscape. In the design of the Greenway trails, it is a priority to retain the natural environment of this area in the best way possible. This section will describe physical and ecological characteristics of the site, as well as explain which ecologically valuable areas should be protected.

General Description

Slope and Elevation

The lay of the land is gently rolling, varying from very flat (zero percent slope) in some areas to very steep slopes (over 30 percent) in others. The site ranges in elevation, from 21 to 30 meters above sea level. There is a flat, low lying area bordered by steep slopes, centrally located on the site at the end of Marlborough Ave. The existing footpaths on the site follow the lay of the land safely along the edge of the cut, and tend to avoid the very steep areas. There is one area along the edge of the site bordering the railway corridor that has very steep slopes (caused either by the original blasting of the corridor or from erosion due to human use). There are footpaths that meander down into this area, but the slopes are very steep (nearly vertical for a short distance in one area), and difficult to traverse. (See Appendix C: Slope Inventory Map and Inventory Map 1 for map of existing footpaths).

Soil, Bedrock and Surficial Geology

The bedrock on the site is finely laminated black slates and siltstones of the Halifax Formation (MacDonald & Horne, 1987). At several areas on the site, particularly close to the edge of the cut, this slate bedrock is entirely exposed. Along the current footpaths there are numerous slate boulders piercing through the soil. The site is covered by very thin till. It is classified as Stony Till Plain, which is a silty material, derived from the slate bedrock (Stea, Conley, and Brown, 1992). The ground was frozen during site visits so I couldn't test the site soil conditions. However, according to the *Soil Map of Halifax County Nova Scotia,* the soil on is classified as the Bridgewater series

which is a yellowish-brown shaly loam, very stony soil with good drainage (Soil Research Institute, 1964).

Vegetation

Despite the urban context of the project site this area is relatively natural. In recent years, the vegetation has been cut in several areas and secondary forest has grown back in its place. The majority of the trees present are sprouted from stumps of former trees and are between 5 and 15 years old. It is not clear how or why the damage was caused, but it is possible that the damage was caused by people removing trees. They may have been removed to clear a path for a previous trail, the trees may have been removed because they were diseased, or the damage may have been an act of vandalism. Regardless of why the trees were cut, the land was not badly damaged; the natural vegetation has regrown.

The current vegetation on the site north of the Oaks Heritage Property suggests that the land was never cultivated for agriculture or urban use. Although this area was at one time private estate property, it was left as a wooded area. Most of the vegetation on this section of the site is native to the area, with the exception of a few exotics that have been introduced over the years.

The area surrounding the Oaks Heritage Property lawn shows evidence of past horticultural uses. It is likely that this section of the project site was originally part of the estate lawn, but has become somewhat naturalized over the years. There is a combination of natural and exotic species in this area. Some of the exotic species include Forsynthia (*Forsynthia x intermedia*), Japanese Knotweed (*Polygonum cuspidatum*) and European Ash (*Fraxinus excelsior*). A row of Norway Spruce (*Picea abies*) is located on the northern side of the Oaks lawn, suggesting that they were originally planted as a boundary to the lawn. Grasses cover the forest floor west of the lawn (with no underbrush) suggesting that this area was at one time kept as a lawn. The exotic species remaining from past horticultural uses behind the Oaks diminishes the natural value of the land compared to other, more natural areas on the project site.

While most of the damage and influence in the site is from human disturbances, several mature trees have been uprooted and turned over on the northern section of the

site at the end of Marlborough Avenue. This damage occurred during Hurricane Juan in 2003.

(Freedman, personal communication, February 17, 2007)

Dominant Trees Species

This is a predominantly hardwood forest with very few coniferous tree species. The most abundant and mature species on the site is red oak (*Quercus rubra*). Red oak is a native species commonly found on rocky dry sites such as this. Its root system is deep and spreading and it can live up to 150 years of age (Farrar, 1995, p. 248). The oldest trees on the site are red oaks estimated to be about 90 years of age.

Red maple (*Acer rubrum*) is also abundant in this area. Many of the red maples have sprouted from stumps and are relatively young in age. Red maple can grow successfully in a variety of soils and sites, and has a shallow spreading root system (Farrar, 1995, p. 140)

Largetooth aspen (*Populus grandidentata*) and white birch (*Betula papyrifera*) are also abundant on this site. Both trees are fast growing and are pioneer species commonly appearing in areas that have recently been disturbed. It is also common for both species to regenerate through stump sprouting, as they have done on this site (Farrar, 1995, pp. 283 & 335).

Beaked Hazel (*Corylus cornuta*) is also common to the site. This species may be recognized as a perennial shrub or a small tree. It prefers well-drained soils, and commonly grows on forest edges and understories of forests. It can grow in either shade or sun (Rook, 1994)

Scots pine (*Pinus sylvestris*) is one of the few evergreen trees in this area. It is not native, but was one of the first trees introduced to North America from Europe and is commonly found across Canada. The root system is deep and wide spreading, and it grows successfully in a variety of conditions. Mature scots pine grow as tall as 30 meters (Farrar, 62).

Shrubs, Ground Covers and Wildflowers

Mixed in around the trees, this woodland floor is covered in various species of ground covers, shrubs, mosses and wildflowers.

The most common shrub edging the existing footpath along the length of the site is Lambkill (*Kalmia angustifolia*). This shrub is commonly found in open thickets, pastures and roadsides. It is resilient shrub; very tolerant of dry soils and disturbed areas (Roland & Smith, 1969, p. 563).

Other native plants commonly found in the area are the cinnamon fern (*Osmunda cinnamomea*), hair grass (*Deschampsia flexousa*), winter green (*Gaultheria procumbens*), low bush blueberry (*Vaccinium angustifolium*), poverty grass (*Danthonia spicata*) and bracken Fern (*Pteridium aquilinum*). The majority of these plants are commonly found on well drained sites and sandy soils (Roland & Smith, 1969, pp. 100, 101 & 564). There is also a substantial amount of moss growing on the exposed bedrock alongside the current footpaths. The mosses are probably of the genus *Tortella* and *Dicranum*.

Wildflowers present on the site include: the mayflower (*Epigaea repens*), which blossoms in the spring and is commonly found on well drained sites and areas (Roland & Olson, 1993, p. 10); the blue-bead lily (*Clintonia borealis*), which produces pointed yellow flowers in early June (Roland & Olson, 1993, p. 97); and the most significant wildflower on the site, the pink lady's-slipper orchid (*Cypripedium acaule*). (See vegetation images in Appendix A, Figures 13-15).

Environmentally Valuable or Sensitive Features

The most valuable ecological features of the landscape are the pink lady's-slipper orchids and the native mature trees. These two features are considered valuable because they provide a great deal of character to the site and they will be the most difficult features to re-establish if they are disrupted or removed from the landscape. The sensitive terrain on the site are sections with steep slopes or severe erosion.

The Pink Lady's-Slipper Orchid

The pink lady's-slipper (*Cypripedium acaule*) is an admired and cherished wildflower. Although this species is not threatened or endangered, it is locally appreciated and highly valued. An important element of designing the Greenway trails through this area is the preservation of the pink lady's-slippers that exist on the site.

The pink lady's-slipper is the most common and widespread native orchid in Nova Scotia. The plant can reach a height of 30 – 40 cm and the flower is characterized by its pouched lip that varies from white to pink in colour. The majority of the pink lady's-slippers located on the project site are fuchsia-pink. They do best in poor, acidic soils and blossom in June. This plant grows in a variety of habitats, but is often found in wooded sites around blueberry and bracken. It is particularly common with in areas around Dartmouth and Halifax. Although this species is not in danger, much of its habitat is being destroyed by both human development and by people removing large amounts of these flowers directly from the earth (Munden, 2001, pp. 52-53). This orchid species is notorious for being difficult to transplant and re-establish. Often, people remove these plants with the expectation that they will be able to transplant them for their own enjoyment, and are unsuccessful in doing so. The best way to admire these orchids is in their natural setting (Brown, 2006, p. 56). (See Appendix A, Figures 16-17 for additional orchid photos taken on site).

Figure 7

The best way to ensure that the pink lady's-slippers remain a part of the natural landscape is to design the trail routes to avoid the locations of these orchids. In order to ensure that people do not stray from the trail into the natural environment to view these flowers, the trails should also be designed so that visitors may safely view the orchids from the trails without causing further damage to the landscape. If orchid locations are

incorporated into the trail experience, it also offers an opportunity to teach the public about the flower and how to treat the flower in the wild.

The time of year that this project was completed makes it difficult to design the trail based around the location of all orchids (as they are not evident during the winter months). However, observation of the site in June of 2006 provides some indication of the location of these orchids on the project site. The majority of the orchids observed at that time were growing in and around the stone wall remnants, as well as in two other locations centrally located on the site. (See Appendix C, Inventory Map 1 for the locations of these orchid patches). Further observation of the location of the orchids is necessary to develop a more accurate map of the orchid habitat.

Mature trees

The HUGA hopes that the Greenway design will be able to preserve as much of the natural landscape as possible. In particular, they would like to see the healthy mature trees on the site preserved (Poirier, personal communication, June 26, 2006). Trees that should be preserved in the trail development are native species that appear to be healthy and have a trunk circumference of at least 1 m. Mature stump-sprouting trees with two or more trunks are considered worth preserving if they have a circumference of at least 80 cm. This set of criteria was selected because trees that fit this standard visually stand out and are noticeably larger than the majority of the trees on the site.

The trail routes should avoid these mature trees in order to preserve as many as possible. Unlike the orchid, it is not likely that people will stray from the trail to view the mature trees, so it is not necessary to design the trails in close proximity to the mature trees. (See Appendix C, Inventory Map 1 for a map of the mature trees.)

Steep Slopes

Any slope that exceeds 5% is not recommended for the multi-use trail development. Alterations to slopes can lead to erosion, alteration of drainage, and damage to existing vegetation. The more alterations made to the topography of the land, the more ecological damage is caused (Marsh, 2005, p.77). However, there is no way to develop a trail through the project site without developing on these sloped areas. The

first priority of the trail route will be to avoid the steep slopes, the second option will be to traverse the slope in the most gradual route possible, and the least favourable (but may be necessary in some cases) will be to grade the land to meet the gradient standards.

Ownership and Zoning

The ownership of the project site is split among the Canadian National Railway Company (CN), the Halifax regional Municipality (HRM) and St. Mary's University (SMU). All three land owners are aware of the Greenway development and have been involved in the planning process since the its inception (see Appendix C, Ownership Map). This section discusses the zoning regulations of the site and identifies the standards and regulations set forth by each of the landowners.

Zoning and Property Regulations

Currently, the zoning in this area is split between Park and Institutional (P) and Single family Residential (R-1). The P zone covers CN land and R-1 zone covers SMU property and a small portion of HRM property. There are currently no restrictions in either of the zones that inhibit the development of the Greenway trails through the project site. If St. Mary's University develops into this area in the future, it is likely that they will need the area rezoned as Low-Density University (U-1). The U-1 zone also allows for the trail development on this land. The Halifax Urban Greenway is not restricted in anyway by zoning of the area (Halifax Regional Municipality, 2005, sections 27(1), 67(1), 70AA(1)). (See Appendix C, Zoning Map)

The Oaks Estate adjacent to the project site is officially designated as an HRM Heritage Property. In order to develop a trial on this site, approval is required from the Heritage Properties Program. According to the planner with the HRM Heritage Properties Program, there should not be any issues getting the Greenway approved, as the trail will not affect the current state of the Oaks building of the Estate lawn (Maggie Holm, personal contact, February 9, 2007). (See Appendix C, HRM Heritage Properties Map)

Ownership

Halifax Regional Municipality

The HRM has been actively involved with establishing guidelines and standards for both trail types of the Greenway plan. The guidelines provided in Section One relating to the Active Transportation and standards set for multi-use and footpath trails make up the regulations that the HRM has for the Greenway.

Canadian National Railway Company

I was unable to contact a CN representative to determine if there are any specific regulations to the trails on CN property. However, it is likely that the CN will require a fence to be constructed along the edge of the cut as a safety measure to ensure people do not slip off the corridor edge or have access to the tracks.

Saint Mary's University

St. Mary's University (SMU) is the largest landowner of the area. The University's property runs along the CN property boundary and extends 250 meters along the length of the site from the end of Rogers Drive to the residential developments off Greenwood Avenue. Currently the built area of the SMU campus extends only as far south as Gorsebrook Avenue. With the exception of the Oaks property this southern most section of the SMU campus has been never been developed.

Campus master plan

In 2006 SMU developed a campus master plan to provide direction for campus development for the next thirty years. The conceptual design guidelines for this section of the campus focus are:

- That Oaks property and the southwest quadrant of the campus are considered as one contiguous area
- That existing buildings be expanded to take advantage of indoor connections
- The Oaks and the campus be connected with well designed interfaces

- New buildings be carefully integrated with the natural environment
- The Oaks property and mansion be preserved in its natural state
- The Oaks mansion be preserved
- The Urban Greenway project be supported

(Brook McIlroy Inc., 2006, slide 18)

The concept plan for the future development (Figure 8) of this area shows one central building at the end of Robie Street. The Halifax Urban Greenway also appears in this plan. The multi-use trail is shown running along the southern boundary of the SMU property to the future Greenway bridge over the corridor, and a smaller footpath connects the Greenway to the rest of the campus, Robie Street and Gorsebrook Avenue. See Appedix C, Inventory Map 2 for the proposed location building development.

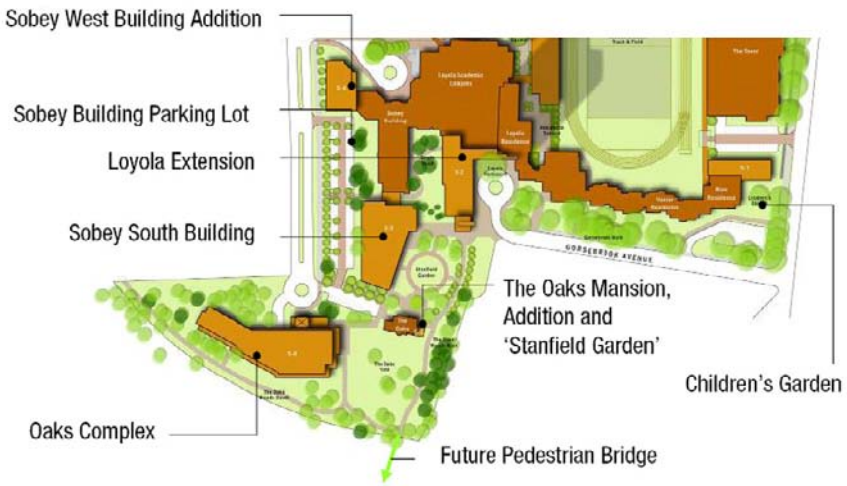

Figure 8

Trail requirements on SMU Property

Gabrielle Morrison, St. Mary's Administrative Vice President, spoke with me about what the university expects from the Urban Greenway.

- SMU will allow the Greenway multi-use trail to be constructed on the University property where necessary, as long as it does not conflict with plans for future campus development.

- A barrier (such as a small fence) will be necessary on the north side of the multi-use trail to discourage users from wandering off of the Greenway and through the campus.
- SMU does not support meandering footpaths on their property.
- The Greenway trail will be maintained by the HRM.

The Maplewood Estate Stone Walls

Located on the project site at the end of Greenwood and Marlborough Avenues, there are two remaining sections of the stone wall boundary of the former Maplewood Estate. These are hand laid, dry field stone walls, and they are the only remaining evidence of Maplewood. The current footpath runs adjacent to one section of the wall and the second section of the wall cuts directly across the footpath. Today, the once intricately stacked large oblong slate stones have fallen over and become imbedded in the soil on the forest floor. The stones have become part of the natural landscape. Trees have since grown up through and around these walls. In the spring time mossy ground cover, lady's-slipper orchids and blue-bead lilies bloom through and around these wall remnants. In the autumn the fallen leaves from the surrounding trees form a blanket over the stones. Most users of these paths today likely step right through the wall remnants without recognizing the presence of these historic landmarks. In the 2005 Preliminary Design Maps for the site (see Figure 6) there has been no effort made to preserve or incorporate the Maplewood Estate wall remains into the Greenway trails. (See Appendix C, Inventory Map 2 for the location of the wall remnants.)

Figure 9

In this section, I briefly look at the history of the estate property and discuss the importance of preserving the wall remnants. I then examine the possibility of preserving and incorporating the walls in the Urban Greenway.

History of Maplewood Estate

Maplewood mansion was built in 1870 by owner William Almon Hare. The mansion had fourteen rooms, a conservatory, hot and cold water pipes, multiple kitchens and pantries and a grand ballroom. From the time it was built to the end of the 19th century, the mansion was rented out for receptions, balls and parties. Maplewood became the scene of some of Halifax's most extravagant social occasions, and became known for having one of the best dance floors in late 19th century Halifax (Watts & Raymond, 2003, p. 41). In 1896, the property was bought by Senator David MacKeen. At this time, the original mansion was demolished and the modern house in the Tuscan villa style was built on the original foundations. The development of the railway line cut through Maplewood property, but did not disrupt the location of the house. The MacKeen family retained ownership of the estate and continued to live in the house until 1974, when the property was sold for redevelopment. Shortly after the estate was sold, the mansion was destroyed in a fire (Watts and Raymond, 2003, pp. 39-41). (See additional images of Maplewood Estate in Appendix A, Figure 18-20.)

Figure 10

Historic Preservation

The Maplewood Estate walls are part of a large collection of historic remnants in the south end of Halifax. Historic Halifax is preserved through official HRM Heritage Properties and historic street names. Two historic properties, the Oaks Heritage Property and the Bower Estate Heritage Property are located just meters away from project site (See Appendix C, Heritage Properties Map). Many of today's South End neighbourhoods honour these early 19th century estates through street names; including

Oakland Road, Studley Avenue, Marlborough Avenue and Belmont on the Arm. The rich heritage of this area is preserved wherever possible, and it is clear that the preservation of the past plays a large role in defining the South End today.

The National Trust for Preservation, an American non-profit organization dedicated to historic landmark preservation, states that "historic places tell a community where it came from—what previous generations achieved, what they believed, what they hoped to be" (2007). The characteristics of a place's past contribute to the present sense of that place. These physical remnants of the past are also irreplaceable. In Norman Tyler's book, *Historic Preservation: An Introduction to its History, Principles, and Practice* (2000), he states that "it is our duty, as a society and as a community, to protect and preserve our heritage, which is deep and rich" (p. 11). Tyler continues to point out that when we design and build within our communities, we must realize that it is "not just [about] making something new and better but of preserving remainders of the past as well" (p.14).

The Halifax Urban Greenway is about creating something new and better. But it is also about preserving what already exists. One of the primary goals set at the beginning of the Greenway project in 2002, was "preserving the scarce natural heritage" of the area (Halifax Urban Greenway Association and Gordon Ratcliffe Landscape Architects, 2002, p. 6). These walls are a part of the natural heritage in the landscape and it is important for these walls to be preserved and presented to the public as areas of significance.

Historic Significance of the Walls

In order to establish how the Maplewood Estate wall remnants should be preserved, it is necessary to determine the historical and cultural significance of the walls. The American National Register of Historic Places has established a list of criteria for evaluating the historical significance of properties. The site or property is:

1. associated with any significant events
2. associated with the life of an important person
3. possesses high artistic or architectural value
4. yields important historical information (Tyler, 2000, pp. 93-94)

Based on these four criteria, these fieldstone walls do not rank particularly high in historic value. The Maplewood Estate was not associated with any major historical event and was not connected to the life of any significant historical figure. The walls posses little to no architectural value, and the only historical information that they provide is the location of the former estate boundary.

Although these old stone walls may not be considered valuable in historic of significance, these walls are still a locally important natural history feature that should be preserved if possible. Bob Ogilvie, manager of Heritage Promotions and Development of Special Places at the Nova Scotia Museum, confirms the historical significance of these walls and provides a suggestion for how these walls may be preserved. He states "though we wouldn't consider these to be of sufficient significance to protect, this does not mean they would not have value". He continues to point out that rebuilding the walls to their original state "would be a considerable effort and introduce long-term maintenance costs and potential liability considerations… leaving them as they are is the best option". He believes that the best approach the preservation of these walls as part of the Greenway, would be through historical interpretation for the trail users (Ogilvie, personal communication, February 16, 2007).

Interpretation

Preserving these walls in their current state and incorporating them as an interpretive element in the Greenway trail system allows for protecting the wall remnants while providing trail users with a view into the natural and cultural history of the landscape. Historical interpretation will add a very interesting element to the Greenway. It will encourage people to stop along the way, allow them to learn something about the landscape and persuade them to further explore the trail. The interpretation of the project site and of these walls should tell a story about the place. The users should be able to walk through the trail as though they are walking through a piece of history (Yahner, Korostoff, Johnson, Battaglia & Jones, 1995, p. 308).