COASTAL RURAL VILLAGE PLANNING WITH VISUAL SIMULATION

AT MINERS BAY, MAYNE ISLAND

by

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ABSTRACT

This project describes different possibilities for compatible development in a small rural coastal community, Miners Bay on Mayne Island, and uses computerized 3D tools to depict the development options in order to develop, test and revise the design.

The site is the core of Miners Bay where the commercial and community center of Mayne Island has been located for more than 100 years. Mayne Island is part of the southern Gulf Islands chain of British Columbia. Its geographical location is in Active Pass, a busy waterway between Vancouver Island and the lower mainland. The community is rich in historical features and presents unique beautiful ocean views. The residents have desires for a more sustainable form of development.

Information from a previous project in Landscape architecture at UBC provided an understanding of landscape features at the local level (Mayne Island). General landscape character and building character, circulation and orientated ocean views established the key criteria for landscape conservation, view protection, and community development to be explored in the design.

Two community development scenarios were developed to examine expansion of shoreline-oriented commercial tourism development while protecting rural character and ocean views, under existing and alternative planning resolutions. 3D modeling and computer animation were used as a major tool in the stages of project inventory, site analysis and conceptual design and processed vital in demonstrating and testing the spatial results of plans.

Recommendations for revising current planning policies include more specific protection of key view corridors to the ocean; clustering of new commercial tourism development to protect key views, improving building orientation to the ocean, and creating a denser commercial area and dispensing building pattern in the village; as well as other community design options to increase community viability while retaining the rural character.

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ACKNOWLEDGEMENTS

1. INTRODUCTION

The research describes different scenarios of development compatible with a small rural coastal community, Miners Bay on Mayne Island, and uses computerized 3D tools to depict the development options in order to develop, test and revise the design.

1.1 Introduction of Mayne Island and Miners Bay

Figure 1.1. Aerial photo of Mayne Island. The red rectangle shows the boundary of the study area. Image is from Google earth.

The site is the core of Miners Bay where the commercial and community center of Mayne Island has been located for more than 100 years (Figure 1.1).

1.1.1 Site Location and Context

Mayne Island is part of the southern Gulf Islands chain of British Columbia. Its geographical location is south of Active Pass, a busy waterway between Vancouver Island and the lower mainland. Approximately 1.5 hours from Tsawwassen near Vancouver, the ferry is the only way on and off the island for drivers (Figure 1.2).

Approximately 21-square-kilometre (5,750 acres) in area, *"Mayne Island is the second smallest, populated island of the southern Gulf Island group that also includes Galiano, Saturna, Saltspring, and North and South Pender Islands."*[1] It is so small that even a one day trip can

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[1] **Elliott, Marie,** *Mayne Island & the outer gulf islands a history*, P25

cover most of the sightseeing places; but it is *"pretty enough for a lifetime."*[2] As a result, many seniors have chosen this quiet rural island for their retirement. There is no public transit on the island, so cars, bicycles and walking are the principal modes of transportation.

The irregularly shaped island has diverse geographic features that give it the coastal landscape typical of the region such as steep ridges, forests, meadows, and ocean edge. Benefiting from the effects of the ocean and rain-shadow of Vancouver Island, the weather is moderate and pleasant.

Figure 1.2. Location of Mayne Island, image is from www.mayneisland.com

1.1.2 History of Mayne Island and Miners Bay

The history of Mayne Island can be traced back to 5000 to 3000 B.C when the regional aboriginal peoples used it as a fishing station. *"Captain George Richards of the Royal Navy surveyed the area aboard his vessel HMS Plumper in 1857, naming the island after his lieutenant, Richard Charles Mayne. During the Cariboo and Fraser River Gold Rush of the mid-1800s, Vancouver Island gold miners gathered on Mayne Island before rowing across Georgia Strait to the mainland of BC in search of their fortunes."*[3] Miners Bay, used as a half-way stop between Victoria and the Fraser River by the miners, gained its name in 1859.

During the late 1800s, Mayne Island was both the commercial and social centre of the Gulf Islands. The central location helped the island attract all nationalities who arrived to farm and fish

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[2] www.mayisland.com
[3] http://www.britishcolumbia.com/regions/towns/?townID=219

at that time. The subsequent commercial boom resulted in the formation of a small community around Miners Bay - the old ferry terminal - that became the cultural center of Mayne Island. Before the turn of the century, it had gained a wharf, postal service and community facilities such as a church, jail, school, hotels and stores.

Mayne Island began to develop as a summer entertainment destination for residents of Vancouver and the lower mainland in the 1920's. Hotels at Miners Bay and other places on the island provided low-key accommodation that has continued to the present. Efficient ferry and passenger services made it increasingly attractive for summer tourists and seniors who finally chose to settle here.

Today, the historic village at Miners Bay is still the commercial centre of the island. The Island's history has left behind many historic buildings, with most of them located in Miners Bay: the 1892 Springwater Lodge, reputed to be the oldest continuously operating hotel in the province; the 1890s Agricultural Hall, the gathering place for the annual Fall Fair since 1925; the 1898 St. Mary Magdalene Church and its adjoining cemetery overlooking Active Pass; the 1885 Georgina Point Lighthouse, one of the rare lighthouses staffed until recently; and the 1896 Plumper Pass Lock-Up, now operating as a small museum displaying local artifacts   (Figure 1.3, Figure 1.4).

Figure 1.3. Miners Bay in 1900s. The building on the right is Springwater Lodge while the one on the left no longer exists. Image is from www. mayneisland.com .

Figure 1.4. Miners Bay in 1984. The building on the left is Springwater Lodge. Image is from <u>Mayne Island & the outer gulf islands a history</u>,

1.2 Study and Design Objectives

The rich historical features, the beautiful ocean views, and the desire for the sustainable development of this small community all attracted me to this project. For a community, *"growth is inevitable and desirable, but destruction of community character is not. The question is not whether your part of the world is going to change. The question is how."* [4] For Miners Bay (Figure 1.5), in viewing of its special character, I set my project objectives as follow:

1. Create an appropriate development plan and design strategy for this historical rural coastal community.

2. Define and program possible methods and recommendations to protect the visual quality of the coastal area and views.

3. Maintain the island community's rural character where residents can enjoy privacy and a livable environment.

4. Explore computerized techniques in the design process to offer a direct and convincing way to define and explore the community's landscape character and inform the site analysis.

5. Integrate 3D modeling in the stages of project inventory, site analysis and conceptual design to demonstrate and test the spatial results of plans.

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[4] **Christopher J. Duerksen, R. Matthew Goebel,** *<u>Aesthetics, Community Character, and the Law,</u>* P 2

The site is relatively large, the character of Miners Bay is rich and complicated, and time available is limited. The study focus is restricted to certain major planning and design issues rather than to provide fully-detailed comprehensive designs. It is hoped that this approach can identify specific methods of protecting Miners Bay's character may, and still leave room for future development design at the site level within the community.

Figure 1.5. High resolution aerial photo of the site in Miners Bay. Image is from Google earth.

2. A REVIEW OF PRECEDENTS FOR STUDY APPROACH AND METHODS

There are two interconnecting challenges in this project: one relates to the planning of a small rural community, where the goal is to preserve the landscape character of a rural-historical village while developing more commercial and residential uses in order to meet the requirements of tourism as well as those of residents; the other relates to design solutions for the conservation of ocean views, specifically during new coastal development.

The overall study approach method addresses these two aspects: **"maintaining the spirit of rural areas"** and **"view protection"**.

2.1 Maintaining the Spirit of Rural Areas

"A place is a space which has a distinct character."[1] Spirit of place, or *Genius Loci*, is *"the result of constants such as topography, vegetation, visible water, climate, cultural expressions which solved functions in proper relationship to natural conditions and the resulting visual and sensual expression which was created."*[2]

2.1.1 Theories and Concepts

Spirit of place is a concept related to the conservation of **character**. Compared with **"space"** or **"place"**, **character** is simultaneously a more general and concrete concept. *"On the one hand it denotes a general comprehensive atmosphere, and on the other the concrete form and substance of the space-defining elements."*[3] Each place has some special elements, includes its materials and formal constitutions, which determine its character. These affect the basic properties of its environmental image and support a sense of belonging among the place's people. The three elements are described as[4]:

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[1] **Norberg-Schulz, Christian**, *Genius Loci, Toward a phenomenology of architecture*, P1
[2] **Garnham**, *Maintaining the Spirit of Place*, P viii
[3] **Norberg-Schulz, Christian**, *Genius Loci, Toward a phenomenology of architecture*, P14
[4] These aspects were the summarized concepts of **Lynch, Norberg-Schulz**, and **Garnham**'s theories.

1. Aspects of the existing natural environment.

These include the physical features and appearance of the site, such as land form and topography, as well as key external factors, such as climate and the influence of other nearby places. In order to establish context, they also include the character of vegetation, such as the species, densities, distribution, and scale of plants.

2. Cultural expressions.

The character of a place is expressed in landmarks, heritage buildings, and human activities. These three traits are indicated by the consistent use of certain architectural styles, building materials, signage, and the pattern of the surrounding landscapes. Unique architecture can provide an indication of cultural variations and their response to both the climate and to the locally available materials.

3. The sensory experience, primarily visual, which results from the interaction of culture with the existing landscape.

This is the interpretation, by people, of their surrounding buildings and landscapes. It is the interaction of observable objects and functions with the visual perceptivity of peoples. The more elements an object involves, the more the viewer receives a sense of human intentions and experiences.

Defining the components of character

For a small historic town, the existing character which makes it a special place has been created by changes during its long history. *"An unfortunate reality is that many of these special places have undergone rapid changes as a result of such activities as industrialization, real estate speculation, transportation expansion, urban growth, shifts in population, and organized tourism."*[5] These changes can easily and quickly erase the town character.

When changes are unavoidable, it is crucial to set up rules or regulations to preserve the basic

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[5] **Garnham,** *Maintaining the Spirit of Place,* P 2

character and spirit of a place. Since "*the growth and change can happen without altering the major components which make up a town's baseline character. The desired level of historic continuity, growth and economic development, therefore, can be accomplished without destroying essential town quality.*"[6]

The first step is to identify and map the major components which relate to those characters. These components describe local conditions which form the **spirit of place**, and help to distinguish this area from the others. According to the data of **Lynch** and **Granham**, the unique character or a strong sense of place are often based upon such items as:

1. *Physical/ natural features*

- *Landform and topography* outline the basic structure of a site. They provide necessary clues as to the role of the town site in creating the overall character. This includes the types of soil and landforms, surface water, terrain, location, the shape of areas, as well as information regarding the surrounding land.

- *Climate, particularly the quality and quantity of light, amount of rainfall, and variations in temperature*, is a key ingredient in understanding vegetation and the potential for outdoor landscape constructions and activities. Some weather information affects the landscape character more than others. As it stands in BC, the clear and mild summer time is the best season for travel.

- *Vegetation* is a key indicator of landform and climate. This includes plants' height, their density, as well as the size of each group. It also highlights local species and the features of plants in more important areas, such as roadside trees and various focal plants.

- *Unique natural setting* often adds a particular character to the town's fabric. This includes undisturbed natural areas, such as open spaces, wildlife habitats and wetlands. Natural elements and local ecology may also have strong influence on the community pattern. The interaction between vegetation, landform and climate provides integral parts of the

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[6] **Garnham,** *Maintaining the Spirit of Place,* P 9

information regarding why towns have developed in a certain pattern in the past, and outlines the limitation and direction of how they may develop in the future.

2. *Cultural/ Social aspect: Meanings or symbols of the landscape to people*

- *Cultural diversity and history* shows a towns' individual spirit via historic and cultural marks on buildings, streets, and landscapes. This includes the knowledge of existing historic buildings, the human interactions with natural sites during the evolution of a town, and the local cultural attitudes toward the livable and enjoyable qualities of its places. It also pays heed to the local citizenry's activities in the past and the present.

- *The use of land* lends to an understanding of how a town is being used, the full range of local legislative and administrative control, and the trends of future developments. It includes the ownership of public and private lands, the types of land uses permitted, which are categorized as commercial, institutional, public services, recreational, etc., and the relationships of lots.

- *Town fabric* is the foundation of **imageability**[7] for a town and refers to physical forms which can be conveniently classified into "*five types of elements: paths, edges, districts, nodes and landmarks.*"[8] these elements can be described as follows:

1) *Paths- are the channels along which the observer customarily, occasionally, or potentially moves,* such as streets, walkways, transit lines, canals, railroads. People get the image of a place when they move through it; it is the linear link between the other elements.

2) *Edges- are the linear elements not used or considered as paths by the observer. They are the boundaries between two phases, linear breaks in continuity: shores, railroad cuts, edges of development, walls.* This is the changing point from one landscape to another, which serves to separate the distinct characters of various areas and thus organize a sense of place.

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[7] Imageabililty- is the quality in a physical object which gives it a high probability of evoking a strong image in any given observer. **Lynch, Kevin,** *Image of the city,* P9
[8] The definitions and quotations in this component are all from **Lynch, Kevin,** *Image of the city,* P47-48

3) *Districts- are the medium-to-large sections of the place.* They are the extensive structure of paths and edges over the whole area. Usually the inside/essential feature of a district can be used as reference if it is visible from outside.

4) *Nodes- are points, the strategic spots in a place which are the intensive foci to and from which people travel,* such as a junction of transportation, a crossing or convergence of paths, a focal point, even just an enclosed square and space which can stand as a symbol of the character.

5) *Landmarks* are an external reference point. *They are usually rather simply defined physical objects: building, sign, store, or mountain.* They may be either within a place or at a distance, and symbolize the spirit of a town's history or lead in a constant direction. They are often used as symbols of spaces and serve as icons which invoke the spirit of a place.

Districts are structured with nodes, defined by edges, penetrated by paths, and sprinkled with landmarks. They overlap and pierce one another. The interactions of these features form the fabric of a place.

- ***People's values*** are divided into two smaller components.

   What the place means to people who experience it. The *spirit of a place* is the reaction and feeling of people to a place. People image a place according to their interpretation of a place's **imageability.** It includes the first impression of a place, whether it is favored or disliked, and the landscape patterns such as enclosures or open spaces. People are a dominant factor in the forming and defining of landscape character, not only because every person has an emotional reaction to a place but also due to the fact that individuals can help the character of a place change in either a better or worse manner.

   Town-wide activities, daily and seasonal- People's values also lie in the potential for their spontaneous enjoyment of a public environment, both in their opportunity to engage in social participation and in their chance to experience nature. They reflect how people actually use

the town and the interconnection between a **town fabric** and *"behavior streams"*[9].

3. *Visual aspect- visual identification of natural and cultural landscape*

This is visibility/ imageability in a heightened sense, where objects are not only able to be seen, but are presented sharply and intensely to the sense of vision.

- *Town appearance and architectural style-* includes building layout, density, height, scale, facade color, roof style, and function. The fabric of a town gives people various ranges of vision to its character: near range, middle range and far range. The distance of perceiving a town decides the details of images which constitute its landscape character.

- *Siting of important buildings and space-* includes landmarks, public lands, parks, major streets, as well as their orientation and relationship within the context of the town. Enclosure and sequence provide spatial definitions at the town scale, such as the relationship of main streets with their enclosures, or the proportion and height of buildings to surrounding open spaces. These provide important information for visual analysis and view conservation.

- *High quality public environments which are visible and accessible-* this includes unique places which have strong characteristics; the places where people can see interactive phenomena such as sunsets, viewpoints and viewsheds, pleasing sequences of views, and visual cues which provide a sense of regional identification such as on Miners Bay towards Galiano Island.

These components are simply a raw inventory catalogue for the environmental image at town scale. Though they are classified into three aspects, none of them work alone; they must be patterned together in order to perceive an overall form. For instance, *Town fabric* is a cultural expression, which also plays a crucial role in the town's visual impact on people.

2.1.2 Precedents Study

There are two precedents of how to define the *spirit of a place* which are discussed in the

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[9] Behavior streams- the overall categories of activities such as recreation, work, shopping, housework and child care and the detailed activities within these overall activities. (**Garnham**, P 39)

following paragraphs, Martha's Vineyard and Village Homes. Martha's Vineyard is an example of how to define the landscape character in a rural historic place, and what the key elements are which affect an island's visibility. In the Vineyard, the town fabric has formed gradually over a long time at a district scale. The case of Village Homes shows the methodology and criteria of designing a small suburban community in a relatively short period of time in a smaller scale area. It can be said that the character of Village Homes was developed through a combination of the original community patterns with a new town fabric. This was set up by the designers, as well as by residents involved in the design process.

2.1.2 A- Martha's Vineyard

Martha's Vineyard is an island which has rural, historic and coastal character, very similar to Mayne Island. In 1973, **Lynch, Kevin, Sasaki, Dawson & Demay Associates. INC** conducted a visual study for the Vineyard Open Land Foundation to define the landscape character and visual resources of this island and make suggestions for the future development.

Location and context[10]
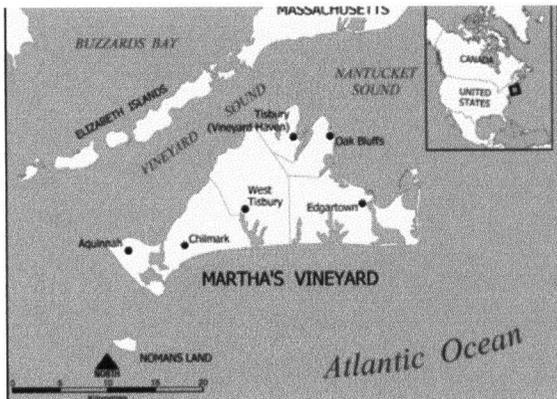
Figure 2.1. Location of Martha's Vineyard. Image is from http://en.wikipedia.org/wiki
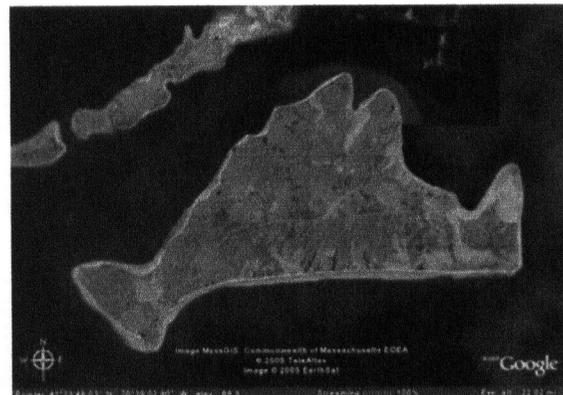
Figure 2.2. Aerial photo of Martha's Vineyard. Image is from Google earth.

Martha's Vineyard (36 square kilometers) is an island located 6 miles off the coast of Cape Cod Massachusetts. It is an island of intriguing diversity and therein lies much of its fascination. Ferry and aircraft are the primary means of getting there. The most common method of transportation to the island of Martha's Vineyard is by a ferry on which the visitors can take a car with them for

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[10] Information from www.mathas-vineyard.com & www.mvy.com

more convenient transportation (Figure 2.1, Figure 2.2).

Description- Defining the rural character and coastal landscape features

• *Methodology of the study*

I have used the following flow chart (Figure 2.3) to show the process and methods which Lynch

and his colleagues used in this case study according to their description.[11]
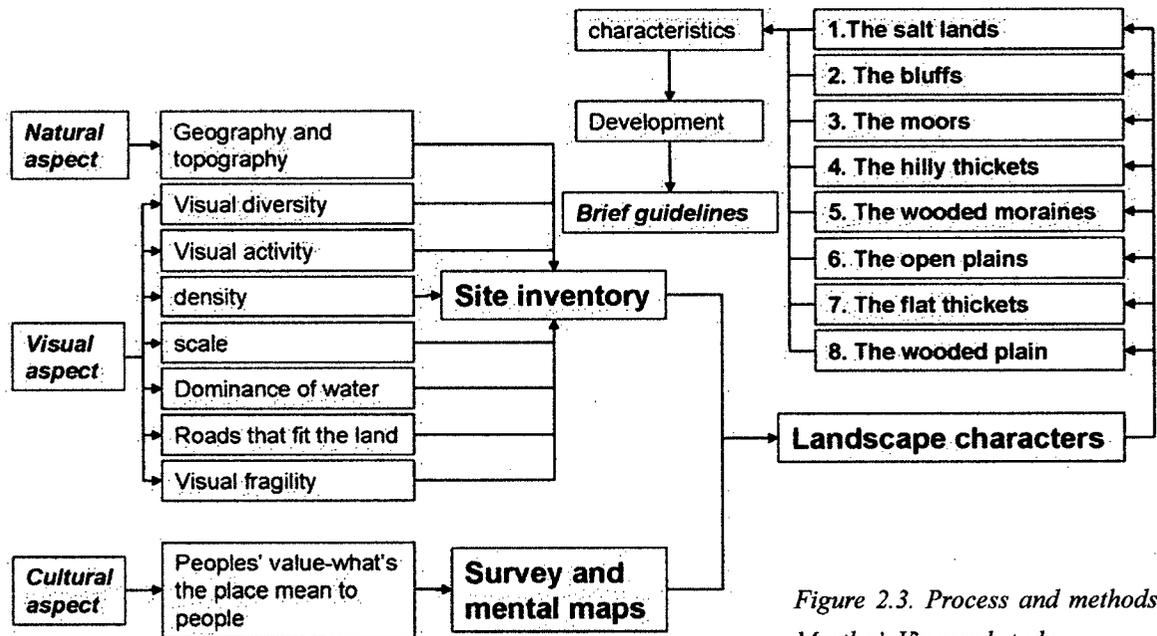
Figure 2.3. Process and methods of Martha's Vineyard study.

• *Landscape character identification*

Summarizing the case study findings of Kevin Lynch, the spirit or character of Martha's Vineyard

can be described as:

1) Physical/ Natural aspect-Unique natural setting

Based primarily on topography and vegetation, Lynch and his colleagues classify 8 distinct types

of natural scenery setting. Each one is the product of a particular natural and human history and

requires distinct treatment. They are: salt lands, bluffs, moors, hilly thickets, wooded moraines,

open plains, flat thickets and wooded plains.

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[11] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island.*

The Vineyard is an island which is strongly affected by the ocean. Because water temperature remains relatively stable, the Vineyard has a late spring, a long autumn, and warm winters. One of the primary reasons that the Vineyard grew as a tourist destination is its very pleasant summer weather.

2) Cultural aspect- Town fabric/ Architectural style[12]

Districts- on the island scale, there are six towns: Aquinnah, Chilmark, Edgartown, Oak Bluffs, Tisbury (which includes the harborside Vineyard Haven), and West Tisbury. Each town has its own appearance: Edgartown is recognizable for its stately homes, Oak Bluffs has a lively downtown, Tisbury and Chilmark overlook scenic harbors, Aquinnah has a rocky coastline and its legendary cliffs, and West Tisbury has New England villages.

Land marks- the steepled church in West Tisbury, Gay Head lighthouse (Figure 2.4), the historical buildings and other light houses on the island form "*a system of places to look out from and of places most often seen.*" [13]

Figure 2.4. Gay Head lighthouse. Image is from http://www.mvol.com/

Edges- the major visible skyline, shorelines, and scenic roads are mentioned as important to the character of the Vineyard, and require restrictions to preserve their features.

What the place means to people who experience it

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[12] Information from http://www.mvol.com/
[13] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island,* P45

Lynch and his colleague did surveys among residents and asked: "what area do you use most"; the tourists in the surveys were asked: "what place do you like or remember best."[14] The answers revealed the major spirit or character of the places.

"A very large number (57%) spoke of the Island as peaceful and relaxing, unspoiled, un-crowded or quiet. In addition, nearly half the total comments made were about scenic qualities, the fantastic beaches, the wonderful water, air or weather."[15]

Cultural diversity and history

Originally (and still) inhabited by the Wampanoag Indians, it was named Martha's Vineyard by the English explorer, Bartholomew Gosnold, who sailed to the island in 1602. The Vineyard is a multi-cultural island which includes Native Americans, Japanese, and those of European ancestry.

3) Visual aspect-Town appearance

Density: Generally speaking the Vineyard is a rural, scattered village. The contrast between open areas and houses, as well as between natural and inhabited areas, is an important element of its character.

Scale: The overall landscape on this island feels open and spacious; the scale of natural material is relatively small. Low trees, shrubs, low cliffs and hills appear larger than they actually are and create a sense of spaciousness for the viewer.

High quality public environments which are visible and accessible

"There are many places on the Vineyard with beautiful, even spectacular, views. Some views are grand, while others have interest because being there you feel part of the view, and closely related to the land, the water or the activity. A more limited number of places are excellent panoramic lookout points, from which much of the Vineyard can be seen, and from which the nature of the

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[14] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island,* P4
[15] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island,* P8

Vineyard as an island can be appreciated."[16]

Panoramic lookout points (Figure 2.5) and shorelines are the most important sources of visual satisfaction to both those who are familiar with the Island and those who first visit here. Water and the activities related to the water dominate Island life. Houses are either situated for views of the water, or crowd along the shores for easy access to it.
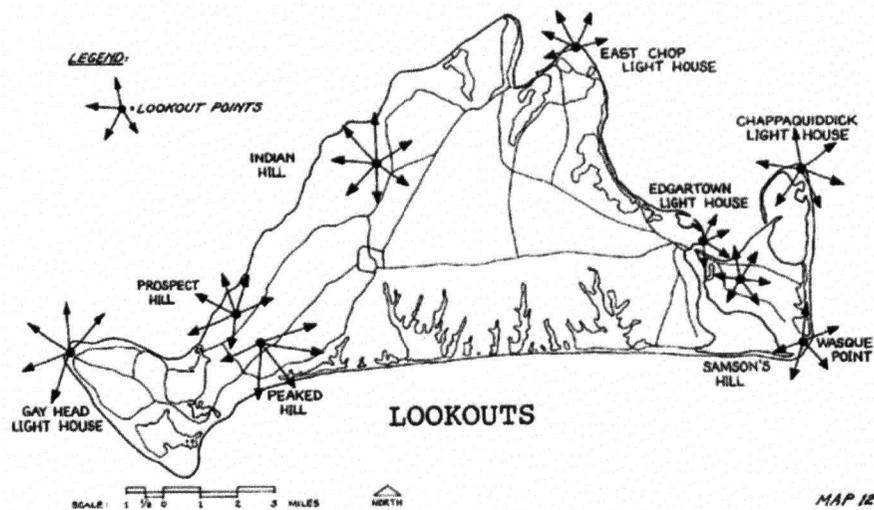
Figure 2.5. Lookout places on Vineyard, by Kevin Lynch.

Within the diverse general landscapes of the Vineyard, some special locations get more attention from people and evoke stronger feelings. These feelings seem to be based either on historic or personal associations, or on unique visual qualities and beautiful natural settings.

• **Lessons learned**

In this case study, the methods of classifying and identifying the spirit and character of the Vineyard (Figure 2.6) are quite effective, aiding me greatly later in defining the landscape character of Miners Bay. Some guidelines or recommendations which Lynch used became references for my project design. The following are examples of suggestions *vis-à-vis* the preservation of landscape character which are suitable for both the Vineyard and Miners Bay:

The Moors- "*should be kept open, and extended by clearance. They can take moderate*

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[16] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island,* P45

development if buildings are low, and skillfully sited in the folds and low places. "

The Wooded Moraine- "allows development to continue at moderate densities under good public controls. Conserve the landscape character by careful siting of dispersed houses and roads, and by thoughtful planning of openings in forest. Maintain some wooded areas free from development. "[17]

Lynch's study is mainly about addressing the visual resources of the Vineyard. Many of the characteristics which he defined would apply equally on Mayne Island, such as a rich history, multi-cultural architecture, rural density villages, dominant water views, small scale vegetation and country-style roads.

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	DEVELOPMENT DENSITY, TYPE OF CONTROL	SITING AND FORM OF BUILDINGS	ROAD AND PATH CHARACTER, PARKING	CLEARING AND PLANTING	MATERIALS AND DETAILS	ACTIVITIES
THE SALT LANDS	LOW DENSITY, NO DEVELOPMENT OR VERY LITTLE. RIGID CONTROL.	NONE ON BEACH, DUNE, MARSH, POND, GRASS. ONLY VERY SMALL, LOW CLUSTERS BACK IN THICKETS.	ROADS VERY LIGHT, MOSTLY IN THICKET. FOOT PATHS TO POND AND BEACH. NO PARKING.	LEAVE ALONE. NO EXOTICS.	EARTH, GRASS, WOOD. EARTH COLORS.	MEN ONLY TEMPORARILY PRESENT. NO CARS, ENGINES. ENCOURAGE BIRDS, DOMESTIC ANIMALS, SMALL BOATS. QUIET ACTION, SWIMMING AND OTHER WATER-ORIENTED ACTIVITIES
THE BLUFFS	POSSIBLY SOME CLUSTERS OF MODERATE DENSITY, LITTLE OR NO DEVELOPMENT ELSEWHERE. RIGID CONTROL.	GROUPS OF HOUSES RELATED TO GROVES OF TREES OR LAND FORMS. LOW OR STEPPED UP SLOPES. NEVER ON CRESTS.	PARKING AND ROADS NOT VISIBLE FROM SHORE. NO ROADS RUNNING UP THE SLOPE.	NO TALL VEGETATION ON CRESTS. MAKE MORE OPEN.	NO PAINT OR METAL. MATERIALS WHICH BLEND OR WEATHER. NO LARGE, LIGHT SURFACES.	BOATS, FISHING. NO CARS. SOME RESIDENCE.
THE MOORS	LOW-MODERATE DENSITY, SOME DEVELOPMENT. CAREFULLY MANAGED.	LOW IN VALLEYS. NONE ON HILLS. CLUSTERED. ROOTED.	TRACKS IN GRASS, NARROW, LOW WITH LAND. HIDDEN PARKING, NEVER ON TOPS.	KEEP OPEN. NO EXOTICS OR TREES. MOW OR GRAZE.	WEATHERED WOOD, STONE. STONE, EARTH FENCES.	RECREATION. GARDENS, PASTURE. DOMESTIC ANIMALS. RESIDENCE.
THE HILLY THICKETS	CLEAR TO MOOR OR MODERATE DENSITY IN DISTRIBUTED OPENINGS. INVENTIVE CONTROLS.	EDGES OF PRIVATE CLEARINGS. LOW, TALLER IN VALLEYS.	NARROW OR TUNNELS, WINDING. OPPORTUNITY FOR CARVING SEQUENTIAL OPENINGS. DEVELOPMENT SCREENED.	CLEAR ALL OR ONLY VALLEYS. NATURAL PATCHES. "DWARF" LANDSCAPES.	WOOD SHINGLE ROOFS.	PRIMARILY HOUSING. PRIVATE, SCATTERED.

Figure 2.6. Lynch provides this sketch to describe the different types of landscape character, and use text +graphics to show the location, the definition, and the relationship within the relevant context. Image is from Looking at the vineyard—a visual study for a changing island.

He puts forward the concept of **"visual fragility,"** stating the following:

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[17] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island,* P23, P28,

"The sense of scale and meaning afforded by a view is more easily destroyed in some areas than others. Fragility is a factor when only a small part of a view, perhaps one glimpse of water, contributes a major part of that view's feeling. If this small part disappears, the loss is keenly felt. Views must be safeguarded in proportion to their importance, not their size."[18]

This is the reason why I tried to protect the key viewpoints in the design: to conserve the **"visual fragility"** of Miners Bay.

2.1.2 B- Village Homes

From 1964 to 1981, Village Homes (Figure 2.7) was designed and built by Michael and Judy Corbett on 60 acres in West Davis. So far it is ranked as one of the best places in Davis to live. What interested me in this case is that *"It was designed to encourage both the development of a sense of community and the conservation of energy and natural resources."* [19] The major goal of this design is to combine visual enjoyment, energy-efficiency, and conservation of the existing rural character, along with thoughtful community development.

Figure 2.7. Aerial photo of Village Homes. Image is from Google earth

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[18] **Lynch, Kevin,** *Looking at the vineyard—a visual study for a changing island,* P3
[19] http://www.villagehomesdavis.org/Design.php

Location and context

Village Homes is located on the west side of Davis City, California, adjacent to University property and other residential neighborhoods. It includes 220 single family homes, 20 apartments, and Cooperative Housing (Table 2-1). Most of the buildings incorporate solar power and design features. It is the most publicized examples of sustainable community design in the U.S.

Table 2-1 Village Homes project data[20]

Project name	Village Homes
Location	Davis, California. Location in Central Valley, Putah/ Cache Creek Bioregion, 60 miles northeast of San Francisco and 15 miles west of Sacramento
Houses	600-3,000sq.ft. also a nine-bedroom co-op house has about a dozen residents
Size	60 acres
Density	4 dwelling units/ acre, 7.7 dwelling units/ acre not counting common landscape; 6,933 people per sq. miles; vicinity density: 3-5 dwelling units/ acre, 3458 people per sq. miles
Open space	25% of site in public and community open space
Land use	242 housing units (222 single family units, 22 apartments); 650 resident; Commercial office space: 4000sq.ft with 15 small businesses including consulting and professional firms; Agricultural uses: 12,000 sq.ft; 12 acres of greenbelts and open space; 12 acres common agricultural land; two village greens swimming pool; community center building; restaurant, dance studio, and day care center.
Lot size	Approximately 4000sq.ft
Land in streets and parking	15% in Village Homes; 22% in Vicinity
Street widths	23 ft. in Village Homes; 44 ft Vicinity
Average number of cars	1.8 in Village Homes; 2.1 in Vicinity
Landscape architect	Micael Corbett, Town Planners, Davis, California

Description- Maintaining rural character in sustainable community design

- *Defining landscape character*

The successful aspects of the design are[21]:

Orientation (visual-architecture style) - All streets run east-west and all lots are oriented

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[20] **Francis, Mark,** *Village Homes: a case study in community design*, P24

[21] http://www.villagehomesdavis.org/Design.php

north-south. This orientation (which has become standard practice in Davis and elsewhere) helps the houses with passive solar designs, which allows them to make full use of the sun's energy and forms a unique building feature.

Street Width (visual sensitivity in the siting of important buildings and space) - all the roads are narrow (see the Table 2-1 and Figure 2.8), with curving cul-de-sacs; they are less than twenty-five feet wide and generally are not bordered by sidewalks. Their narrow widths minimize the amount of pavement exposed to the sun during the long, hot summers. The curving lines of the roads give them the look of village lanes, and the few cars that venture into the cul-de-sacs usually travel slowly.

Pedestrian/Bike Paths and Common Areas (town fabric- paths and nodes; visual- high quality public environments which are visible and accessible) - Alternating with the streets is an extensive system of pedestrian/bike paths (Figure 2.9), running through common areas that exhibit a variety of landscaping, garden areas, play structures, statuary, and so on, which offer a series of focal points for pedestrians. Most houses face these common areas rather than the streets, so that emphasis in the village is on pedestrian and bike travel rather than cars.

Figure 2.8. 23 foot roads in Village Homes
Image is from http://www.greenedge.org/

Figure 2.9. Pedestrian and bike paths in Village Homes
Image is from http://www.greenedge.org/

Natural Drainage (town fabric - edges) - The common areas also contain Village Homes' innovative natural drainage system (Figure 2.10), a network of creek beds, swales, and pond areas that allow rainwater to be absorbed into the ground rather than carried away through storm drains. Besides helping to store moisture in the soil, this system provides a visually interesting backdrop

for landscape design.

Edible Landscaping (natural- vegetation) – Fruits, nut trees and vineyards (Figure 2.11) form a large part of the landscape elements in Village Homes and contribute vegetables and fruits to residents.

Figure 2.10. One of the streams, which is part of the system of natural filters. Image is from http://www.lgc.org/

Figure 2.11. Village Homes has its own vineyards throughout the neighborhood, Image is from http://daviswiki.org/Village%20Homes

Open Land (visual- high quality public environments which are visible and accessible, town fabric)- Village Homes includes two big parks (Figure 2.12), extensive greenbelts with pedestrian/bike paths, two vineyards, several orchards, and two large common gardening areas. The commonly owned open land comprises 40% of the total acreage (25% in greenbelts and 15% in common areas), a much greater proportion than in most suburban developments. 13% of the developed land area is devoted to streets and parking bays, and the remaining 47% to private lots, which generally include an enclosed private yard or courtyard on the street side of the house.

Figure 2.12. Open space in Village Homes. Image is from http://www.greenedge.org/

- *Lessons learned*

Landscape architecture design in Village Homes is mainly focused on the open space, the edible vegetation, circulation, green drainage and water conservation. The objective for the detail design is to maintain an original character and find a pattern to fit the site capabilities. It is designed to be an energy efficient environment and a visually pleasing attraction for tourists. Many methods of these details might be suitable for Miners Bay, such as houses orientated to the views, pedestrian and bike paths associated with public areas and buildings, and natural swales along roads for drainage.

During the design and development of this project, the designer/ developer brought together a group of interested families to discuss the design and make decisions. This community involvement is another key element in the design process. In order to help a community take a positive role in shaping its future environment, residents need to be able to picture the "results" of different development scenarios. *"Graphic images can serve as the primary communication tool. Illustrations and photographs provide a common language which present information in a way that could be easily understood by most people."*[22] Since many people have difficulty interpreting two-dimensional plan graphics, 3D computer modeling techniques are used more and more often as models and visualization aids.

2.2 Precedents in Methods of Visual Analysis and View Protection

A view is a phenomenon of visual impact on people's eyes and the resulting stimulus on the brain which produces an image of a place. At the same time, the brain also "produces" a feeling regarding this place: either a positive or negative sensory link to the need to identify and make tangible. Those components of landscape character which affect the visual features or imageability of a place are identified in section 2.1. This section focuses on a discussion regarding basic visual analysis and the appropriate methods/skills which can be applied in community design.

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[22] **Doble, Cheryl S,** *Managing Change: a pilot study in rural design and planning,* P18

2.2.1 General Concepts of Visual Analysis

"87% of man's perception is based on sight"[23]. To understand the importance of visual elements and the applicable design principles, it is important to address the affect of visual impact on people's feelings, to analyze landscape character and to discover the degree of acceptance for landscape designs which will alter landscape character.

The first step for visual analysis is to define the elements which affect visual perception and basic principles which are releaved in visual phenomena.

According to Simon Bell[24], the basic elements in a view can be defined as point, line, plane and volume. The elements work together to form different aspects of objects, such as number, position, direction, size, texture, density, color and light. The following *six basic principles affect the visual dominance of form, line, color and texture in a landscape.* [25]

Contrast is the difference or degree of difference between things having similar or comparable natures, or the comparison of similar objects to set off their dissimilar qualities. *Strong contrast between the visual character of a project and that of its setting is an important indicator of potential visual impact.*[26]

Sequence is a continuous or connected series. Two aspects of it relate to landscape character, sequential landscapes and sequential experience, such as viewing sequence. Bell (1993) provides a detailed explanation in his book.

Axis is a straight line about which a body or a geometric figure rotates or may be supposed to rotate; e.g. views to water down streets. It is a design tool of great forcefulness. For instance, a vista is created by an axis in order to get more focus and thus the viewers' attention.

Convergence is the act of converging and especially moving toward union or uniformity; as it *"relates to landscape management, convergence generally occurs when major landforms, lines, colors, and/ or textures tend to focus attention on one point or a small area."* e.g., focal views

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[23] *National Forest Landscape Management* , cover
[24] **Bell, Simon,** *Elements of visual design in the landscape*, P17-36
[25] *National Forest Landscape Management* , P29-48
[26] **Laurini, Robert., Thompson, Derek.,** Fundamentals of spatial information systems, P239

that accentuate an important place in the landscape.

Dominance stresses the related importance and visibility of certain parts of the landscape over others, e.g. a big tree in grassland is a dominant feature.

Enframement is the act or manner of framing views in order to direct the viewers' attention and focus; it often reinforces other dominance principles to establish a strong focal point. A classic example of enframement would be the following: trees or rocks on the sides of the view, with the canopies of trees overhead, and an ocean view to an island in the middle.

2.2.2 Visual Analysis Techniques

Many techniques can be used in design for describing, recording and analyzing the visual characteristics of a large landscape. For a project, choosing the right method for the optimum balance between efficiency and economy is a major decision in the design process. *"We emphasize those graphic methods which are apt for specifying the pattern of some sensory feature in space and time. "*[27] In this study, the focus is on applicable techniques for view protection.

Mapping / Section- two dimensional methods

Long sections and elevations are most useful when dealing with relative height of distant landscape objects and their effects on skylines or visibility. A map can distinguish spatial areas by relative scales and shapes of the spaces and the connections between them. .

We use two dimensional methods to describe spatial patterns, record viewsheds from maps and adapt them to environmental models or pictures to test the results of analysis. Units, features, sightlines, screening (e.g. plantings), and view sequences in a place might be mapped. To achieve clear expression, maps need to be combined with sketch drawings and photos or renderings, such as Lynch's drawings for the visual study of Martha's Vineyard.

Modeling – three dimensional methods

Scale models have been used to visualize the general relationships between buildings, as well as

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[27] **Lynch, Kevin,** <u>Managing the sense of a region,</u> P88

between buildings and their environment. *"Some European cities maintain a permanent model of the center as a means of testing all new proposals. A model may also be the medium in which the design for some public space is developed, being patched and modified as ideas grow."* [28]

There are several types of models, each serving a different purpose. Simple cardboard (Figure 2.13) or clay models are used to show the conceptual size of construction, magnify vertical distances, and convey the relationships between buildings. Models often utilize transparent materials. In diagrammatic models, *"spaces are represented and located by solid abstract symbols whose color, shape, and size convey the general importance and spatial character of each place: its scale, enclosure, activity and so forth."* [29] It is difficult to go into the models to see specific views, view cones, and visual sequences.

Figure 2.13. Cardboard model. Image is from www.gettyimages.com

Computer simulation—dynamic methods

With the aid of 3D computerized software we can build increasingly detailed and realistic models, which make visual simulations of design proposals very powerful tools, since people tend to believe scenes which look realistic. By using the computer, it is possible to make 2D rendering pictures (Figure 2.14), 3D models, or 4D movies (3D+ time).

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[28] **Lynch, Kevin**, Managing the sense of a region, P89
[29] **Lynch, Kevin**, Managing the sense of a region, P89

Figure 2.14. "After" scene done by computer compared with "before". Image is from Landscape Modeling

2.2.3 View Protection Concepts and Principles

*"**Protected view** is the legal requirement within urban planning to preserve the view of a specific place or historic building from another location. The effect of a protected view is to limit the height of new buildings within or adjacent to the sightline between the two places so as to preserve the ability to see the landmark as a focus of the view. The protection may also cover the area behind the place or building concerned."* [30]

For different aspects, there are different elements playing significant roles for particular types of views. For example, at Miners Bay, the ocean views are a critical feature of its scenic character; simultaneously, the views to heritage buildings like Springwater Lodge and Agriculture Hall are also worth protecting.

Designers and communities can use a combination of tools, including height, density, use restrictions, sign controls and landscape regulations, to protect the scenic views and local character. Since the features of various views - panoramic vistas, view corridors, and scenic roadways - contribute to the unique spirit of the place, especially in a rural-historical-coastal area like Miners Bay, they are of great importance as they boost the overall quality life and help to attract new business through tourism.

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[30] http://en.wikipedia.org/wiki/Protected_view

Types of view protection

Since each view or vista emphasizes a different aspect of the local landscape, the local view protection programs may be characterized in a variety of ways. Using Miners Bay as an example, one category could focus on protecting the view to the ocean and Galiano Island; another one might address the methods by which to conserve the view to the historic buildings.

In the context of town or village scale, there are three categories involved in this type of project design: 1) viewshed protection; 2) view corridor protection and 3) scenic roadway protection.

- *Viewshed protection*

"A viewshed is an area of land, water, and other environmental elements that is visible from a fixed vantage point. The term is used widely in such areas as urban planning, archaeology, and military science." [31]

Viewshed is the most common type of view protection for grand, scenic vistas: the areas visible from many vantage points, that encompass multi-elements of landscape character, both natural and man made, and that contribute to the "Genius Loci".

Viewshed protection programs emphasize a certain degree of control over the construction of new buildings. This may include regulations restricting building heights, locations, setbacks, and even details like the color of roofs, surface materials, and planting control. The latter includes the conservation of old specimens, the density and height of plants, and a focus on aesthetic/visual issues such as the shape and color of leaves and flowers.

- *View corridor protection*

"A view corridor is a three dimensional area extending out from a viewpoint. The width of the view corridor depends on the focus of the view. The focus of the view may be a single object, such as a mountain, which would result in a narrow corridor, or a group of objects, such as a downtown skyline, which would result in a wide corridor. Panoramic views have very wide

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[31] http://en.wikipedia.org/

corridors and may include a 360-degree perspective. Although the view corridor extends from the viewpoint to the focus of the view, the mapped portion of the corridor extends from the viewpoint and is based on the area where base zone heights must be limited in order to protect the view."[32]

View corridor (Figure 2.15) protection in rural areas focuses on community fabrics. This allows either quick glimpses or more extended views of important constructed resources (e.g., historic buildings, landmarks and unique residential houses) and natural features which possess positive visual qualities (e.g., open spaces, park, and beach).

- *Scenic roadway protection*

A **Scenic roadway** is a road which has a linear series of attractive and interesting views of the landscape. More and more communities are recognizing the aesthetic value of key roadways, such as entryways to a city or a town which provide the first impressions of the place and can greatly assist in protecting the character of the overall community.

Figure 2.15. Example of mapping view corridor. Image is from www.cityofsydney.nsw.gov.au/Development/

"Typical roadway protection programs emphasize restrictions on signs (e.g., no billboards), lighting (e.g., no neon, no excessive nighttime lighting), and landscaping (e.g., minimum landscaping of roadside areas is required in order to prevent broad expanses of concretes)." [33]

Because a scenic roadway may be from several miles to several hundred miles long, the regulations of the protection often involve land uses, vegetation types, construction, or even infrastructure. This may belong to the federal government, provinces, local communities,

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[32] Glossary of telecommunications terms source list for definitions section of model bylaw, http://www.vapda.org/bylaw/gloss.htm

[33] **Duerksen, Christopher J, Goebel, R. Matthew,** *Aesthetics, Community Character, and the Law,* P51

organizations or various private owners.

Scenic easements

When implementing a program of view protection, the restrictions and regulations might be applied to privately owned land and a kind of compensation would be granted to them as well.

Easement is "*a right to use another person's real estate for a specific purpose. The owner of property that is subject to easement is said to be "burdened" with the easement because he or she is not allowed to interfere with its use.*"[34]

Easement has several types, the most common being the right to travel over another person's land, known as a *right of way*. Another type is called a *utility easement*, where property owners commonly grant easements for the placement of utility items such as power poles, utility trenches, water lines or sewer lines. When the goal of a conservation easement is specified only for preserving desirable views of an area or other scenic resources, it may be referred to as a *scenic conservation easement* or simply a *scenic easement*.

A *mixed-purpose easement* is one in which the purpose of a scenic easement overlaps with other goals, such as protection of open space, wildlife habitat, forests, or wetlands. "*This approach has the benefit of ensuring that if a conservation easement fails to qualify for scenic purposes under the Internal Revenue Service's definition, it can still be supported under the definition of another permitted conservation value.*

Scenic easements are one tool among many used by both government and non-governmental organizations to protect the visual environment. Local governments, in contrast, generally have much less funding available for land acquisition. Instead, they tend to rely on land use regulations (e.g., zoning) and strategic uses of capital improvements programs to reach their scenic protection goals. For example, a local government might create a zoning overlay district

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[34] Glossary of real estate terms, http://www.bascomgrooms.com/glossary.htm

restricting tall buildings in a scenic corridor, or it might withhold extension of public infrastructure into sensitive viewsheds in order to discourage development. "[35]

2.2.4 Precedents Analysis

There are many ordinances concerning view protection. San Francisco, for instance, employs a justly famous General Plan which indicated view corridors and was first implemented in the 1970s. Fort Collins, Colorado has adopted some of the most comprehensive guidelines and standards in the country that shape the appearance and impact of buildings in order to *"encourage development that contributes to Fort Collins as a unique place by reflecting its physical character and adding to it in appropriate ways."*[36]Vancouver has view corridor (Figure 2.16) protection mapped where the view corridors must remain open and not be blocked by views.
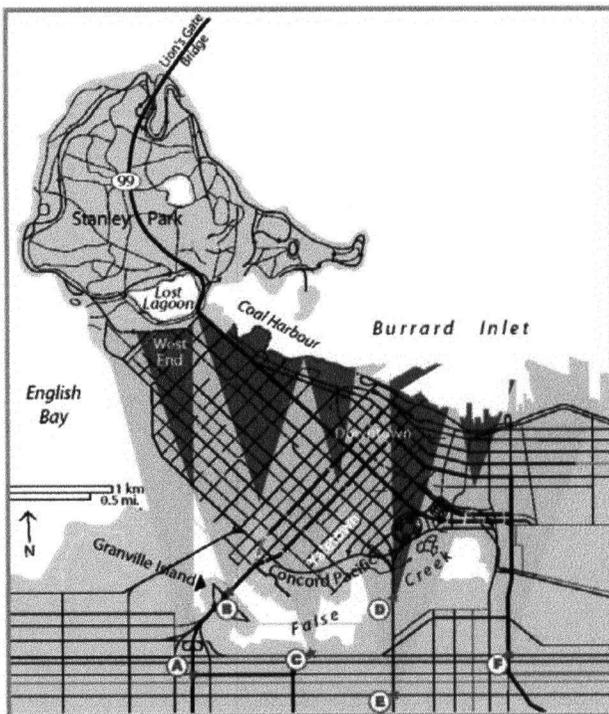
Figure 2.16. Vancouver view corridor, protecting views of the mountains to the north, as of the year 2000. This map shows two-dimensional outlines of the view corridors within which views are protected. Not shown are the allowed heights, higher as one proceeds away from the apex of the cone. Thus height limits for areas within a cone are low near the apex and gradually get higher with distance. Between cones, height and floor-area ratio regulations govern. This system encourages tall, slender buildings and great variety while protecting those views held most sacred by the populace. Viewpoint C is a public park. Viewpoints A, B, D, E, and F are important entry points where one first gets long-range views of the mountains. Image is from www.spur.org.[37]

2.2.4 A- St. Paul's Cathedral in London

This case is a typical form of protection for a narrow view cone in a city; for a rural area, views to

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[35] Scenic America, http://www.scenic.org/easements
[36] **Duerksen, Christopher J, Goebel, R. Matthew,** *Aesthetics, Community Character, and the Law,* P25
[37] **Chappell, Jim** *Vancouver's View Corridors,* SPUR report 422, P20

some historical buildings or views to a landscape feature, like mountains or an island are also described as view cones. The ways and the process in this case of setting up a regulation for a special view/view cone are worth exploring.

Location and Background

Figure 2.17. St. Paul's Cathedral. Image is from www.gettyimages.com

Located in London, England, St. Paul's Cathedral (Figure 2.17) has been described as follows:

"A Cathedral dedicated to St Paul has overlooked the City of London since 604AD, a constant reminder to this great commercial centre of the importance of the spiritual side of life.

As the Cathedral of the capital city, St Paul's is the spiritual focus for the Nation. This is where people and events of overwhelming importance to the country have been celebrated, mourned and commemorated since the first Service took place in 1697."[38]

Case background

King Henry VIII's Mound is located in the public gardens of Pembroke Lodge, Richmond Park; it is the highest point in the park. Looking east from the Mound and through a special gap in the holly hedging, down a specially maintained clear avenue in Sidmouth Wood, visitors can see St. Paul's Cathedral, which is over 10 miles away. This viewpoint was established soon after the completion of St. Paul's Cathedral in 1710.

In 2003, the City of London approved a new Mayor's draft plan for future development. Residents near Richmond Park believe that *"the draft plan has ignored the 300-year-old strategic view from atop King Henry VIII's Mound in Richmond Park to St Paul's Cathedral. One of London's most ancient and amazing views is under threat."*

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[38] http://www.stpauls.co.uk/

"Campaigners have already worked to protect the view and on 22nd May 1992 the Secretary of State for the Environment gave protection for "...the strategic view of St. Paul's Cathedral from Henry VIII's Mound in Richmond Park...(and its)...viewing corridor (Figure 2.18, Figure 2.19). "However, in 2002, the Mayor's Draft London Plan omitted the view of St. Paul's from the list of 'London Panoramas'. In fact the Draft London Plan failed to include listed parks and gardens, including The Royal Parks, as historic environments to be considered when proposing new developments. Strong objections were lodged by The Royal Parks."[39]

Figure 2.18. View to St .Paul's Cathedral. Image is from http://photoguide.to/london/

Figure 2.19. View corridor to St. Paul's Cathedral. Image is from www.gettyimages.com

Description- view corridor protection

In the ODP (Official Development Plan), the City of Westminster, UK, has special chapters to explain its strategies for protecting important views in the city. It states the aim, the reason, the view points and their descriptions, the protected area, and the way to protect views.

The strategic views, as it describes them, are: [40]

(A)   The City Council will normally refuse permission if a proposed development within a viewing corridor would exceed the development plane between the viewpoint and either the base of the lower drum of St. Paul's Cathedral, or the general roofline of the Palace of Westminster. This will include proposed developments in locations where the views are

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[39]   Richmond Park of London, http://www.royalparks.gov.uk/press/archive/press_release_39.cfm

[40] Information is summarized from *ODP, Chapter 9: Protecting important views,* www3.westminster.gov.uk/udp/adopted/full/chap9/des2.cfm

obstructed by existing buildings which exceed the height limits.

(B)   The City Council will normally resist development within the wider setting and background consultation areas which would adversely affect the strategic views.

(C)   The improvement of the views will be sought when existing buildings of inappropriate height are redeveloped. Where appropriate, applicants will be expected to provide montage studies of the likely impact of a proposal on the views.

- ***Lessons Learned***

An environmental image is the result of a two-way process between the observer and the environment. The regulations for view cone protection are crucial for the visibility of the landmarks. The restrictions which are put into the development plans also increase the opportunities of forming a coherent environment for those landmarks. The visual enjoyment value of the landscape features as well as the town character may be preserved and enriched in this way.

2.2.4 B- Georgetown, Colorado
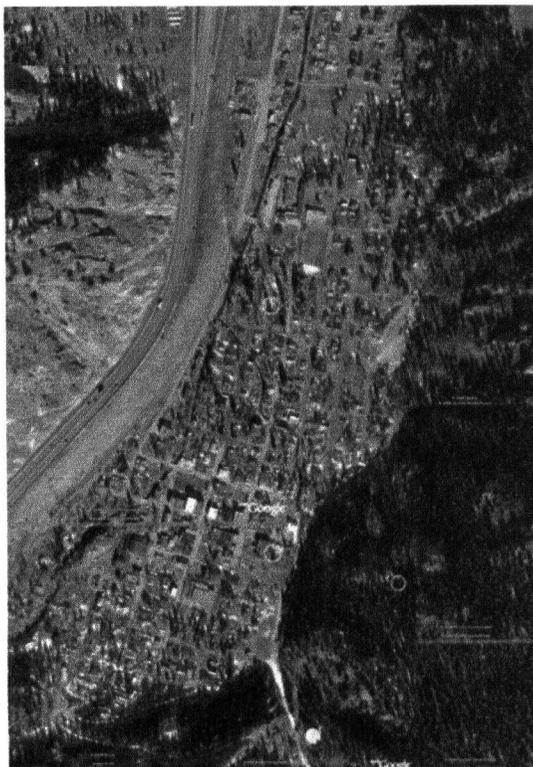
Figure 2.20. Aerial photo of Georgetown, Colorado. Image is from Google earth

This case focuses more on conserving the town's fabric and character. It shows a precedent of historic view protection in a large area.

Location and context

Georgetown (Figure 2.20) is a town in Clear Creek County, Colorado, with a population of 1,088 at the 2000 census.

"The town sits at an elevation of 8,530 ft, nestled in the mountains near the upper end of

the valley of Clear Creek in the mountains west of Denver along Interstate 70. Although a small town today, the town was a historic center (Figure 2.21) of the mining industry in Colorado during the late 19th century and at one time was the third largest community in the state, earning the nickname the "Silver Queen of Colorado." It has evolved into a lively historical summer tourist center today with many preserved structures from the heyday of the Colorado Silver Boom. *The town stretches roughly north-south along Clear Creek, hemmed in by the mountains, with the historic downtown located at the southern (upper) end and modern development located at the northern (lower) end of town."*[41]

Figure 2.21. Zoning map of Georgetown. Image is from <ins>http://www.town.georgetown.co.us/</ins>

Description- view protection method

"The history and architecture of Georgetown are recognized as nationally significant in the preservation of American history by the 1966 designation of the Georgetown Silver Plume National Historic Landmark District." [42] It faced a challenge, however, in determining how to preserve the unique historical and rural low-land character and to simultaneously develop for the needs of tourists and skiers. This tourism factor developed during the 1950s when thousands of skiers began to pass through the town on their way down from the mountain ski areas near Loveland Pass and Guanella Pass. At this point in time, the local population began to climb.

Georgetown's residents agreed that its historical heritage and resources should be protected and designs for alterations and new construction should be compatible with historic structures. For

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[41] http://en.wikipedia.org/wiki/Georgetown,_Colorado
[42] *Town Georgetown Design Guideline*, Chapter 1, http://www.town.georgetown.co.us/drc/drcbk3ch9.html

this reason, the design guideline was set up in 1978 as the primary regulatory tool. In drafting it, the Town chose to conserve its inherent character when developing new areas.

"The Town of Georgetown requires that property owners or developers with proposed new construction projects (i.e., exterior remodeling or rehabilitation, add-ons to existing buildings, or construction of new buildings) obtain a Certificate of Appropriateness (COA) before they can obtain a building permit. This requirement applies to construction projects regardless of where they are located in Georgetown. "[43] That process is referred as *Design Review* which is illustrated in the following flow chart (Figure 2.22).[44]

CDC: Certificate of Design Compliance
HARC: Historic and Architectural Review Commission
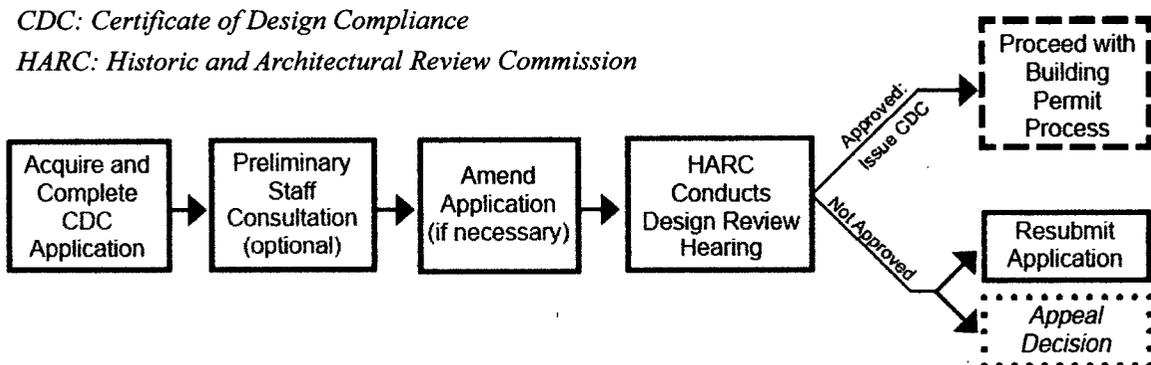
Figure 2.22. Process of Design Review. Image is from <u>*Purpose of the Design Guideline.*</u>

The design guidelines are specified in 9 aspects on building restrictions and 14 aspects on character landscape areas for maintaining the town character. Most of the details are focus on how to protect views, since *"views to natural and historic features abound in Georgetown contribute to its unique setting. Maintaining views / view corridors to the mountains and historic landmarks are especially important."* For instance, the regulations for preserving views to significant features from a public way are[45]:

1) Site plans for new construction should include consideration of retaining view opportunities for future projects;

2) Landscaping is encouraged and, in some situations, may be required in order to mitigate other visual impacts. Such landscaping, when mature, should maintain existing views and

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[43] *Town Georgetown Design Guideline*, Chapter 1, http://www.town.georgetown.co.us/drc/drcbk3ch9.html
[44] Information is from *Purpose of the Design Guideline*, http://www.town.georgetown.co.us/drc/drcbk3ch9.html, P7
[45] Information and quotations are from *Town Georgetown Design Guideline*, Chapter 2, http://www.town.georgetown.co.us/drc/drcbk3ch9.html

solar access corridors.

3) Consider seasonal factors that may enhance or inhibit views because of snow accumulations in winter or dense foliage in summer.

4) Developing overlooks to be accessible from public ways are encouraged.

The following table (Table 2-2) shows the restrictions and suggestions in some residential and commercial character areas which can serve as a reference for the Miners Bay design.

Table 2-2 Design Guidelines of Georgetown, Colorado[46]

	HISTORICAL RESIDENTIAL AREA
Design Goal	• The Historic Residential Character Area should continue to develop in a coordinated manner so that an overall sense of visual continuity is achieved. Preservation of the integrity of this area is a primary goal of the Design Review Committee.
Mass and Size	**A. New construction should appear similar in mass and size to historic structures found in the Character Area.** • Residences in the Character Area from one- to two-stories, but are typically one and one-half story. • The tradition of one- to two-stories street facades should be continued. • Break up the massing of larger buildings into components that reflect this traditional size. **B. New construction should be within five feet of the average height of historic structures within the immediate neighborhood.** • Historic residences within a 300 foot radius of the new structure should be used in calculating the height of the surrounding context. **C. A facade should appear similar in dimension to those seen historically in the town.** • Typically, a residential building front ranges from 15 to 30 feet in width. Additional widths were accomplished with a setback or change in building plane.
Building and roof form	**A. Use building forms similar to those found traditionally.** • Vertically-oriented rectangular shapes are typical and are encouraged. • One simple form should be the dominant element in a building design. • Building forms that step down in size to the rear of the lot are encouraged. • Smaller, secondary buildings should be simple rectangular shapes, as well. **B. Use traditional roof forms.** • Sloping roof forms, such as gabled, and shed, should be the dominant roof shapes. Avoid flat roofs. • Traditional roofs are simple and steeply pitched and most have hip or gabled ends facing the street. • Non-traditional roof forms are inappropriate. • Orient ridge lines parallel with the floor planes and perpendicular to the street.

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[46] Town of Georgetown Design Guidelines Book II: Design Review in Georgetown

	C. The number and size of dormers should be limited on a roof, such that the primary roof form remains prominent. • Dormers should be used with restraint, in keeping with the simple character of buildings in Georgetown. • Tops of a dormer roof should be located below the ridge line of the primary roof and set back from eaves.
	D. Roofs should be similar in size to those used historically on comparable buildings. • The length of a roof ridge should not exceed those seen historically on comparable buildings. Historically, in residential contexts, the maximum ridge length was 35 to 40 feet.
Building setback	**A. Maintain the alignment of building fronts along the street.** • Setbacks should fall within the established range of setbacks in the block. • For additions to existing buildings, set them back from the front of the structure such that they do not alter the perceived character of the front. Typically a setback from the building front should be, at a minimum, equal to the width of the facade.
	B. Side yards should match the dimensions of historic yards along the street.

HISTORICAL COMMERCIAL AREA

Design Goal	• New buildings should continue to relate to the traditional storefront and the retail character established in this area.
Mass and Size	**A. Maintain the average perceived size of two-story buildings at the sidewalk.** • New construction should present a tall one-story or two-story facade at the front property line. • Facade heights of new buildings should fall within the established range of the block, and respect the historic proportions of height to width. • Floor-to-floor heights should appear similar to those of historic buildings in the area.
	B. Traditional spacing patterns created by the repetition of uniform building widths along streets must be maintained. • No facade should exceed 50 feet without a clear expression of this standard module. • Where a building must exceed this width, use a change in design features to suggest the traditional building widths. Changes in facade material, window design, facade height or decorative details are examples of techniques that may be considered.
Building and roof form	**A. Rectangular forms should be dominant on commercial facades.** • Rectangular forms should be vertically oriented. • The facade should appear as predominantly flat, with any decorative elements and projecting or setback "articulations" appearing to be subordinate to the dominant form.
	B. Use flat roof lines as the dominant roof form. • Gabled roofs may also be used if a false front or parapet with horizontal emphasis obscures it. • Parapets on side facades should step down towards the rear of the building.

	C. Along rear facades, a building form should step down in size, and not be a continuous two- or three-story facade plane. • This is especially encouraged when rear areas are anticipated to have pedestrian activity. • Consider using additive forms, such as sheds, stairs and decks. These forms must, however, remain subordinate to the primary structure. • Use projecting roofs at the ground floor over entrances, decks and separate utility structures to establish a human scale that invites pedestrian activity.
Setback	**A. Maintain the alignment of facades at the sidewalk's edge.** • Placing the facade of the building at the property line is required by the zoning ordinance and should be modified only in special circumstances. • Locating entire building fronts behind the established storefront line is inappropriate.

NATURAL RESOURCE AREA

Design Goal	Any new restoration or construction project should respect and even enhance the setting for these features, such as waterways, wetlands and established groves of trees. Roads, landscaped areas and buildings should be located and designed to accommodate any natural features of the particular site and its context.
	    • Natural resources, such as Clear Creek, South Clear Creek, Leavenworth Mountain and the steep hillsides surrounding the town, should be respected in all projects.
	    • B. Protect and enhance existing stands of vegetation.
	 Respect all shorelines in the area, in compliance with other regulations.
	 Provide temporary protection to existing vegetation during construction.

Mass and Size	**A. Maintain the average perceived size of two-story buildings at the sidewalk.** • New construction should present a tall one-story or two-story facade at the front property line. • Facade heights of new buildings should fall within the established range of the block, and respect the historic proportions of height to width. • Floor-to-floor heights should appear similar to those of historic buildings in the area.
	B. Traditional spacing patterns created by the repetition of uniform building widths along streets must be maintained. • No facade should exceed 50 feet without a clear expression of this standard module. • Where a building must exceed this width, use a change in design features to suggest the traditional building widths. Changes in facade material, window design, facade height or decorative details are examples of techniques that may be considered.
Building and roof form	**A. Rectangular forms should be dominant on commercial facades.** • Rectangular forms should be vertically oriented. • The facade should appear as predominantly flat, with any decorative elements and projecting or setback "articulations" appearing to be subordinate to the dominant form.
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	C. Along rear facades, a building form should step down in size, and not be a continuous two- or three-story facade plane. • This is especially encouraged when rear areas are anticipated to have pedestrian activity. • Consider using additive forms, such as sheds, stairs and decks. These forms must, however, remain subordinate to the primary structure. • Use projecting roofs at the ground floor over entrances, decks and separate utility structures to establish a human scale that invites pedestrian activity.
Setback	**A. Maintain the alignment of facades at the sidewalk's edge.** • Placing the facade of the building at the property line is required by the zoning ordinance and should be modified only in special circumstances. • Locating entire building fronts behind the established storefront line is inappropriate.

- *Lessons learned*

Georgetown and Miners Bay both possess unique views, well recognized landscape character, and rich historical backgrounds. Thus, the details of the Georgetown Design Guideline are relevant to the design details of protecting the views and landscape character in Miners Bay. For example, "Residences in the Character Area from one- to two-stories, but are typically one and one-half story" is one of my restrictions in the design (see below). The concepts which the Design Guideline described help me to decide which type of view protection is more important, and what kind of building restrictions can be used.

3. SITE ANALYSIS METHODS AND RESULTS

3.1 Project Background - Studio Project LARC504B

Between February and April 2005, landscape architecture students of UBC conducted a studio project for Mayne Island in LARC 504B to get *"both concepts and practical experience in landscape and open space planning, in the context of a real community and larger scale rural landscape."*[1]   This was my first exposure to this island.

3.1.1 Goals

The main goals for this studio project were:

1. To assess existing conditions, opportunities, constraints, and critical areas for landscape character, recreation/tourism and sustainable development (within the island's 'ecological footprint').

2. To develop future landscape concepts and design vignettes/prototypes that reflect existing trends or alternative future visions.

3.1.2 Defining the Landscape Character of Mayne Island

During the studio project, I was in the Landscape Character group, which was in charge of defining the landscape character of Mayne Island and creating a critical area map to highlight character zones and features with particular sensitivity or potential for improvement.

Surveys were conducted among visitors[2] and residents in order to obtain and analyze peoples' opinions, determine the critical features of the landscape, and address the character of this community through the following tasks:

1. Identify those features, places or impressions of Mayne Island's landscape that are liked and considered important to its character.

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1 Defining Landscape Character and Exploring Sustainable Futures:
Executive Summary and Technical Appendices of LARC 504B
[2] Due to insufficient time to survey normal visitors, we used our classmates as surrogates.

2. Identify those features, places or impressions of the landscape on Mayne Island that they were personally disliked or which seem out of character.

3. Draw a simple map of Mayne Island from memory ("memory map").

"Ruralness", **"Ocean Views"**, **"Culture"**, **"Special Places"**, **"Built Environment"**, **"Geographic Elements"**, and **"Sense of Caring"** emerged as the themes in the summary of the key defining elements in the landscape character of Mayne Island.

The terms **"Rural"** or **"natural"** appear to best describe the most important aspect of the island's character. Diverse rural features such as forests, valleys, open fields and ocean shoreline are physical, dominant geographic dimensions frequently mentioned in the survey. The respondents regard **'rural'** as an ambient and ephemeral quality along with the quiet and tranquility of Mayne Island.

"Ocean views" was the second mentioned important aspect. The favorite views which are defined include vistas along the Georgina Road extending from the Lighthouse to Miners Bay, as well as Fern Hill Road between Miners Bay and Bennett Bay. Scenic beach views at locations in all the Bays of the island are enjoyed. The special ocean views of Miners Bay include ferries passing by, the view to Galiano Island and the sunset.

"Special places" also ranked highly. The Springwater Lodge, the Agriculture Hall and the church (all in Miners Bay) are the most important locations for daily events, and form a core of culture, community, and economy in Mayne Island.

The summary of the **"Memory Map"** identified the location of "special places" and the percentages of people who marked each place on the map. The "visitors" did not have chance to become knowledgeable about every aspect of Mayne Island. The islanders did not pay as much attention to the ferry terminal or road types as the "visitors" did. Miners Bay was among the most frequently mentioned by both groups, as well as some other places, e.g. outstanding points (Mt. Parke ridge), parks, farms and forest (vegetation). The maps (Figure 3.1) proved the importance

of Miners Bay to the life on Mayne Island and how critically it will affect the character of this small-coastal community as it develops.
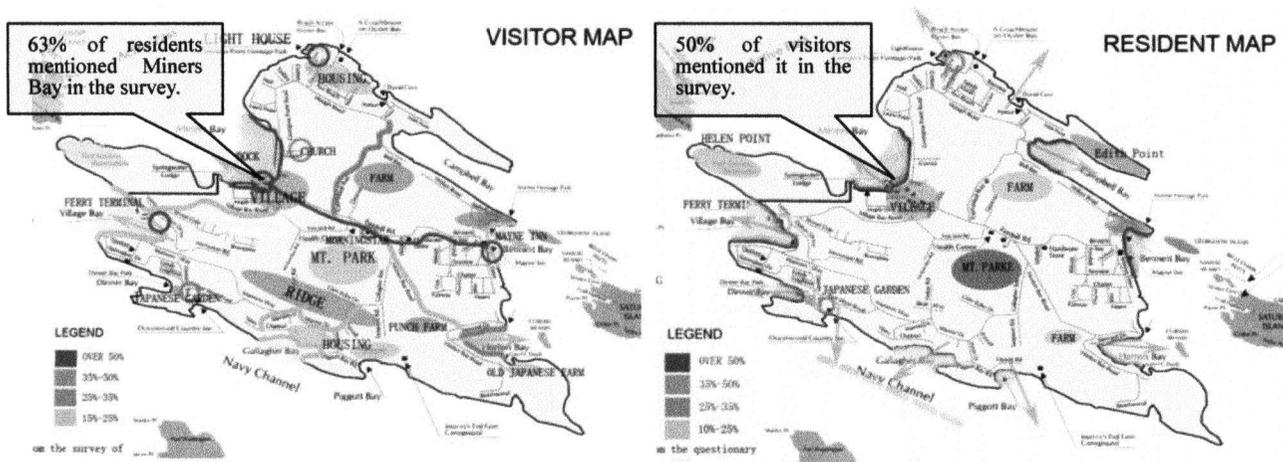
Figure 3.1. Memory maps of "visitors" and residents.

Landscape character map

Mayne Island can be characterized primarily in terms of its topography, vegetation (forest cover), bays, neighbourhoods and special views (to water and inland) (Figure 3.2).

"Landmarks, icons, or special places tend to be culturally associated and of historic significance, or of recreational / restorative value (access to nature).

The Mayne Island character zone map includes 20 different character zones which reflect the experiential qualities generated by ruralness, views, nature, open space, building development, and sense of caring." [3]

Several character zones are related specifically to Miners Bay, which are:

• ***Miners Bay village***

This character is described by the historical island center, heritage buildings, mixed use (residential, commercial, tourist, civic), open public views of Active Pass, ferries, and the sounds of ferries.

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[3] Defining Landscape Character and Exploring Sustainable Futures:
Executive Summary and Technical Appendices of LARC 504B

Landscape Character Group
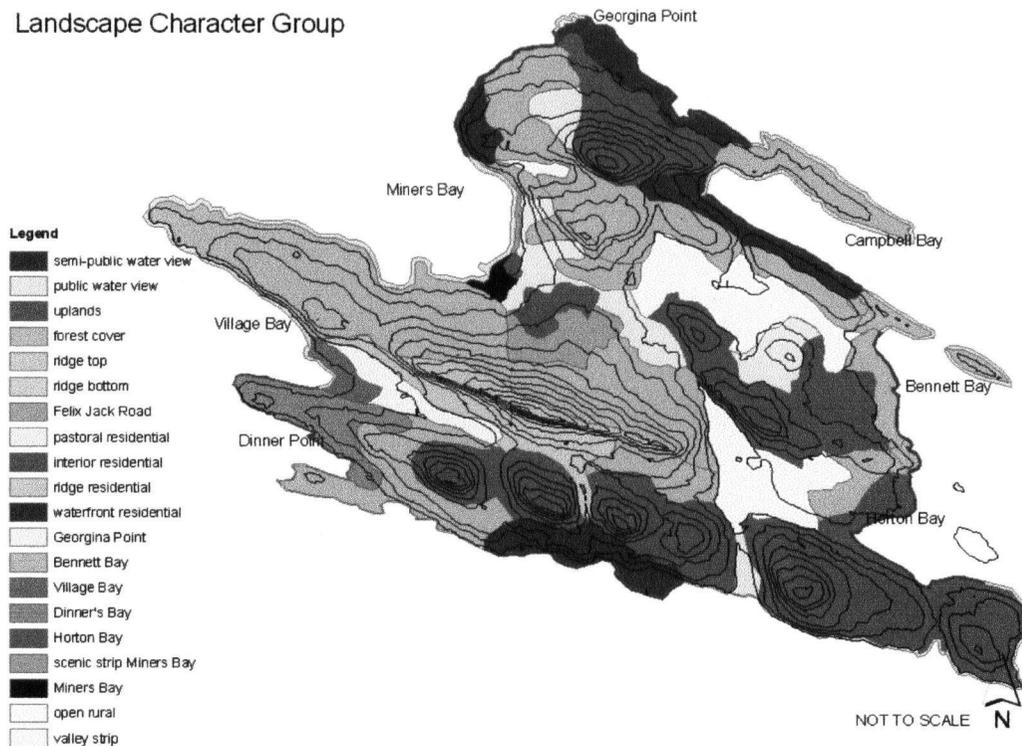
Figure 3.2. Landscape character zoning map, prepared in group work in LARC504B.

- ***Coastal Scenic Strip in Miners Bay***

Georgina Point Road, Village Bay Road and the north end of Fernhill Road in Miners Bay have open views to the water. They are exposed and form a transitional between Miners Bay and forest land.

- ***Waterfront Residential Areas***

These areas are located near water edges, with residential developments, private ocean accesses, and views to the ocean. The areas are highly visible from the water and typically characterized by dense tree cover, fence, *"sloping properties, private feeling, separate and varied topography"*[4]

- ***Ridge Top***

The ridge tops provide lookout spots over the ocean, with forest cover functioning as refuges and/or farming; example include the church yard and the cemetery, Mt. Parke and Miners Bay Park area.

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[4] Defining Landscape Character and Exploring Sustainable Futures:
Executive Summary and Technical Appendices of LARC 504B

Future vignettes

Another important component of this studio project was the future vignettes, which received the most attention from the islanders during the final presentation on Mayne Island.

We envisioned both sustainable alternatives and possible threats under the trends of existing development, with the use of visual imagery or 'vignettes' to illustrate key concepts or illustrative prototypes in selected key areas. Various "what-if" conditions were illustrated by using Photoshop or other computer software, sketch graphics, and photographs.

Figure 3.3. A vignette of the future in Miners Bay. Image is from students' work of LARC 504B

Above (Figure 3.3) is one the vignettes of Miners Bay. In response to the intense requirements of both tourist and residents, more commercial and tourist accommodation could be developed in Miners Bay. The increasing density of construction and multi-use functions may lead to a small non-traditional village center. The vignettes were used as a tool for the participants to judge and choose acceptable scenarios and conceptual designs for the future.

3.2 Site Inventory Approach

For any project, site inventory is the first and critical step. The purpose is to provide an information base for the Site Analysis and subsequent design process. Most of the information can be cataloged as topographic data, visual documents (site photos or videos) and various maps. The existing opportunities and challenges of the site, based on a careful landscape description and analysis, are key elements to be focused on in the design.

3.2.1 Photo and Videos

During the previous studio, three visits were made to Mayne Island to gather site information which included taking pictures, visiting islanders and doing surveys among the residents and visitors. For this study, more detailed information on each building on the site, such as the façade design, roof styles, heights and the surrounding vegetation, were needed for 3D visual simulation. So I visited the site twice more to take pictures of individual houses, panoramic shots for each key view point, and videos of the drive along major routes on the site. I briefly estimated the height of buildings, and located them on the aerial photos. All the above were used for 3D models and analyzing the site character with reference to several particular aspects:

- Existing buildings and infrastructure on-site, such as roads, parking, and docks, pedestrian paths, stairs, and ramps.

- Trees and other plant materials, including species identification, location, condition, canopy spread, ground elevation for isolated trees.

- Topography of the site, including shapes of slopes and streams.

- Views to and from the area, both close and distant.

3.2.2 GIS Data and Site Map

GIS data was used to analyze land uses, determine vegetation cover percentages, build models of terrain, and map viewsheds. GIS data from the studio included:

- Aerial photos of Mayne Island

- Topography of the site, including terrain and 10-meter-interval contour lines

- Hydrology of the site, as needed for the design of the project, including stream location and development restriction buffers, ocean edge, water bodies, wells and drainage system

- Land use conditions on the site, including property boundaries and zoning.

- Existing infrastructure, including trail and road system

The site's surroundings were also analyzed for the following aspects.

- Relationships between structures

- Relationships between circulation and utilities infrastructure

- Neighboring open spaces and plantings

- Topography and views of the area from other locations, as may be impacted by project development.

- Geology and hydrology, as relevant.
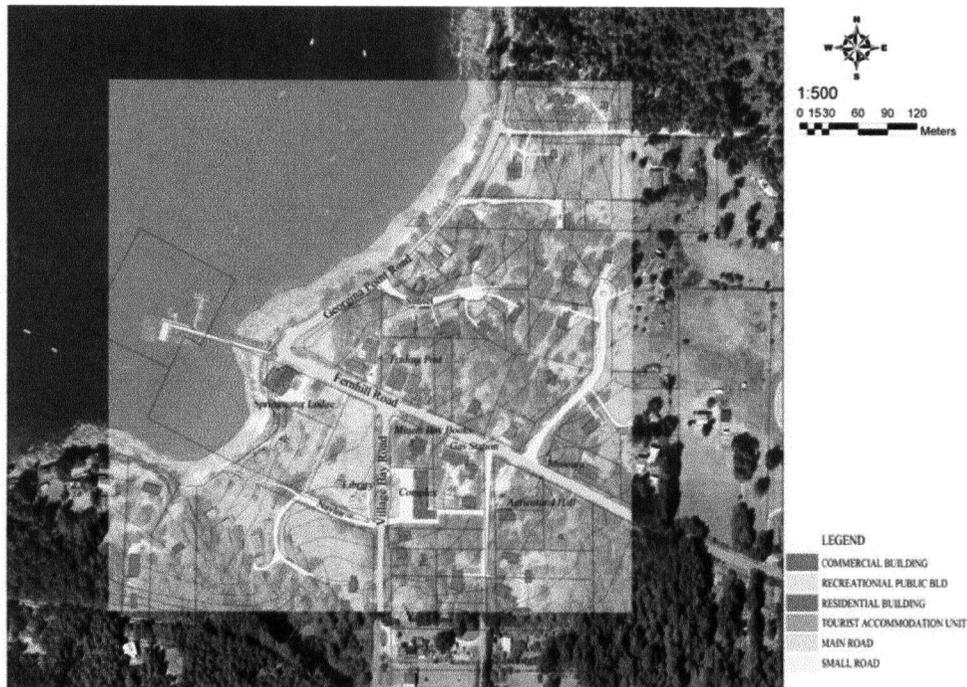
Figure 3.4. Site map of Miners Bay

Fortunately I obtained the contour lines with 2 meter intervals and high resolution aerial photos from the Islands Trust for doing the site analysis. These gave a clear footprint of the buildings on the site and detailed terrain data, which made possible the accurate 3D modeling of the existing situation.

Based on the GIS data, I mapped the existing conditions in the study area (Figure 3.4), identifying and classifying circulation routes and destinations, building types and zoning.

3.2.3 3D Modeling of Existing Conditions

The information gathered was used to build a 3D digital model of the existing conditions of Miners Bay. The model concentrates on the areas close to the major roads and shorelines which

relate to view conservation or have a potential for future development. The method used was to draw on site photos and field inventory data to guide the construction block of a 3D for each house, using the estimated height to determine the roof height of the model and using the aerial photos of Miners Bay to address the size and shape of each building's footprint. The software used was AutoCAD 14 for drawing the footprints and contour lines, and Sketchup 5.0 for building models.

Because all the design alternatives are based on this model, the accuracy of the model is crucial to the creation of convincing pictures for visualization. The model's perspectives were compared with on-site photos for checking accuracy and correcting major inaccuracies in building scale, form, and location (Figure 3.5).
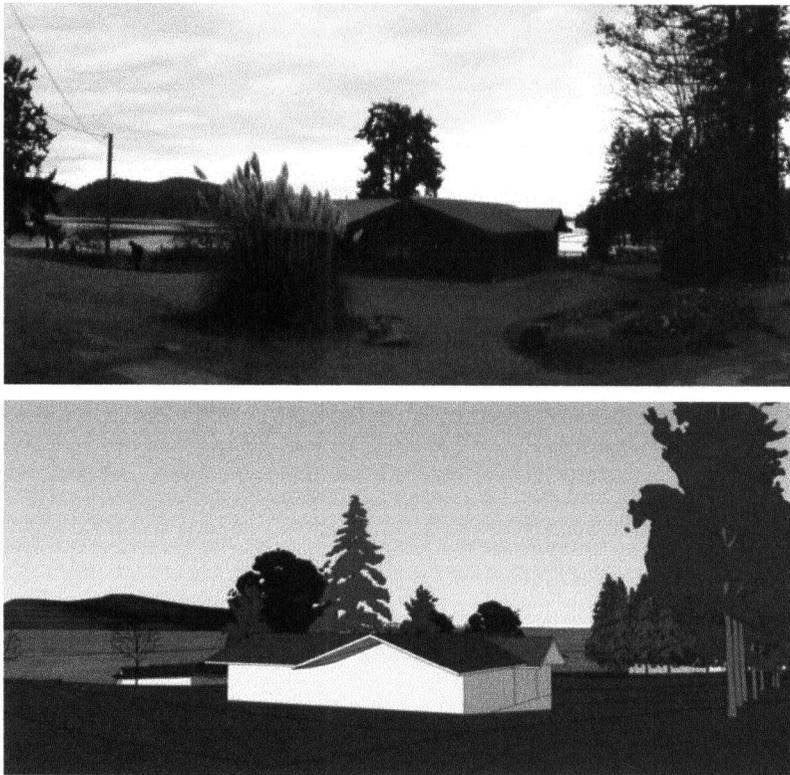
Figure 3.5. Comparison of on-site photo of Miners Bay library and the perspective of the existing conditions model

As illustrated in the photos, there are many objects on site, including buildings, fences, electrical poles, trees, shrubs, and different ground-covers. For practical reasons, not every detail was reproduced to make the model exactly the same as in the photo. Only the elements which have the highest influence on the landscape character, such as major buildings, trees and tree groups,

terrain and roads were modeled. Particular attention was paid to modeling historic landmark buildings which are well known to the community and visitors, and the buildings which affected the views at key locations.

3.3 Landscape Character of Miners Bay

3.3.1 Village Fabric

There are three main roads (*paths*) on the site: Village Bay Road, Fernhill Road and Georgina Point Road. Village Bay Road is a busy road in summer, because it is the only way to the Ferry Terminal and summer is the peak season for tourist. Georgina Point Road leads to Lighthouse Park, the scenic heritage park on the island. Fernhhill Road is the only road to cross the island from the east to the west end. It connects Miners Bay with Mt. Parke (*nodes*), the regional park on Mayne Island, and Bennett Bay, another beautiful sightseeing attraction (ranked as the most attractive place by residents).
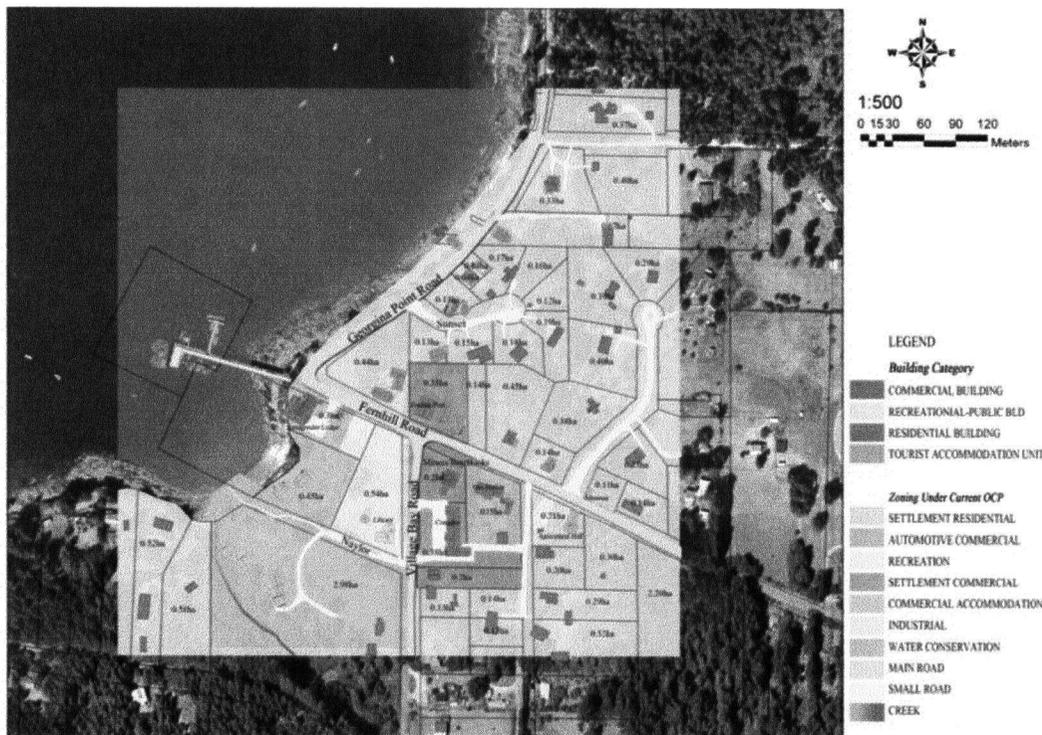
Figure 3.6. Zoning and land use in the site (under current OCP)

The building types (including *landmarks*) on the site are commercial, recreational, tourist accommodation and residential. Under the current OCP, major zoning on the site includes

commercial, commercial accommodation, recreation and residential. The numbers on the map (Figure 3.6) show the size of the parcels. The parcels are larger and irregular in shape compared to most village centers.

Based on the mapped inventory, site photography, and previous studies, four distinct character types/zones emerged: "dense forest", "semi-enclosure", "costal panorama space", and "inland open space". Based on land use and special features, the landscape character of Miners Bay was identified as a combination of **Coastal Panorama Landscape, Rural Residential Landscape, and Waterscape** (Figure 3.7).
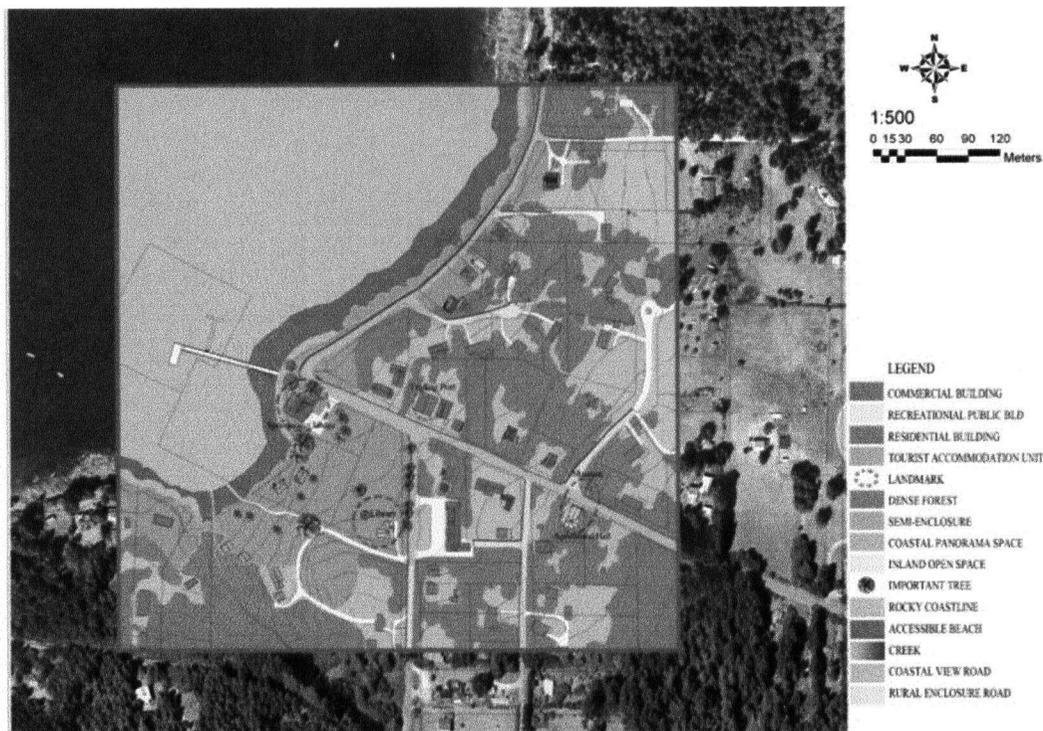
Figure 3.7. Landscape character of Miner Bay

3.3.2 Coastal Panorama Landscape

This character type occurs with a *sloping coastal landscape* and abundant open spaces that offer panoramic views with the shoreline in foreground. At Miners Bay, the slopes reach from the ocean edge to rise gently to several ridge tops on the Island. The steepest gradient of these slopes is less than 15%. Various types of low vegetation such as grass and shrubs are scattered on the hillside, with single canopy trees or small clumps of trees. The dispersed, varied, and small scale

nature of developments is subordinate to tree height and landforms, with most views framed or

back-dropped by natural-appearing forest and hills.

Some tourist accommodation is located in small cottages scatted along the ocean edge in the cleared areas, offering good views. These low cottage style buildings are diverse but fit well with the coastal panorama landscape (Figure 3.8).

Figure 3.8. View from the Springwater deck to Miners Bay cottages

3.3.2 Rural Residential Landscape

The landscape character of rural residential areas retains many aspects of the natural landforms and natural vegetation types combined with a variety of man-made elements. For Miners Bay, the ocean and shoreline are also critical to this rural sense in filtered or middleground views.

The rural residential character zones can be divided into *Rural Low-density Residential Landscape, Rural Village-center Landscape and Transportation Corridor Landscape,* with a mixture of dense forest, semi-enclosure and some open space areas. The vegetation types include mainly conifer forest, with some deciduous forest (e.g. alder), ground cover and naturalistic shrubs (e.g. blackberry).

Rural Low-density Residential landscape- Residential buildings tend to be scattered and have smaller scale (1-2 floors); no two buildings are alike and individual expression on gates, signs and gardens is common; building footprint area typically is less than 100 m^2, most homes are enclosed by forest on 2-3 sides to maintain privacy and native 2nd-growth forest character (Figure 3.9). Residents along Georgina Road have cleared most of the forest facing the ocean. The houses along the major roads usually clear the forest to the road and maintain the rest; where the buildings are located along small roads, the owners tend to leave a small opening on one side of the lot and screen the houses from the roads. Where there are opportunities to have ocean views,

the properties owners open views of buildings totally or partially to the water.

Figure 3.9. A typical house shows the rural residential landscape on Miners Bay

Rural Village-center Landscape- Miners Bay is the community center and the commercial core of Mayne Island. Compared with the other areas on the island, Miners Bay has more commercial zoning, and commercial buildings as well as community recreational areas. Almost all the business facilities which the residents need for their daily life can be found here, like the restaurant, post office, grocery, market, real estate, book store and gas station.

Commercial buildings are generally larger scale than residential houses, with maximum 2 floors. The commercial lots are much bigger than the residential lots in the village center and located near the main roads for convenient traffic. The landscape type is relatively open or semi-enclosed by trees. Generally, there is less screening by the forest, because views to the ocean and to/from the streets are very important to the business, especially for Springwater Lodge –the restaurant and the pub.

Recreational or public buildings in Miners Bay include the library, Agriculture Hall and the Museum. These buildings, along with Springwater Lodge and the pier, comprise the main landmarks on the site. They are scattered in different locations with no strong physical connection or style relationship to each other. Other commercial and residential buildings are also valued historic structures. The hundred year history contributes to the rural character, but in a low-key, rustic and subtle way. Landscaping is informal, without clean edges, hard lines, or solid paving. Edges are rough, with few if any curbs, and considerable wild or natural vegetation along fence

boundaries, open ditches, and general paving areas. Small structures (e.g. sheds and wood storage) and other equipment (e.g. boats, propane storage) are visible from public areas.

The most important landscape focal points in Miners Bay are Springwater Lodge and the pier, which are widely visible from many directions on the Island and from the boats.

Transportation Corridor Landscape- The road conditions in Miners Bay have two main landscape types: typical Mayne Island rural roads, and scenic coastal roads. Usually the rural roads are narrow and wind without curbs and pedestrian walkway, and often have water swales for drainage at one or both sides, bounded by rough vegetation; the road widths are dwarfed by roadside tree height, and these tall trees create an enclosed canopies and tranquil atmosphere.

Figure 3.10. View to Galiano Island on Fernhill Road

Coastal roads (Figure 3.10) such as Georgina Point Road have distinctive ocean views and wide open viewsheds to the water. In Miners Bay, these panoramic views take in Active Pass and the frequent ferries, Galiano Island, and views across Miners Bay. On the Village Bay Road, there are filtered views to Active Pass and Galinao Island. A narrow vista is obtained from Fernhill Road. Vegetation along these roads varies alternately from trees and shrubs to ground cover; the views and open spaces along on the corridor shift from enclosure, to scenes of the ocean framed by trees, to panoramic open view points.

3.3.3 Waterscape

On an island, most landscapes have a certain relationship with the sea, which *"has proven to be the most dominant aspect of their landscape, providing a link with outside civilization, an element*

of danger, and the means whereby the area could be eventually exploited." [5]

Important aspects of the waterscape of Miners Bay can be described in terms of *Bay Landscape, Shoreline Landscape, Island Landscape, and Offshore Structures.*

Bay landscape- The curved shoreline of Miners Bay forms a semi-enclosed water body. The patterns of landform, buildings and vegetation openings are oriented toward the center of the Bay.

Shoreline Landscape- The shoreline comprises low bluffs and sand beach. Sand beaches are attractive but often are not clearly visible or easy to access .

Island Landscape- The enclosing landforms of Galiano Island and surrounding marine features, are distinctive, due to i) landforms isolated by the ocean; and ii) the sound of the ferry and whistle of boats coloring daily life instead of traffic noise.

Offshore Structure- These include the piers, the deck and stairs extending into the ocean and providing more panoramic views.

3.4 Visual Analysis

As mentioned, ocean views are very important landscape characteristic for this small coastal community. At Miners Bay, if views to Galiano Island and ferries were blocked, the character of this coastal village would be changed. The sense of scale and meaning afforded by ocean views is easily destroyed if the community does not take care of the "visual fragility" in new development plans. In the future development, Miners Bay is likely to have more infrastructure, more buildings, and more roads and parking. How will they affect the views and rural community character? How can proposed developments preserve visual features and respect the visual fragility of this area? These problems require visual analysis which offers practical tools for identifying areas in need of view protection as a component for managing landscape character.

3.4.1 Introduction of Visibility Mapping Methods

"*In general, visibility encompasses both the geographic extent of surfaces which can be seen from*

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[5] **Marie Elliott,** *Mayne Island & the outer gulf islands a history,* P45

selected positions, and the legibility of these features."[6]   There is no doubt that visibility plays a central role in many aspects of landscape planning and environmental management.

Technically, the process of visibility mapping is to develop a generalized visibility model, which should include at least macrolandscape features, observer control points, and sight-line recording; then to use mapping or 3D analysis techniques to identify areas which can be seen and record the result on the site maps. Macrolandscape includes terrain with major surface features, such as landform and water boundaries, and major vegetations types. Observer control points include specific viewer positions and moving sequences. Sight-line analysis means recording the lines of sight between control points and *viewshed.*[7]

The viewshed boundary is an interpretation of the 3D computer model to determine the outer boundary of the sight-lines which are limited by land and surface forms; these discrete points and lines are connected by a continuous outline. Four families of visibility mapping approaches may be applied: [8]

Primary- field observation, involving direct, on-site line of sight information. It includes recording on-site, photos, movies and base maps.

Secondary- interpreting topographic maps and vertical air photo analysis in plan view or stereo.

Tertiary- physical topographic model which is a scale model that allows the analyst to optically obtain views when he is away from the site. This approach costs a lot of time and money, and may not be needed if computerized modeling software is available.

Quaternary- digital terrain computer model (DTM) which includes recording and transforming the mapped data to digital format, and using computer software to interpret the terrain and surface cover data to ascertain visibility limits and view characteristics. The output can be plan viewshed maps with singular or sequential perspectives.

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[6] **Felleman, John P.** *Visibility Mapping in New York's Coastal Zone: A case study if alternative methods,* P250

[7] Viewshed- the locus of points where sight lines meet the macrolandscape and the immediate environment. (**Felleman,** P254)

[8] **Felleman, John P.** *Visibility Mapping in New York's Coastal Zone: A case study if alternative methods,* P254

Most projects entail two or more of the above methods.

3.4.2 Viewshed Mapping

A combination of three methods was used in this project to map the viewsheds and view corridors.

Field observation- Site visits, photos, site videos and base maps form the data base for this stage. Ten control points were recorded and marked on the base maps; these are the most important and representative places where good ocean views can be obtained from public viewpoints or are located in critical positions on the site. Photos and videos were taken from these points.

Topographic map and air photo analysis- ArcGIS, particularly the limited sight-line 3D tool, can be used to identify possible view cones on the base map. The aerial photo helped to clarify and interpret the GIS data to be an easy way of mapping the viewshed area, especially for interpretation of vegetation. In this way, the initial boundaries of viewsheds for the 10 key viewpoints were chosen on the site. Most of them are along the main roads except VP10 which is located in front of the library.

3D computer models- The 3D elevation models and 3D Sketchup models of existing condition allow one to see from any point, and give an idea of vegetation height and the location of the structures which did not show in the 2D GIS data and photos. This allows one to verify if the initial viewsheds identified in step two were correct on the ground. Videos of the Island for these viewpoints provide a way to check the outcome.

The specific steps of mapping the viewshed are:

1. Draw an assumed area of viewcone for each viewpoint on the plan.
2. Review the same view in the 3D model and photos at the same viewpoint to check if the viewshed area is correct, and to determine if some areas need to be added in or deleted because they are blocked by other objects. When it is available, Site video also provides a tool for identifying the viewshed area and checking the accuracy of 3D digital models.

3.   Make changes on the draft viewshed map.

Ten viewshed maps (Figure 3.11) were produced after these three steps. They are:
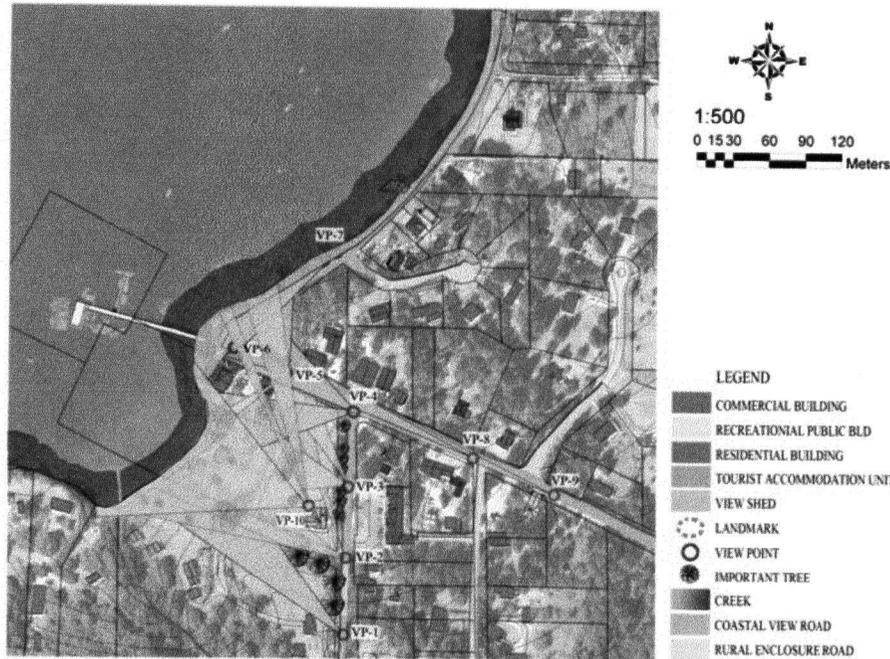
Figure 3.11. The location of all viewpoints

VP1 (viewpoint 1) - the first point approaching where Miners Bay on Village Bay Road can see the water.

VP2 (viewpoint 2) –located beside the Miners Bay Library at the intersection of Village Bay Road with a small road which leads to the beach (Figure 3.12).

VP3 (viewpoint 3) - a place on Village Bay Road where a gap in the roadside trees allows ocean views

VP4 (viewpoint 4) - at the intersection of Village Bay Road and Fernhill Road, in front of the Trading Post, one of the local landmarks.

VP5 (viewpoint 5) - on the Fernhill Road at the north edge of Miners Bay village center, with a broad view to the water.

VP6 (viewpoint 6) - the intersection of Fernill Road and Georgia Point Road, beside the Springwater Lodge. It is the startng point of the scenic view corridor on Georgia Point Road.

VP7 (viewpoint 7) – a series of viewpoints along Georgia Point Road, which is considered to be a

scenic roadway.

VP8 (viewpoint 8) and **VP9** (viewpoint 9) —on Fernhill Road, showing the changing the view cones toward the Galiano Island.

VP10 (viewpoint 10) - is located on the ocean side of Miners Bay Library, on the hill of Miners Bay Park. It is perhaps the most important public viewpoint on the site, with one of the best panoramic ocean views.

These viewsheds focused on the areas where one can see the ocean from the selected key points. The major objects which block the views are buildings and taller trees, which are the key items for consideration in the conservation of views in the design process.

Figure 3.12. Viewshed map of viewpoint 2 (VP2). It shows a viewshed map from one particular viewpoint.

3.5 Zoning and Landuse

According to the OCP (official community plan) and land use bylaw of Mayne Island, the number of buildings which can be developed in total, and the setback on each lot is limited by the size of the lot and the use of the land. The current OCP is brief and general while the landuse bylaws are more specific and detailed.

3.5.1 Requirement of Current OCP

The Mayne Island Official Community Plan establishes patterns for future land use. The patterns

are *"based on historical development, physical features or constraints, initiatives of senior government and specific objectives defined by the community."*[9]
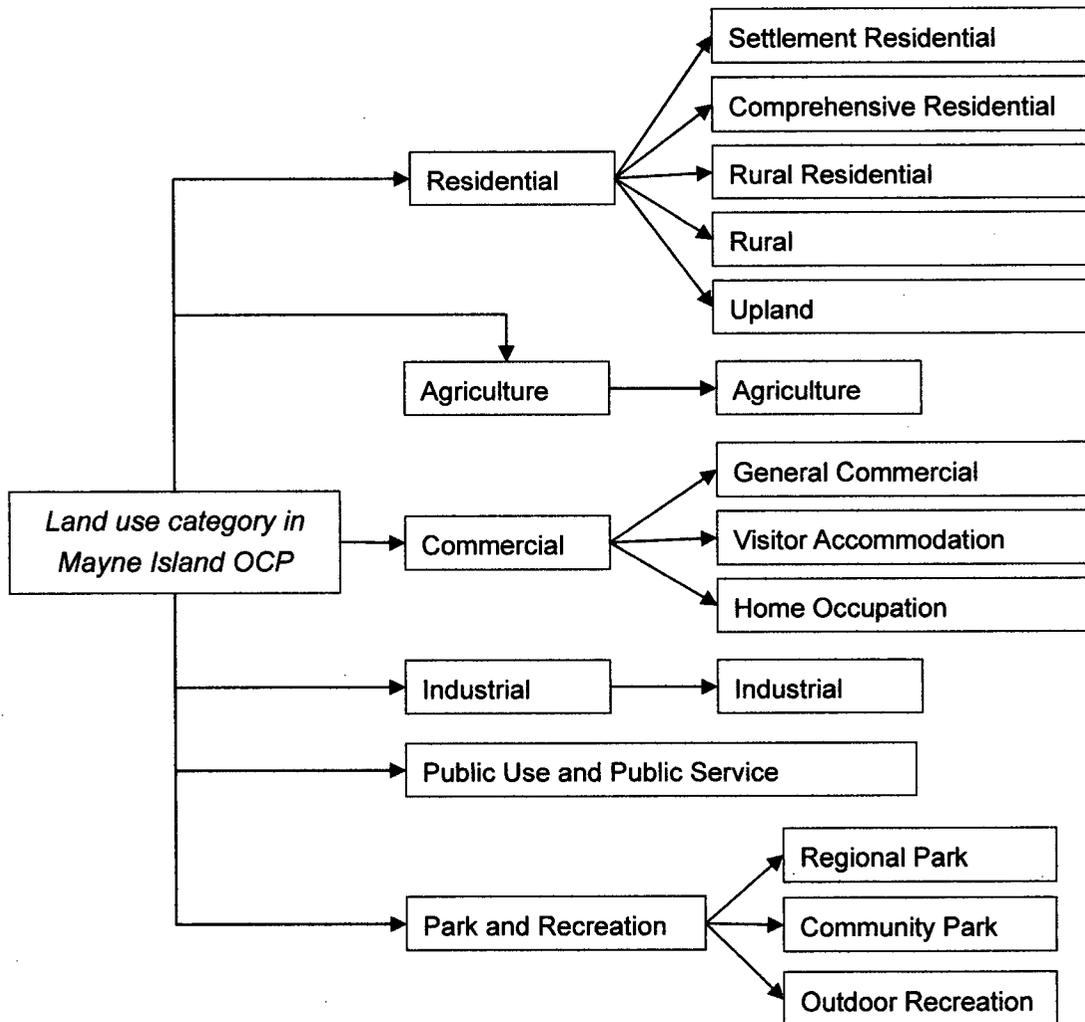
Figure 3.13. Landuse categories in Miners Bay in Mayne Island OCP

The landuse designations (Figure 3.13) are set up to *"ensure that all land uses are based on the sustainability of the natural systems of the island, to maintain the characteristic rural island lifestyle, to protect the environmental qualities of the area, and to maintain the stability of ground and water catchments potential."*[10]. The objectives and policies of the OCP for the lands in Miners Bay are listed in the following chart and table (Table 3.1).

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[9] Mayne Island OCP, P4
[10] Mayne Island OCP, P5

Table 3-1 Objectives and policies for landuse development within Miners Bay area[11]

Category	Sub-category	Objective	Main development policy
Residential	Settlement residential	Enhance the rural nature of the community with particular regard for the protection of vegetation, soils, groundwater sources and ecology of the life	1. One Dwelling unit and one guest cottage on a parcel 0.6 hectares (1.48 acres) or larger. 2. Set the parcel location, number, and size of buildings in order to protect the landscape character. 3. Multiple or joined housing units may be considered in specific sites.
	Rural settlement	Maintain a rural residential density and "rationalize historical situations of cooperative ownership".[12]	1. Principal use shall be residential with accessory uses consistent with a rural character. 2. One Dwelling unit per parcel with the size larger than 2.8 hectares (7 acres) 3. This designation is to be applied only to historical situations to accommodate the needs of long term corporate or strata ownerships. 4. This density shall not be applied to the lands which are not developed.
	Upland— Includes forested slope, habitat areas, ground water recharge areas, steep terrain.	Preserve scenic and aesthetic value, and retain large parcels of land in balance with development settlement area.	1. Principal use shall be residential with accessory uses consistent with a rural character. 2. One dwelling unit and one guest cottage per parcel with the size larger than 10 hectares (24.47 acres) 3. Protect water recharge areas.
Commercial	General commercial— "Historically, The major focus of centralized commercial activity was concentrated at Miners Bay."[13]	Supply services necessary to residents and visitors. Protect the integrity of quiet and rural neighborhood. Provide employment opportunities for the community and protect rural and marine character while it develops.	1. Use small scale commercial business 2. Retail and personal service business are better be clustered at Miners Bay and Montrose/ Fernhill area. 3. Regulate the scale of use, the degree of servicing, roads and parking, the provision of open space. 4. Characters of commercial development shall associate with the environment.
	Visitor	Ensure a safe and healthy	1. Use low density and disperse buildings around

[11] The data are summarized from Mayne Island Official Community Plan NO 86.

[12] Mayne Island Official Community Plan NO 86, P6

[13] Mayne Island Official Community Plan NO 86, P11

	accommodation	environment. Keep the quiet rural character of the island and offer adequate service.	the island. 2. Choose the right scale of use, the degree of servicing, roads and parking, the provision of open space. 3. Signage, form and character of commercial development shall be regulated through development permit.
	Home occupation— a significant part of the economic base.	Provide opportunities for residents to support themselves and retain a rural character in all neighborhoods.	1. It shall be a secondary use to a permit residential use and small scale. 2. Signage, form and character of commercial development shall be regulated to protect the rural character.
Public use and public services	Includes public services, facilities and utilities which work for community's current and future need.	Provide an appropriate scale and cost for the public services. Protect the health and safety of residents and visitors.	1. Encourage multiple uses of public facilities. 2. Regulate the off street parking, signage and lighting to keep the rural character of the island. 3. The recycling depot shall follow the highest standards for environment health. 4. All goods, materials and equipment shall associate with public use
Parks and recreation	Community park	Expand the community park system and public trails under the control of a park plan. Encourage a system of neighborhood parks in residential areas.	1. Encourage the rights to walking trails or private right of ways. 2. No overnight use or camping. 3. No open fire pits. 4. Only the accessory buildings or structure specified in the zone shall be permitted.
	Outdoor recreation	Retain public access to shoreline and beach areas. Encourage a system of walking trails, with minimal development. Develop outdoor entertainment place, like golf course.	1. Develop a network of walking trails on the island. 2. Obtain public access to the foreshore and parks. 3. Provide cycling paths along all major roads when upgrading the roads. 4. Rezone some areas for golf courses and driving ranges.

3.5.2 Requirement of Land Use Bylaw

Table 3-2 Requirements of Landuse Bylaws for building development in Miners Bay[14]

ZONE	SHORT FORM	PERMITTED USES	DENSITY	LOT COVERAGE	SITTING OF BUILDINGS	HEIGHT OF BUILDINGS	SCREENING
Settlement Residential	SR	1. residential use	2 du/ 2000m2-	<=20% lot area	>8m of any front, rear or exterior side lot line	principal building or dwelling unit <=9m	
		2. parks	3 du/ 2000-4000m2				
		3. utility lines and poles	4 du/ 4000m2+		>3m of any interior side lot line	accessory building <=5m	
		4. home occupations	two du + one cottage				
		5. cottage					
		6. accessory uses, buildings and structures					
Settlement Commercial	C1	1. restaurants	floor space ratio<=0.25	<=35% lot area	>6m of any front, rear or exterior side lot line	principal building or dwelling unit <=9m	1.5m in height landscape to screen the commercial uses lot form residential uses lot
		2. retail stores	2 du/ 2000m2-				
		3. offices including banks and travel agencies	3 du/ 2000-4000m2		>3m of any interior side lot line	accessory building <=5m	
		4. medical and dental clinics	4 du/ 4000m2+				
		5. printers and publishers	1 accessory / 2000m2-				
		6. personal service	2 accessory/ 2000-4000m2				
		7. appliance repair and servicing	3 accessory/ 4000m2+				
		8. clubs and halls					
		9. freight depots					
		10. utility lines and poles					
		11. accessory dwelling unit for the accommodation of the owner, operator or employee of a permitted principal use					
		12. accessory used, buildings and structures					
		13. parks					
		14. public services uses					
Commercial Accommodation	C2	1. tourist accommodation in hotels, motels, lodges and inns	one accessory du/ per lot	<=20% lot area	>8m of any lot line	accessory building <=5m	
		2. accessory dwelling unit for the accommodation of the owner, operator or employee of a permitted tourist accommodation use	floor space of all purpose<=2500m2/ hectare				
		3. accessory restaurant, café	tourist accommodation unit <=37/ha (in first hectare); 27/ha (over 1 hectare)			principal building or dwelling unit <=9m or 2 stores	
		4. retail sales uses in connection with a tourist use					
		5. public service uses	number of buildings accessory to a permitted tourist accommodation use=4				
		6. parks					
		7. utility lines and poles	floor space ratio<=0.25				
		8. accessory uses, buildings and structures					
Automotive Commercial	C4	1. gasoline service station and accessory propane sales	number of buildings accessory to a principle commercial use=4	<=35% lot area	>8m of any front, rear or exterior side lot line	principal building or dwelling unit <=9m	1.5m in height landscape to screen the commercial uses lot form residential uses lot
		2. auto body repairs					
		3. retail stores	floor space ratio<=0.25		>5m of any interior side lot line	accessory building <=5m	
		4. rental of tools and garden equipment					
		5. accessory dwelling unit for the accommodation of the owner, operator or employee of a permitted tourist accommodation use	1 principal building accommodating+1 accessory dwelling unit/ per lot				
		6. public service uses					
		7. parks					
		8. utility lines and poles					
		9. accessory uses, buildings and structures					
Recreation	REC	1. golf courses on sites having an area greater than 4ha	the number of campsites in an outdoor camp use <=7.5 /ha of lot area		>8m of any front, rear or exterior side lot line	all building or dwelling unit <=9m	
		2. institutional outdoor camps on sites having an area greater than 4ha					
		3. clubs and halls			>5m of any interior side lot line		
		4. recreation facilities					
		5. public service uses					
		6. parks					
		7. utility lines and poles					
		8. accessory uses, buildings and structures					
Note: On the intersection of two major roads, no building or structure exceeding 0.75m in height is allowed to be sited within the area of 15m setback from the right-of-way.							

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[14] The data are summarized from Mayne Island Local Trust Committee Land Use Bylaw NO. 94, 1996.

3.5.3 Potential Development Areas

Analyzing the current condition on the site and based on the current OCP and land use bylaw, the maximum build-out for development on each lot on the critical area was calculated. The followings are some examples.
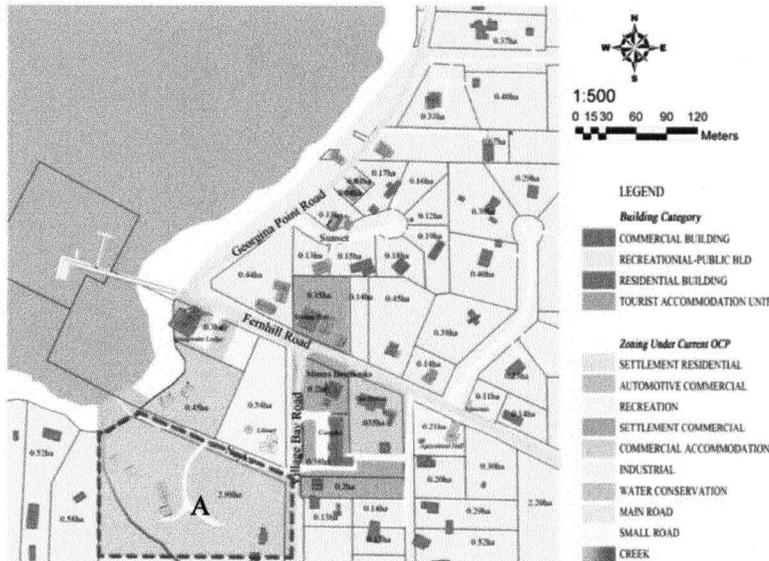

Figure 3.14. Lot A- potential development area map for C2 zoning.

Lot A (Figure 3.14) **Zoning: C2   Area=2.98ha**

- Maximum tourist accommodation units=91 (existing units=10)
- Number of buildings accessory to total accommodation use=364
- Floor space ratio<=0.25
- Building height=9m or 2 stories
- Lot coverage<=20%
- Setback>8m from any lot line

C2 zoning representing the commercial accommodation area in the Mayne Island OCP, has the highest allowable building density to be developed. It lies in the coastal panorama area along the ocean's edge. Buildings on the site in Figure 3.14 have good opportunities to obtain ocean views, while visible from off-shore. This critical location is a key zone for view protection and conservation of landscape character, as well as the most important and sensitive area for future development of this community.
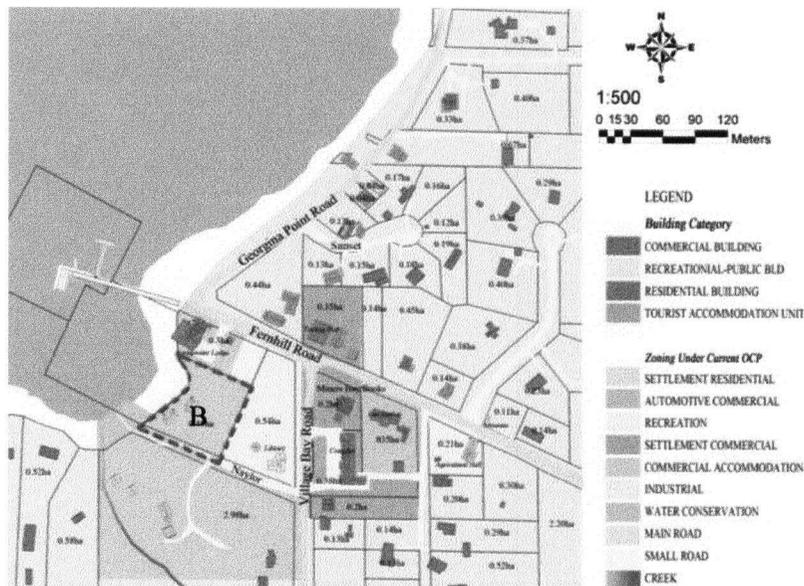
Figure 3.15. Lot B- potential development areas for C2 zoning.

Lot B (Figure 3.15) **Zoning:** *C2*   *Area=0.45ha*

- Maximum tourist accommodation units=16 (existing units=4)

- Number of building accessory to total accommodation use=64

- Floor space ratio<=0.25, lot coverage<=20% ,setback>8m from any lot line

- Building height=9m or 2 stories

Lot C (Figure 3.16) **Zoning:** *C1, C4*   **Area=1.48ha**

- Floor space ratio<=0.25; Lot coverage<=35%

- Accessory buildings=4/each main building

- Main building height <=9m, accessory buildings height<=5m

- Setback>6/8m from any front of line, 3/5m from any interior side lot line

Lot D (Figure 3.17) **Zoning:** *SR*   **Residential Area=0.58ha**

- 6 dwelling units+3 cottages

- Number of buildings accessory to total accommodation use=4

- Lot coverage<=20%

- Building height=9m; accessory<=5m

- Setback>8m from any front of line, 3m from any interior side lot line
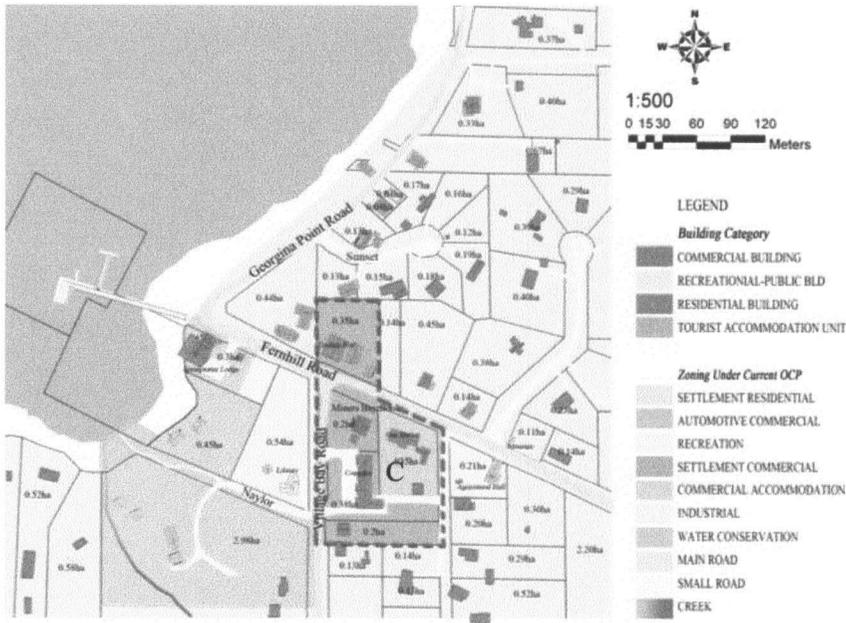
Figure 3.16. Lot C- potential development areas fro C1 and C4 zoning
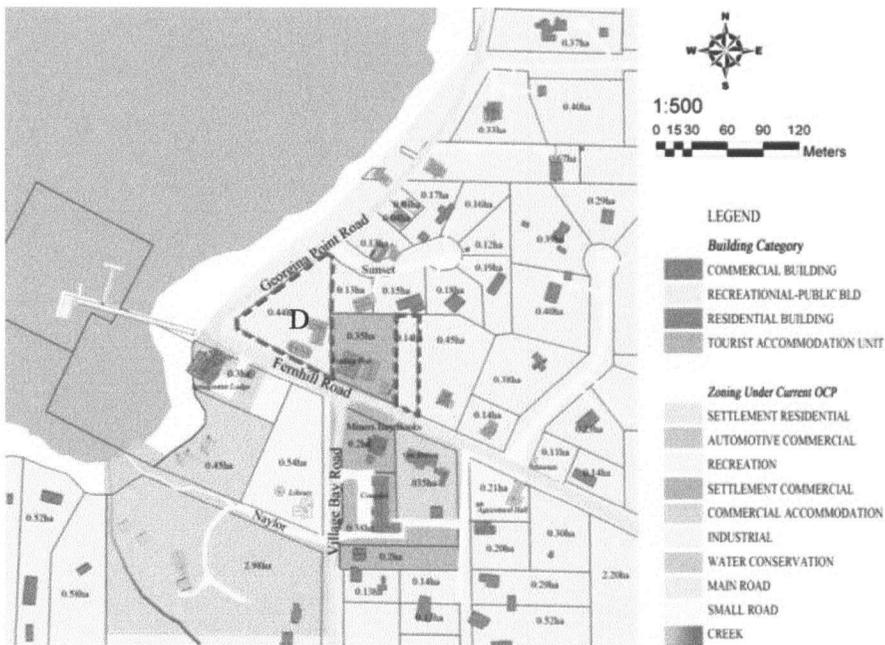
Figure 3.17. Lot D- potential development areas for SR and main roads

4. PROJECT DESIGN

As described in the executive summary of the LARC504B project, the main development concerns on Mayne Island are *"coming from poorly designed logging/clearing on upper hillsides; similar-appearing homes, and incompatible road standards; increased scale of housing with incompatible design materials, landscaping, and view blockage; insensitive widening of rural roads; loss of ocean views; insensitive expansion scale and view blockage from tourist accommodation in key locations; and neater road, parking, and sidewalk standards in Miners Bay village."*[1]

Several alternative designs were developed to illustrate how development consistent with the OCP might be modified to address the above concerns while accommodating community needs and planned tourism accommodation development.

4.1 Methodology of the Project Design

The flow charts (Figure 4.1) overall illustrate the project methodology and (Figure 4.2) detailed design process.
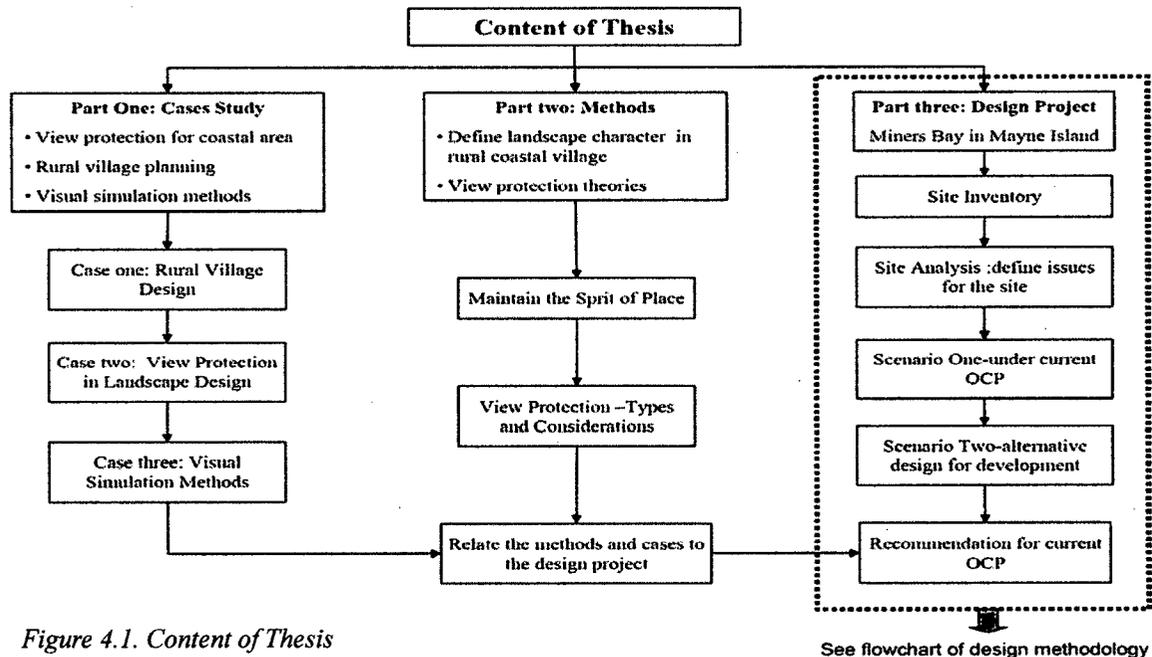

Figure 4.1. Content of Thesis

See flowchart of design methodology

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[1] Defining Landscape Character and Exploring Sustainable Futures: Executive Summary and Technical Appendices of LARC 504B

Methodology of Design Project

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┌────────────────────────────────────────────────┐
│      Project under review (Mayne Island Studio) │
└────────────────────────────────────────────────┘
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Define scope of simulation
- Select area to be simulated
- Determine details of simulations

Select simulation method
- Define time frame
- Define simulation medium

Collect data
- Photos were taken for LARC 504 Studio in 2005
- Photos and digital videos were taken on Jan 15,2006;
- GIS data of Mayne Island and Galiano from the Island Trust
- Executive summary of LARC 504b Studio project
- Other resources-books, internet

Modify project design (if necessary)

3D modeling
- Mark locations and the photos for each building to be modeled
- Make sitemaps in AutoCAD 2004
- Export CAD file to Sketchup 5.0
- Drape the building lines and build models according to photos
- Export 2D perspectives and movies

Site analysis
- Maps the key aspects of Miners Bay
- Visual analysis and viewshed maps

Scenario 1
- Follow the requirements of zoning in current OCP
- Define the potential development area and the maximum situation

Scenario 2
- Evaluating scenario one
- Define the basic requirements of OCP for tourist accommodation, residential use, recreational and commercial growth
- Maintain the visual quality of Miners Bay as much as possible

Revise scenarios (if necessary)

Draw Scenario 1 in AutoCAD
- Sketchup modeling
- Analyze the viewshed
- Movies

Draw Scenario 2 in AutoCAD
- Sketchup modeling
- Analyze the viewshed
- Movies

Comparison Visual analysis

Document design and recommendations

Comments from Mayne Islanders

Figure 4.2. Methodology of Design Project

4.2 Scenario 1- Design Under Current OCP

The major task for Scenario 1 is to explore the potential build-out under the current OCP and to examine what happens to landscape character.

4.2.1 Goals

Design goals of Scenario 1 were to:

- Apply maximum development situations to the site according to the zoning requirements in the current OCP (No 86, 1994) and Land Use Bylaw (NO 94, 1996) (Figure 4.3)

- Assess the possible changes in landscape character in this rural community

- Analyze the effects of this design on the existing coastal viewsheds from the key viewpoints on the site

- Identify issues and concerns associated with existing zoning and to identify alternatives that better address the protection of existing character.

4.2.2 Design Concepts
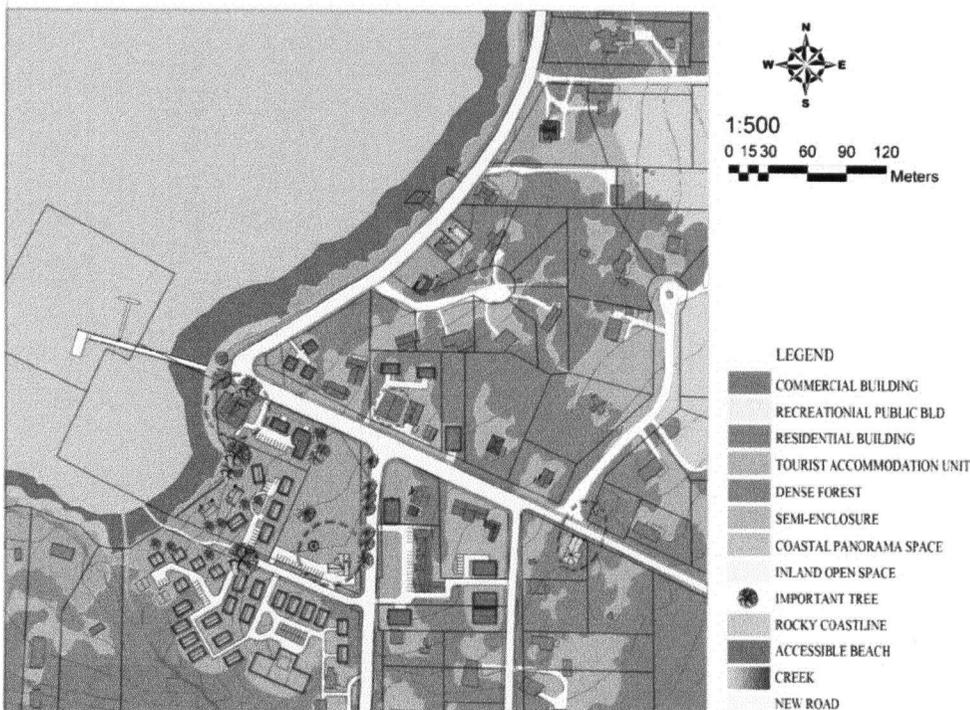
Figure 4.3. Plan of Scenario 1 under current OCP. Buildings in bold outlines represent new buildings.

Key components of this design include:

- Building tourist accommodations in Tourist Accommodation (C2) zoning, with a density of 15du/per acre; the building types mostly are two stories houses and multi-uses cottages to achieve the density.

- Constructing more commercial buildings along the main roads and in Commercial (C1, C4) zoning to satisfy the future needs of tourist and residents, and strengthen the village center; maintaining the scale of buildings the same as or a little larger than the present; limiting the buildings to two stories and 9m height.

- In residential (SR) zoning, constructing more dwelling units and accessory buildings on each lot up to the limits of OCP; locating each house to avoid blocking the views of others; the building layout will follow the existing building pattern of Mayne Island, i.e. semi-enclosed by forest and facing the water; the building style will be similar to existing houses but allow some individual expression.

- Restricting new buildings in the recreational area except small accessory buildings.

- Avoiding clear cutting and maintaining the local vegetation, especially the important specimens on the site; re-arrange the trees and shrubs in the new developing areas.

- Enlarging and upgrading the major roads on the site with side parking; adding bike lanes and pedestrian walk on both sides of roads where possible; maintaining the country road features of swales and tall roadside trees.

- According to the requirement of land use bylaws, parking is provided where necessary, such as the tourist accommodation areas, recreational areas like Miners Bay Park and Agriculture Hall, and commercial zoning.

4.2.3 3D Model of the Design

A 3D model of the new development plan was made; the perspectives and video of the "**before**" condition were used to compare with the effects of the new developments in the "**after**" (the model of Scenario One). The followings (Figure 4.4- Figure 4.8) are examples of the viewpoints.
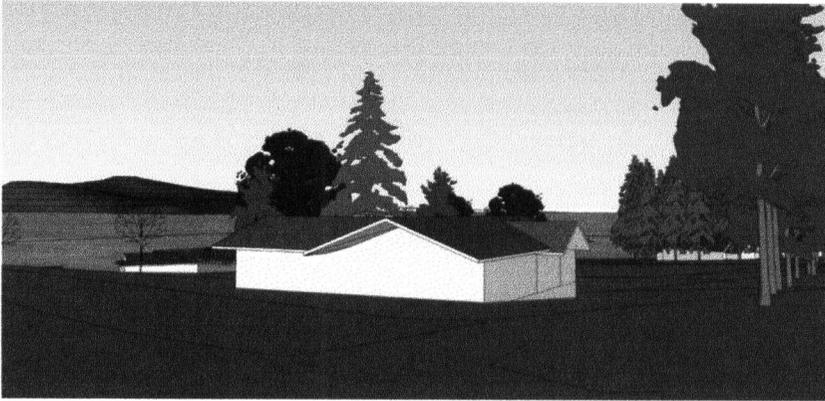
*Figure 4.4. Views from VP 2 in existing model*

Figure 4.5. Perspective of Scenario 1 for VP 2

The above two figures (Figure 4.4, Figure 4.5) are before and after perspective views near Miners Bay library. New buildings are shown behind the library. A wider road and pedestrian walkway are provided; the roadside trees were relocated in order to leave enough space to expand the roads. Although styles and scales of the new buildings' are similar in character to the existing building, they block some original ocean views from this viewpoint.

Figure 4.6 and Figure 4.7 are perspectives of the viewpoint on Fernhill Road looking toward the ocean. The new residential houses on the right side of the road block part of the view to the water and Galiano Island, even though they are only one story; the development would block more views if these buildings were two stories, which is permitted by the OCP. The new commercial buildings on the left side not only block the ocean as the viewer walks down the road, but also partly block the view to the landmark- Springwater Lodge.

Figure 4.6. View from VP5 in existing model


Figure 4.7. Perspective of Scenario 1 for VP5
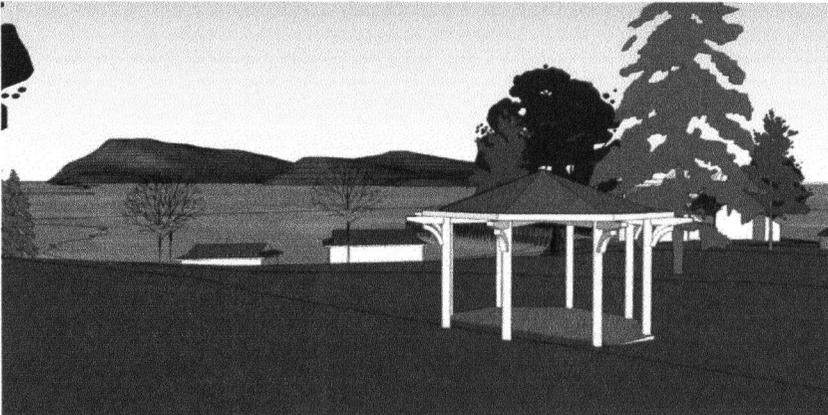
*Figure 4.8. View from VP10 in existing model*
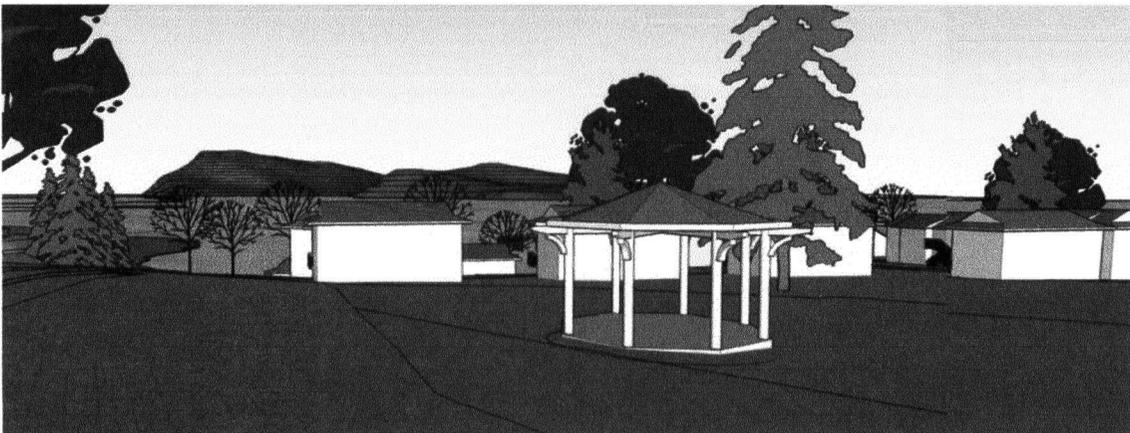

Figure 4.9. Perspective of Scenario 1 for VP10

The perspectives of the viewpoint in the Miners Bay Park (Figure 4.8, Figure 4.9), which is one of the most important and scenic viewpoints for the community, shows expected impacts that will apply to this area. The density and location of the new tourist accommodation units block views of Miners Bay from the open space, affecting most of the viewshed when one stands at the this key point. The rural-coastal scenic park character becomes that of a park within a built-up area.

Figure 4.10. On-site photo from the pier toward the tourist accommodation area on the Island.
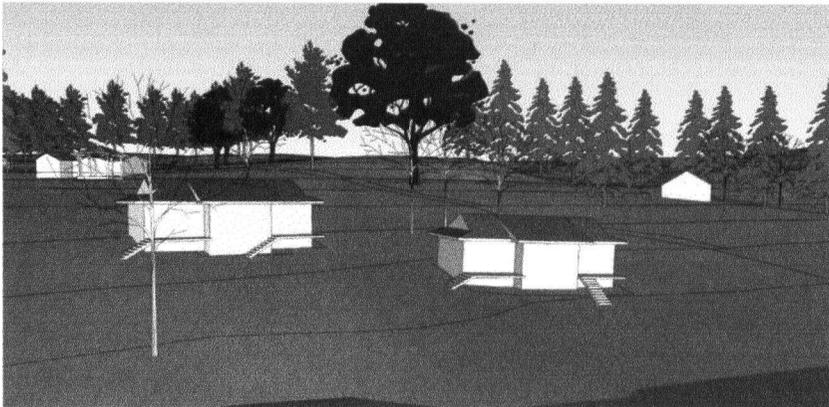
*Figure 4.11. View of the ocean edge from the pier in the existing conditions model*
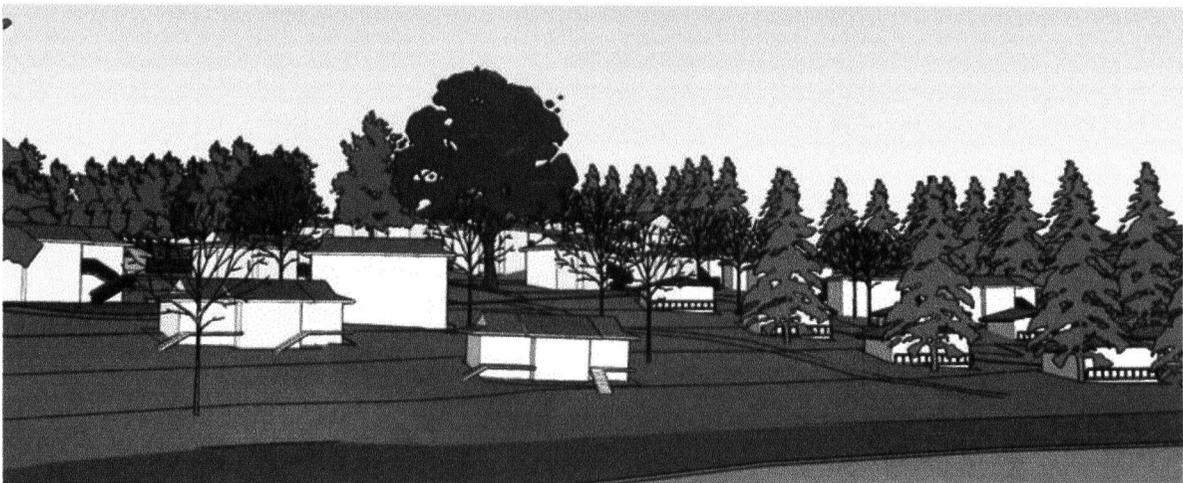
Figure 4.12.Perspective of the ocean edge from the pier in Scenario 1 model.

One of the key landscape characteristics of the Miners Bay is the **Waterscape** (see Chapter 3). The new development will not only affect the landscape on the island, but also views from the boats toward the Bay and shoreline.

The comparison of Figure 4.10- Figure 4.12 shows considerable changes happened along the water edge in Scenario 1. The density becomes much higher than the existing. The views of Miners Bay Park and the library, one of the landmarks on the site, are blocked by new buildings. Though new buildings are close to the water where some have water views, the rural-coastal character of Mayne Island is not maintained when the density and lay-out of residential areas near the center dominates the open character.

4.2.4 Visual Analysis and Comparison

In order to determine how much ocean views will decrease after new development, new viewshed maps of the ten viewpoints were required. By using viewshed mapping[2], ten new viewshed maps for Scenario 1 were prepared. Comparing 'before' and 'after' viewshed maps, the impact of the new buildings on the key viewpoints is shown in Figure 4.13-Figure 4.15.
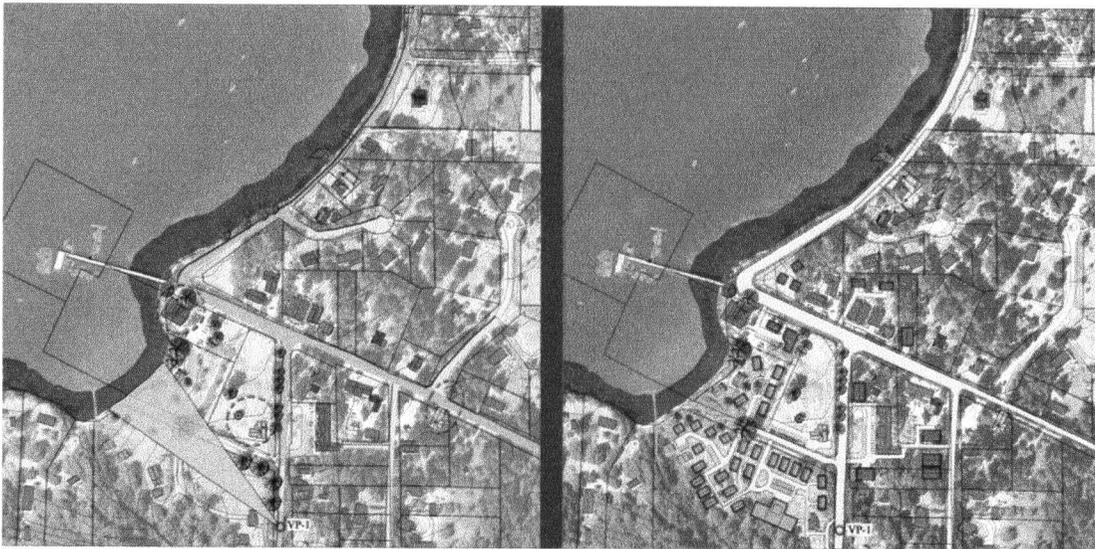

Figure 4.13. Viewshed comparison for VP1

With viewpoint 1, 100% ocean views were lost. The new buildings block the view at this point along Village Bay Road.

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[2] See 3.4.2
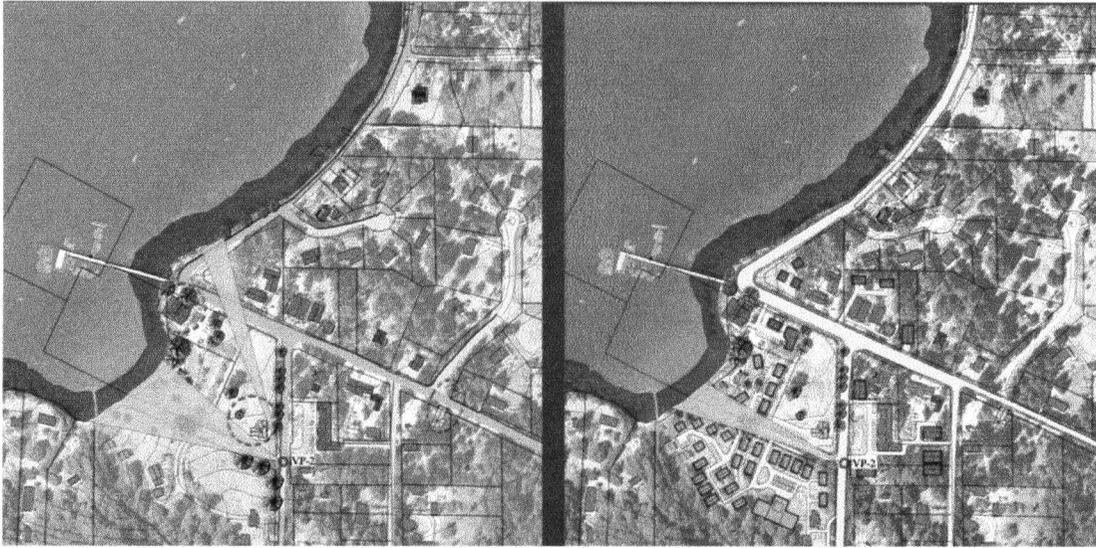
Figure 4.14. Viewshed comparison for VP2

For viewpoint 2, the viewshed is significantly reduced by the new buildings and changes from a major panoramic view and additional narrow vista, to a single narrow view cone. A similar situation occurs with viewpoint 3, viewpoint 4 and viewpoint 5. The new developments and new vegetation impact greatly on the present visual resource.
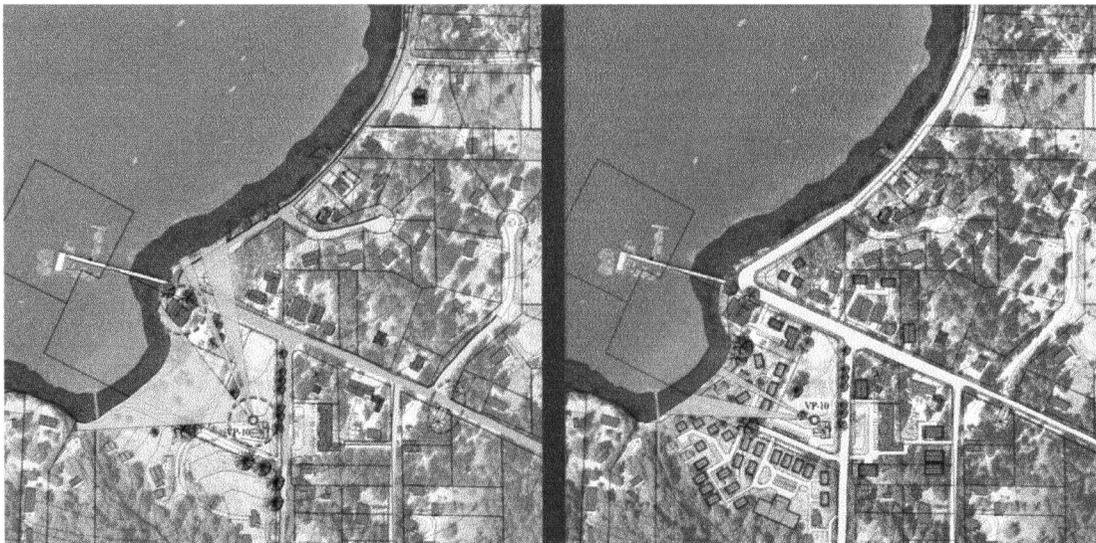
Figure 4.15. Viewshed comparison for VP10

With viewpoint 10, potentially 80% of the views in the future under the current OCP would be lost; indicating a wide panorama of Active Pass will disappear.

With any development, it is possible that some views from current viewpoints will be lost when new buildings are built or more trees are planted in the existing open area; the question is: which

views and how many viewpoints and viewsheds can be lost while still maintaining the community's landscape character?

Based on the viewshed mapping, it appears that from viewpoint 6 to viewpoint 9, the new development will have less negative effects, which means that those areas are not so crucial to the Island landscape and more changes can occur near these viewpoints without degrading the original landscape character.

4.2.5 Conclusion and Potential Problems

Scenario 1 follows the requirements of the OCP and Land Use Bylaws to densify the tourist accommodation area, add more commercial and residential buildings, and upgrade the roads. While trying to meet the requirement and maintain the character of this coastal-rural village, potential problems still persist in the following aspects:

1. All or part of ocean views from some viewpoints within the community are lost.

2. The development at the ocean edge appears chaotic and the character of this community is damaged due to the building patterns.

3. Views from Miners Bay Park will be blocked by the new buildings.

4. The OCP does not require the protection and interpretation of heritage features of Miners Bay, even though there is a rich history for more than a hundred years.

5. Affordable housing has not been provided for in the OCP. During the studio project, throughout the surveys and inventory, it was identified that young families and senior families need to live close to the commercial service center because the island does not have public transit, and not every one can afford private cars.

4.3 Scenario 2- Alternative Development Plan

The problems in Scenario 1were addressed in an alternative design- Scenario 2.

4.3.1 Goals

The goals of Scenario 2 were to:

- Meet the basic requirements of OCP.

- Improve the plan to conserve the quality of coastal views from key viewpoints and maintain landscape character for the main roads and the community.

- Increase commercial and recreational space to serve a growing population

- Provide sufficient accommodation units for tourist and short term residents without damaging the rural-coastal character

- Meet the requirements of residents for affordable housing

- Increase accessibility to the water and the beach

- Use a walkway system to link the heritage buildings for better protection and interpretation

4.3.2 Design Concepts

The key components include:

- Swapping some tourist accommodation land with less valuable recreational land at Miners Bay Park to connect the park with the ocean and increase the accessibility to the water with new trails; this exchange allows the public to enjoy more water front as well as the park, creating more facilities for recreational usage in the park.

- Limiting the C2 density along the ocean edge; increasing the C2 density in the inland areas where it abuts the forested hillside. The result is that the edges with lower density will not appear as crowded and the higher density inland area will satisfy the requirement of current OCP.

- Restricting new developments in some areas to conserve the viewshed of the key viewpoint. The development restriction should limit the location of new buildings to maintain key view corridors; limit their height so that buildings behind of them can still see out towards the views; take advantage of slope and the locations where buildings location will not affect landscape quality.

- Increasing commercial space and concentrating it along the main road to form a small shopping street along Fernhill Road (the dominant axis) and link the village centre more strongly to the Springwater Lodge. Concentrating commercial uses offers a variety of services for tourist and islanders; future expansion opportunities are possible.

- Dividing some large lots which are within walking distance of the village centre into smaller parcels to develop affordable housing for young families and seniors. In this scenario, some low-cost housing was embedded in the community without changing much of the land use or property boundaries.

- Upgrading the major roads with bicycle path and pedestrian walkways and locating additional parking space. This is the same kind of development as in Scenario 1. The differences are in the location and design of parking lots, and the routes of the walkway system.

- Small roads are added according to the requirement of the current OCP to serve new development. The scale and the layout follow the existing character.

- Developing a heritage tour using a walkway system to link the landmark buildings. A good way to raise the awareness of historic conservation is to educate people on the history and the value of heritage resources. The walkway system will function as a historical trail interpreting of old buildings and landscape features (e.g. old orchards).

LEGEND
COMMERCIAL BUILDING
RECREATIONAL PUBLIC BLD
RESIDENTIAL BUILDING
TOURIST- AFFORDABLE HOUSING
DENSE FOREST
SEMI-ENCLOSURE
COASTAL PANORAMA SPACE
INLAND OPEN SPACE
IMPORTANT TREE
ROCKY COASTLINE
ACCESSIBLE BEACH
CREEK
NEW ROAD
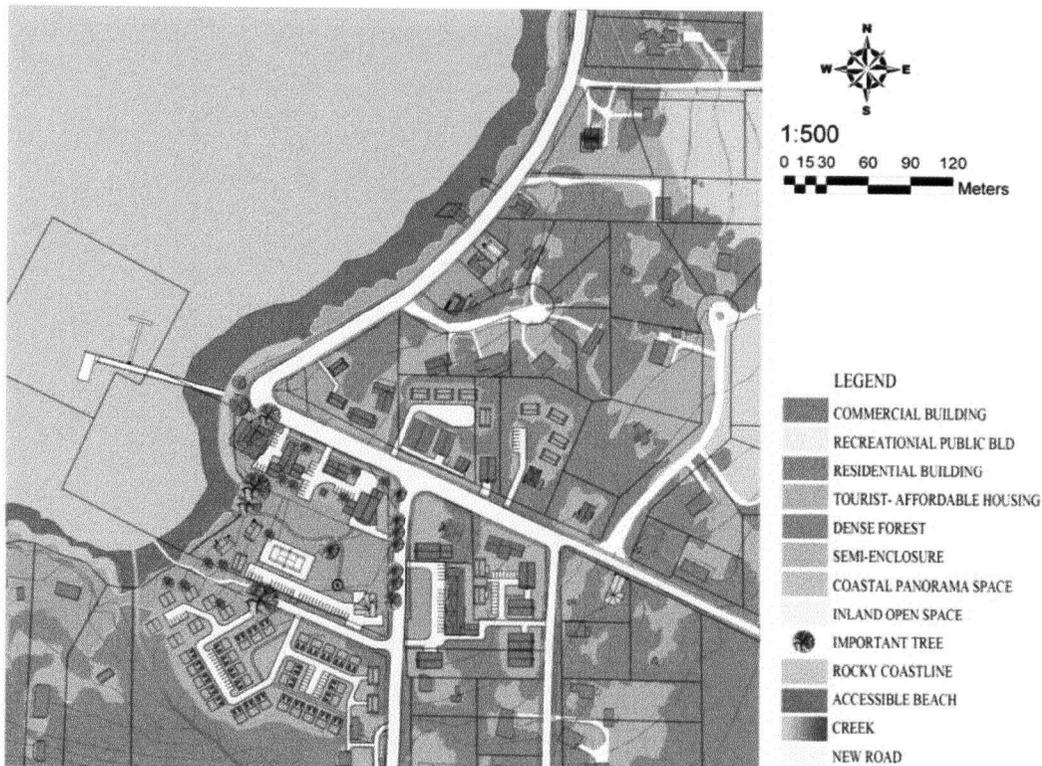
Figure 4.16. Plan of Scenario 2-alternative design

4.3.3 Scenario 2 Design Evaluation

Evaluating Scenario 2

3D visualizations using Sketchup were created to revise and check the design. A digital model of Scenario 2 was made. The comparison of the existing photos with the perspectives of the 3D model helped to evaluate if design goals (keeping coastal-rural character and conserving the views of the ocean as well as the heritage buildings) were achieved.

Though there are a considerable number of new tourist accommodation units in the design of Scenario 2 as seen on the master plan (Figure 4.16), they are much less visible from viewpoint 2 as shown in Figure 4.18 (only visible of the left side of the picture); the viewshed of VP2 is almost totally conserved. The new buildings' color and style are similar to the existing houses on the island; the new development minimizes change to landscape character in this view.

Figure 4.19-Figure 4.22 show the upgrade of road corridors. In order to maintain the rural character, the width and type of pedestrian walk and bike way, the pavement material and color, the roadside trees, and the location of parking spaces were considered during the design.

Figure 4.17. On-site photo of VP2
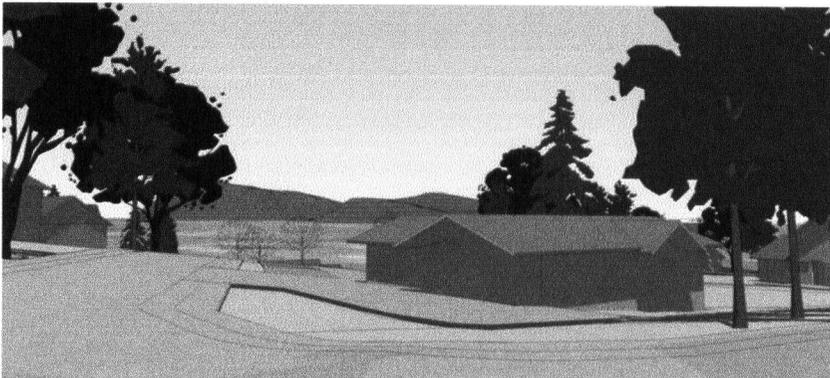
Figure 4.18. Perspective of VP2 from Scenario 2 model

Figure 4.19. On-site photo of VP4

*Figure 4.20. Perspective of VP4 from Scenario 2 model*

The Springwater Lodge and Trading Post are two key landmarks in this area. Comparing the above perspectives of VP4 revealed that the commercial buildings are set back to give views of these two landmark buildings at this key viewpoint. The restrictions on location, the new

buildings height and vegetation are implemented in order to maintain the view cone of ocean views on the left side of Figure 4.20.


*Figure 4.21. On-site photo of VP5*
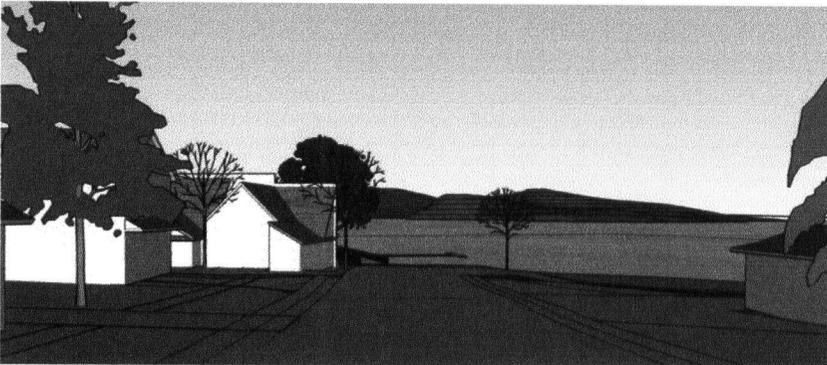
Figure 4.22. Perspective of VP 5 from Scenario 2 model

It is noticed that when comparing of VP5 before and after (Figure 4.21, Figure 4.22), some areas on the site are so crucial that even small changes can have a big effect. For instance, if buildings are situated on the lot at the right side of the picture (which is allowed by the OCP), they will reduce the viewshed of viewpoint 5 which can be seen in the perspective of Scenario 1 (Figure 4.7). One solution is to restrict new development in this area and maintain it as low shrub and turf in order to protect the beautiful panoramic view to Galiano Island from this viewpoint.

The viewshed of VP10, the most important viewpoint, is largely retained in Scenario 2 by limiting the density and height of the buildings in the area in front of it, and locating the new buildings carefully to make the new houses low in profile or out of the sightlines. In Scenario 2, the panoramic views to the water in Miners Bay Park are still kept. People can continue to identify Bay features of Mayne Island, such as Active Pass, Galiano Island, existing big trees, the pavilion, Springwater Lodge, and etc.
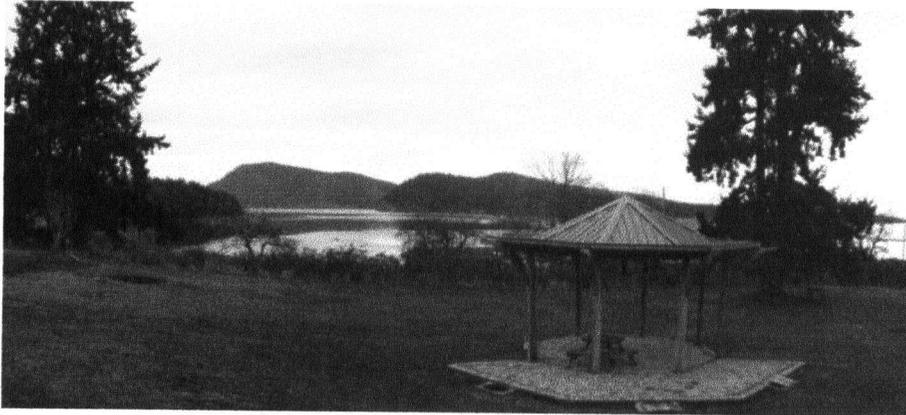
Figure 4.23. On-site photo of VP10
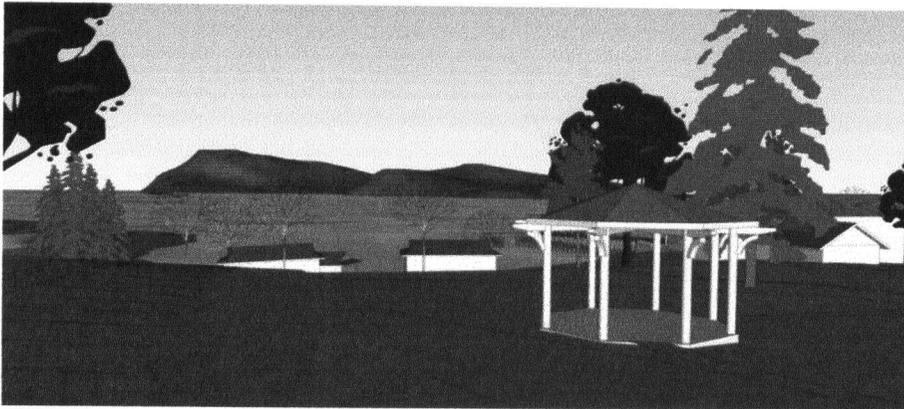
Figure 4.24. Perspective of VP10 from Scenario 2 model
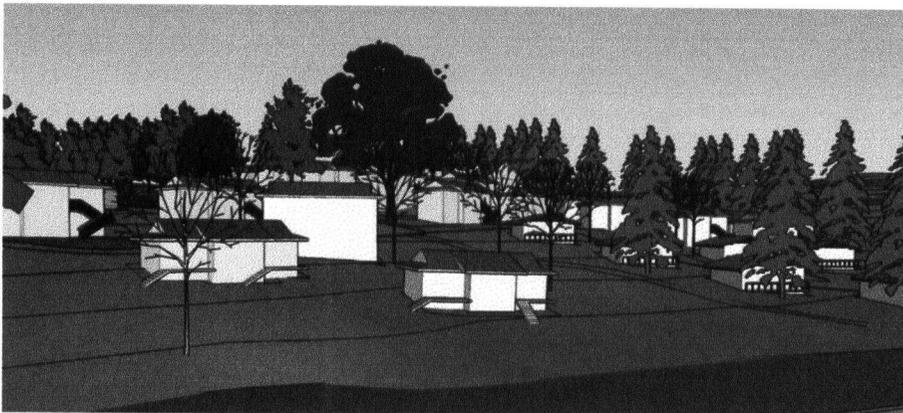
Figure 4.25. Perspective of the ocean edge from the pier in Scenario 1 model
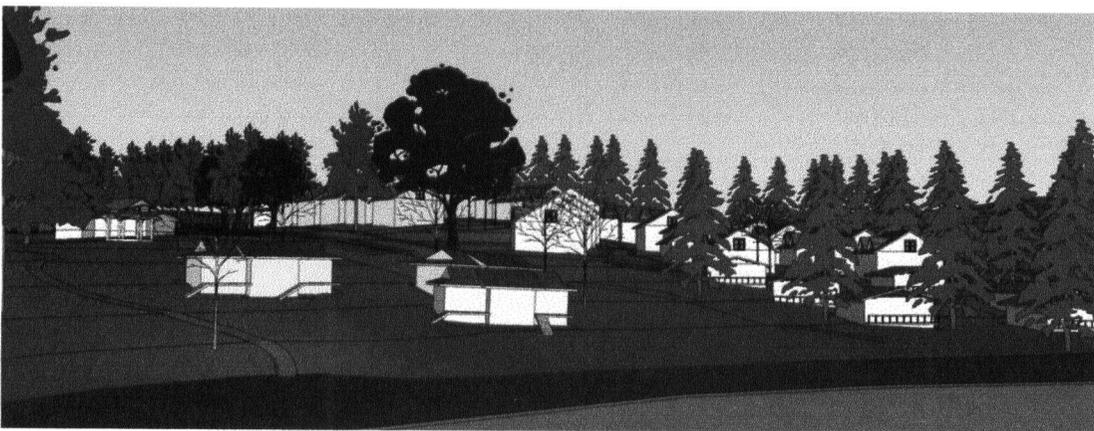
Figure 4.26. Perspective of the ocean edge from the pier in Scenario 2 model

In Scenario 2, most of the predominant changes still happen on the ocean edge near the pier and Springwater Lodge. Comparing Scenario 2 with Scenario 1, Miners Bay Park has more open area; due to the contrast of low density and high density buildings and trees, there is a sequence of the spaces along the beach revealing the alternation of open space and enclosure; the heights and style of the new buildings reflect the current ones in order to maintain the rural-coastal landscape and retain features of existing landscape character. New trails will increase the accessibility to the beach and offer a convenient connection to the facilities on the park site. The concept of connecting Miners Bay Park with the water so as to take advantage of each other is shown clearly on the master plan of Scenario 2 (Figure 4.16).

Defining Design Problems with 3D Model

Some remaining design problems were found when the plan was checked with the model during the design process. For example, the height of some new buildings was so high that they blocked the view to the water from new buildings behind them. Several solutions were applied to improve the design, such as reducing the floor size of the buildings, decreasing the height of each floor, choosing gentle angles roofs, or staggering building placement to allow more views from building.

Some other problems were not so easy to correct, particularly in the tourist accommodation area shown in the plan of Scenario 2 (Figure 4.16) and the perspective (Figure 4.27). Review of the design by using the plan drawing and the model showed:

1. The layout of the buildings does not match the character of Mayne Island; the commercial tourism buildings are regularly spaced in straight rows with similar units (Figure 4.27). The pattern of Mayne Island is more scattered and informal, with stronger orientation to the Bay.

2. The straight line pattern causes the houses to block each others' views; many buildings do not have good ocean views though they are located very close to the water.

Figure 4.27. Perspective of tourist accommodation area from old Scenario 2 model

By simulating the situation in a 3D model of this Scenario, three perspectives show the views when one stands at the locations of NVP1, NVP2 and NVP3 in Figure 4.27.
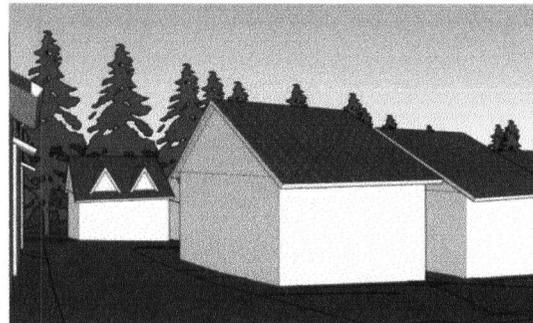
Figure 4.28 (left-above). Perspective of NVP 1 (new viewpoint 1).

Figure 4.29 (right-above). Perspective of NVP2 (new viewpoint 2).
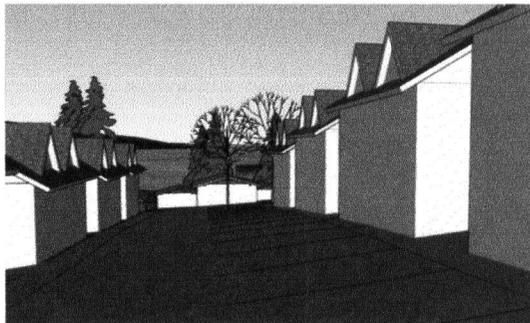
Figure 4.30 (left). Perspective of NVP3 (new viewpoint 3).

Scenario 2 Design Modifications

The southwestern part of the design was redone and a new plan of Scenario 2 was conducted. In the new design, a more informal scattered pattern was used to lay out the buildings, arrange the houses along the slope, and locate them to enable more view corridors to the water for each house.

This layout also provides the opportunity to concentrate access and views on one part of the slope and multiplies the chance of seeing views over lower houses with the sequential stepping down of the buildings towards the Bay (Figure 4.31).
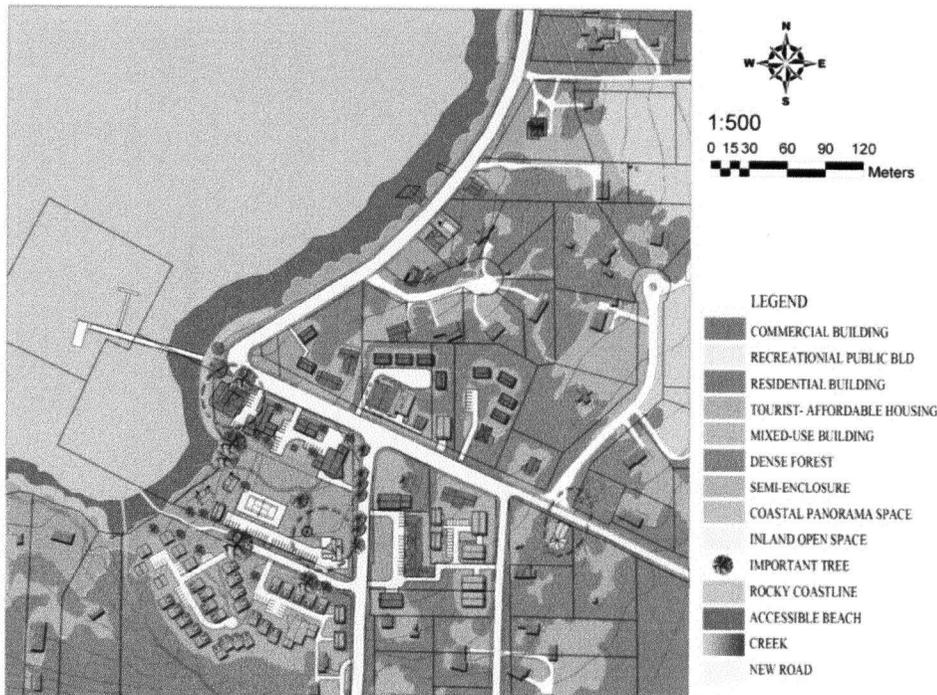

Figure 4.31. Plan of new Scenario 2

When the new plan was revised, the 3D model was used again to check the new Scenario 2 in visualizations. The new perspectives and movies looked much better than the original Scenario 2; each building now has views and the pattern of the buildings' layout is no longer so regular; they are better fitted to the topography and the community character.

Though the work could still be improved if more time was allowed for more detailed housing layout, the computerized visual simulation tool provided relatively satisfactory results at this stage. The new perspectives (Figure 4.32-Figure 4.35) suggest that the views to the water in this area are protected and the revised building pattern better matches the rural character of Miners Bay.

This case showed clearly that the 3D modeling tool can assist in evaluating designs and discovering potential problems; it provides convincing pictures and movies which illustrate the future conditions and help to improve the design.
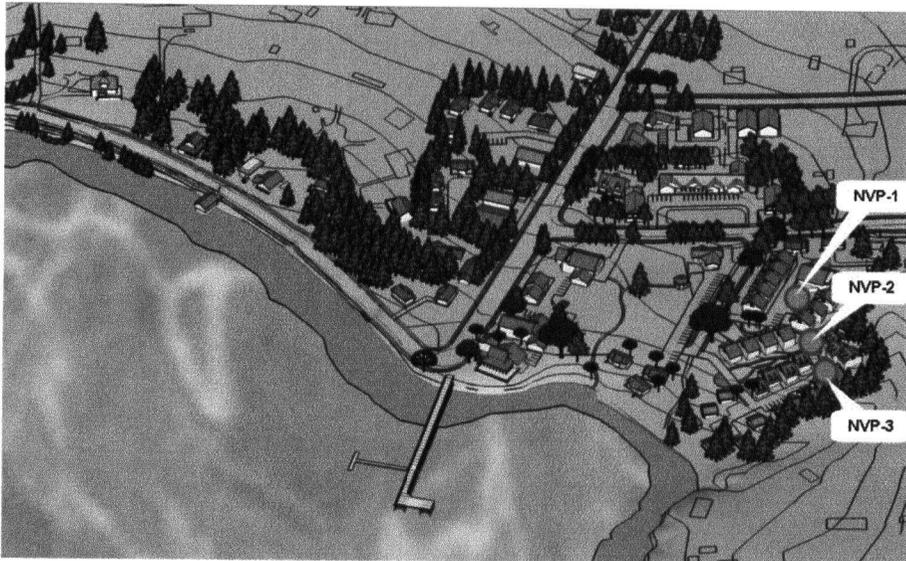
Figure 4.32. Perspective of tourist accommodation area from new Scenario 2 model
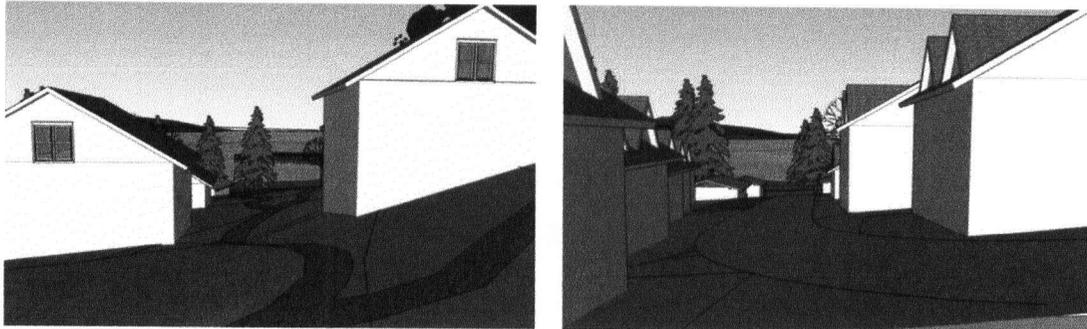
Figure 4.33 (left-above). Perspective of NVP 1 (new viewpoint 1) in new Scenario 2 model.

Figure 4.34 (right-above). Perspective of NVP 2 (new viewpoint 2) in new Scenario 2 model

Figure 4.35 (left). Perspective of NVP 3 (new viewpoint 3) in new Scenario 2 model

4.3.4 Visual Analysis of Scenario 2

The viewshed comparisons for Scenario 2 have two purposes. One is to analyze which design can best help to protect the views and the character of the site; another is to find out ways to locate the new development within the coastal-scenic-historical community without impacting key coastal views and blocking heritage landmarks. The viewshed mapping of Scenario 2 (Figure 4.36) is based on the plan and 3D model of this design. The procedure is the same as in Scenario 1.

Comparing the viewshed maps of existing condition, Scenario 1 and new Scenario 2, significant improvements are seen compared to Scenario 1. Here are some examples (Figure 4.36-Figure 4.38).

Figure 4.36. Viewshed comparisons of VP2 in existing (up-right), Scenario 1(left) and Scenario 2(right image)
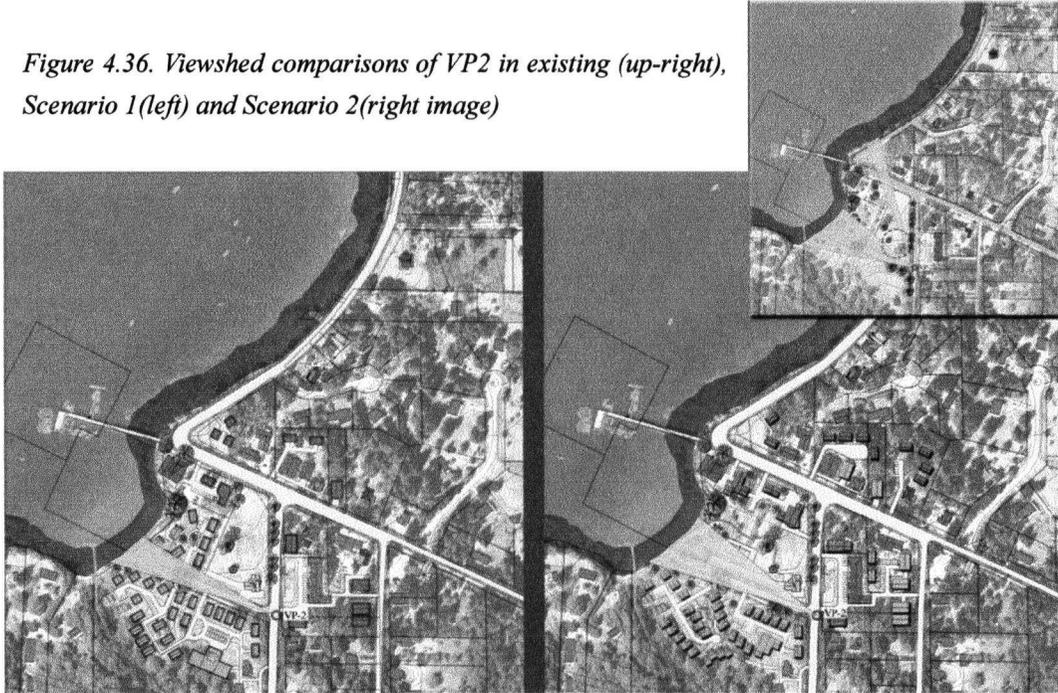

Figure 4.37. Viewshed comparisons of VP5 in existing (up-right), Scenario 1(left) and Scenario 2(right image)
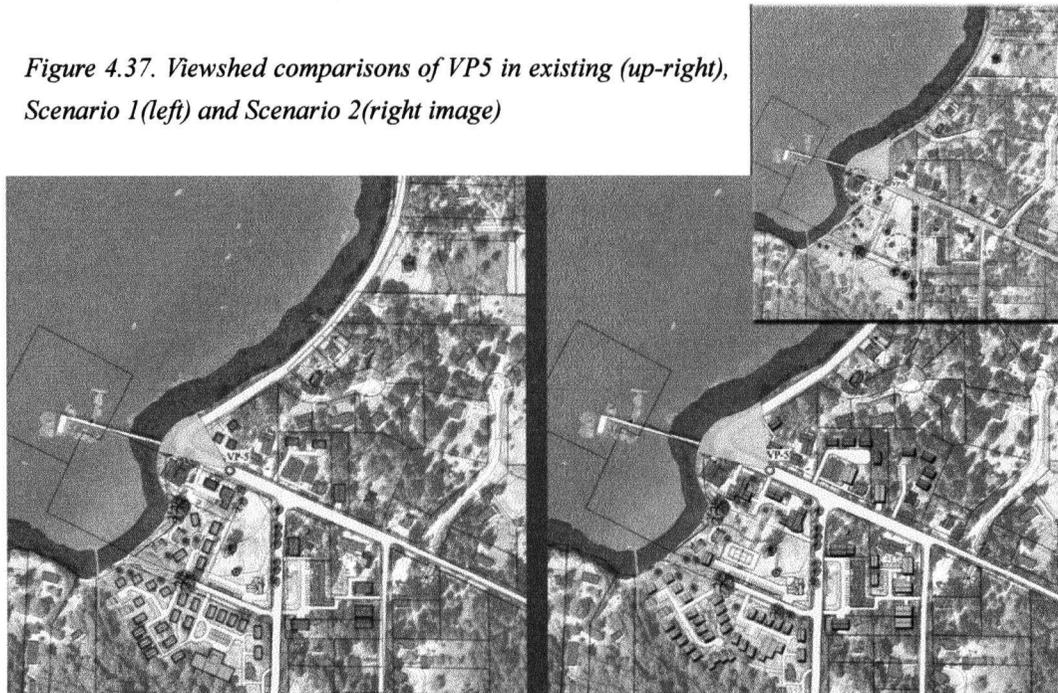
Although in Scenario 2, the viewshed of VP2 (Figure 4.36) is still reduced somewhat by the new developments, the remaining view corridor is better than the one in Scenario 1, resulting in a stronger orientation and connection with the sea. The lower density on the ocean edge reduces the chance of blocking the views and retains wider view cone for the inland houses and sightline from Village Bay Road.

In the design of Scenario 2, the houses are set back far from the road and the types of the vegetation are restricted to low shrubs and ground cover on the important lot at the end of Fernhill Road, so that VP5 has almost the same area of viewshed as the existing one. These restrictions to the development on this particular property near the crucial intersection will benefit the viewpoints on the roads which are shown in the comparison of VP5 (Figure 4.37), and surrounding area, as we can see from the viewshed map of VP10 (Figure 4.38).

Figure 4.38. Viewshed comparisons of VP10 in existing (up-right), Scenario 1(left) and Scenario 2(right image)
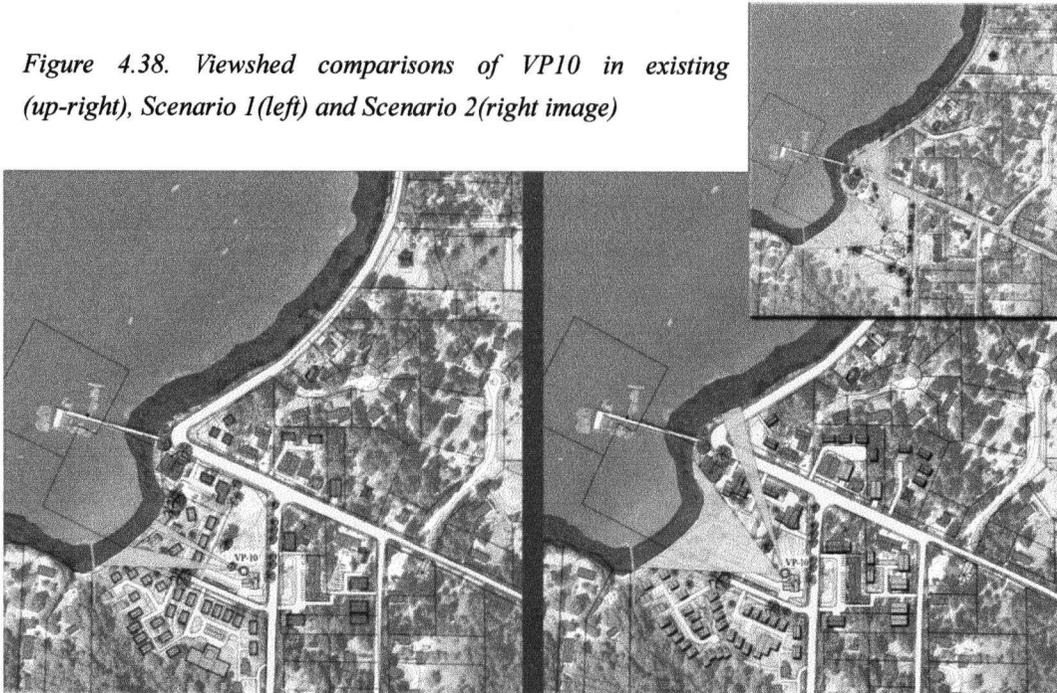
The viewshed map of VP10 (Figure 4.15) illustrates a worst case of view protection in Scenario 1. In Scenario 2, one of the major goals is to achieve the same housing density as in Scenario 1 without impacting the views from houses and Miners Bay Park. The viewsheds are much improved as seen from this comparison. In fact 100% of the existing major viewshed area is kept. In addition, the restriction of the buildings' locations in the surrounding lots provides a gap

through the new commercial buildings in views from VP10 to Active Pass, and helps to retain much of the viewshed.

4.3.5 Conclusion

From the perspectives, movies and viewshed analysis, the conclusions from Scenario 2 are:

1. It is possible to maintain a balance between developing the commercial tourist accommodation use and maintaining the informal rural character of the community. The methods of achieving high density tourist accommodation and high visual quality for the park and scenic roads include:

    -   Decreasing the density in the area near the park or water edge, and at the same time increasing the density in the area of the parcel where it does not affect the views;

    -   Using different types of housing and showing care in building layout in order to conserve views, fit the site, and emulate current building relationships in Miners Bay;

    -   Taking advantage of terrain, locating houses along slopes lest they block each other.

2. Small-scale affordable housing for low-income, young and senior families should be taken into consideration with their specific requirements; and it is possible to add such housing into the plan for the new development without a major impact on the character of the area. The areas should be located within 10 minutes' walking distance to the commercial centre.

3. Protecting the viewsheds of key viewpoints is an effective way for the conservation of coastal view as well as helping maintain rural landscape character. The perspectives and movies of the 3D model show that the character of the new developments are more like the existing environments when designed to protect the viewshed to and from viewpoints.

4. Historic character is an important visual and cultural resource which provides as landmarks and reliable interpretations of the Island's history.

A walk-way is proposed to connect the historic buildings and form a history tour to introduce to tourists these important culture and visual features. At the same time, because these features are

often used by the residents, such as Springwater Lodge and Agriculture Hall, the walkway system also provides them a safe access to the buildings away from traffic.

4.4 Recommendations for Current OCP

From both scenarios, there are some aspects of current OCP and Land Use Bylaws that should be revised to get more appropriate development in Miners Bay, while being consistent with OCP and the community's recommendations (as recorded in the LARC 504B studio projects and provided to the community and the Island Trust). Recommendations include:

1. Develop guidelines for retention of existing open views to the water in key view corridors (as mapped in Figure 4.39) and from public roads and tourism/recreation areas. Define designated key viewpoints in by-laws, together with the associated restrictions of development heights and locations in the surrounding areas to protect view corridors.
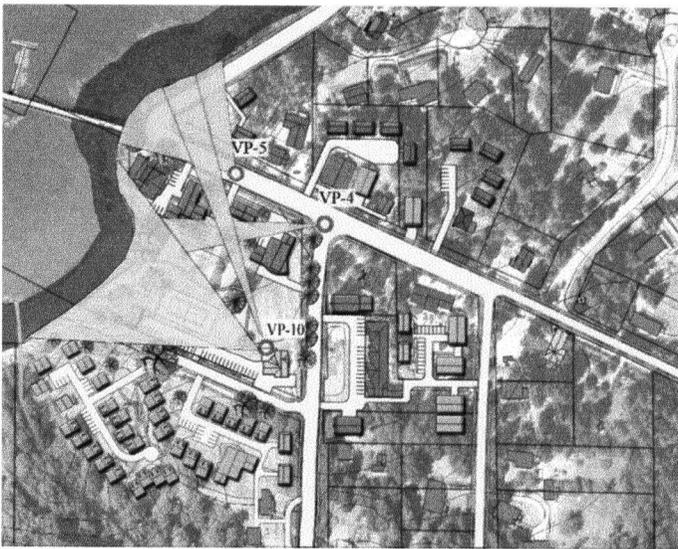
Figure 4.39. Viewshed map of VP4, VP5 and VP10 in Scenario 2; restriction could be addressed to the buildings and lots surrounding the viewpoints.

For example, from VP10, the viewpoint in the Miners Bay Park, restrictions could be described as " lower density or limited development on the lot in front of the park; the buildings should be sited lower on the current slope and the height should be less than 9 m from current ground surface"; for VP5, the viewpoint near the intersection of Fernhill Road and Georgina Point Road, the restriction could be " any new building on the lot beside the road is placed near the back of the property; the proposed buildings should be assessed

visually to determine if they block views from the key viewpoints."

2. Designate (and develop specific guidelines for) the Miners Bay waterfront as a *scenic coastal landscape*, which would permit small scale and compatible development and infill without destroying its character. Change certain zoning and set up special guidelines areas for commercial usage (Figure 4.40)
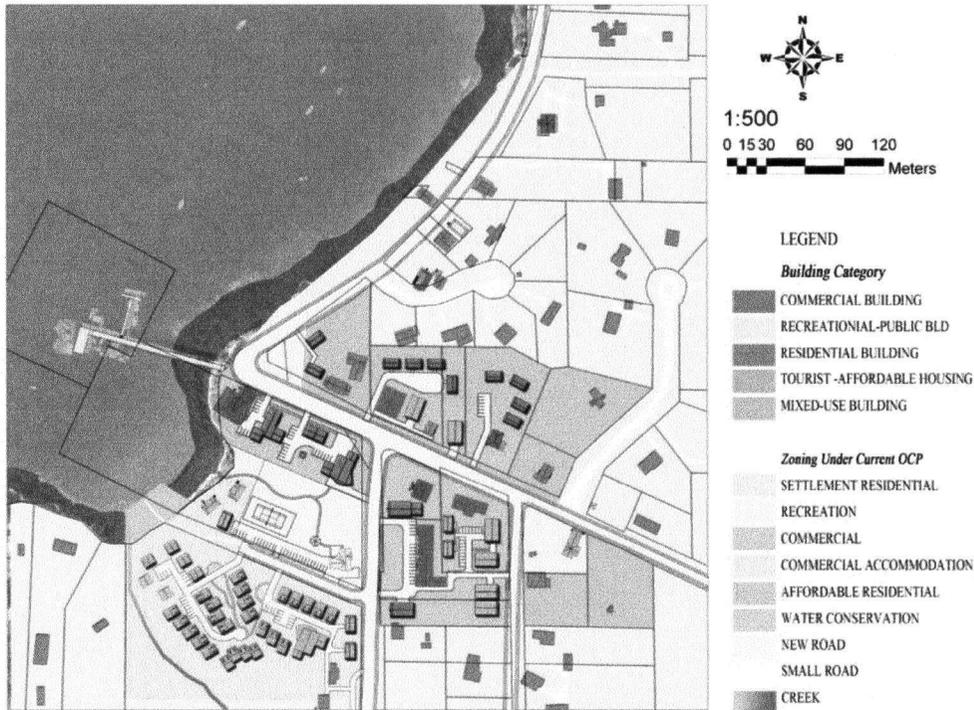

Figure 4.40. Zoning and land use of Scenario 2

The greatest zoning change explored in Scenario 2 is to swap some of the existing recreational land with commercial, so that Miners Bay Park is connected to the ocean, to increase the accessibility to the water and conserve the views for several key viewpoints on the road and in the park. The additional commercial spaces would be filled in near the centre of the community along Fernhill Road to concentrate the commercial usage somewhat.

3. Assign lots within 10 minutes walking distance to the village center to be affordable residential land; encourage building more houses for senior and young families (Figure 4.40). Affordable housing is needed but not described in the current land use bylaws. The large lots in the community near the village center have the potential to be divided into small lots for

affordable housing. The distance of these lots to the commercial center of Miners Bay should be minimized and prices should be suitable for senior and young families. In this area, the proposal is to remove some of the original vegetation to replace it with affording housing, but retain semi-enclosed spaces for screening and privacy.

4. Increase the areas for commercial usage and encourage the mix-used building in commercial zoning (Figure 4.40). In Scenario 2, some residential land is proposed to be combined with commercial use. The maximum additional number of tourist units on the tourist accommodation land is 118 and will reach to nearly 400 people in the future according to the requirements of the current OCP; they will need more commercial services. In addition, there will be more residences and more visitors due to the development on Mayne Island, so the need for commercial uses will increase. Encouraging mixed-use buildings will give flexible choices for the owners; they can either use the buildings as commercial- residential in the summer time when is tourist season or residential in the winter time.

5. Recognize and develop restrictions and guidelines for maintaining the character of scenic roadways, ditches and adjoining vegetation. Assign scenic easements when necessary for the lots to restrict non buildings or change the vegetation patterns adjoining the roadway.

    As mentioned before, new buildings on the lots near the intersection of Fernhill Road and Georgina Road should have more setback than that designated in order to protect critical open views; this means some parts of the property on the corner should not be used to for new construction or tall trees. If the value of the lots is decreased because of this restriction, the easement may call for some form of compensation, such as development transfer to another lot or reducing property taxes in some way.

6. Designate (and develop specific guidelines for) Miners Bay village as a *unique historic landscape*. Designate the heritage buildings, landmarks, historic landscapes and define regulations to protect these buildings spaces and conserve the historic character of Miners Bay.

In the OCP and land use bylaw, none of the historic buildings are protected as features of historic landscape character. Important features such as landmarks and historic buildings should be designated as heritage resources in the OCP.

A recommendation for development is to design a historic landscape plan with detailed guidelines on key landscape elements without changing the community character, like rough edges, small scale development, informal pattern, and local/native vegetations; examples include: using a historic trail system (Figure 4.41) to connect the land marks and heritage buildings, landscaping the surrounding area to reveal or replace heritage buildings' features, and emphasizing the characteristic with unique fences, mail boxes, or name plates.
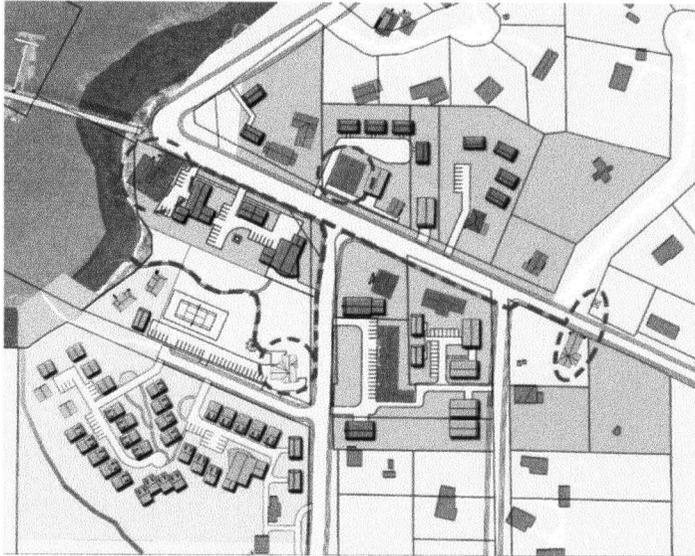
Figure 4.41. A historic walkway. Blue dash line is a purposed walkway system which links heritage buildings and the beach.

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