The Village of
PORT CLEMENTS
"Gateway to the Wilderness"

36 Cedar Avenue West
PO Box 198
Port Clements, BC
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7:00 p.m. Regular Meeting of Council Tuesday, April 2, 2013

AGENDA

1. ADOPT AGENDA.

2. PETITIONS, DELEGATIONS & OPENING OF SEALED TENDERS.

3. MINUTES.
M-1-Regular meeting of Council Monday, March 18, 2013

4. BUSINESS ARISING FROM THE MINUTES & UNFINISHED BUSINESS.

5. ORIGINAL CORRESPONDENCE.

6. GOVERNMENT.
G-1-Bylaw #398, 2013 – 1st, 2nd, and 3rd reading.
G-2-Bylaw #401, 2013 – 1st, 2nd, and 3rd reading.

7. FINANCE.
F-1-Cheque Listing March 27, 2013
F-2-Northern Savings Credit Union bank statement February 2013
F-3-Canadian Imperial Bank of Commerce bank statement February 2013

8. NEW BUSINESS.
NB-1- Report to Council –Bayview Sewer Extension
NB-2-Northern Development Initiative 2013 Grant Writing Support Funding
NB-3-MIEDS and Village of Port Clements Business Case

9. ACTION ITEMS.
A-1-See attached

10. REPORTS & DISCUSSIONS.

11. QUESTIONS FROM THE PUBLIC & PRESS.

ADJOURNMENT.

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Minutes of the regular meeting of the Port Clements Council held Monday March 18, 2013 in the Council Chambers.

Present:
Mayor Cheer
Councilor Gould
Councilor Gaspar
Councilor Falconbridge
Councilor Thomas

CAO Kim Mushynsky

Mayor Cheer called the meeting to order at 7:00pm

1. ADOPT AGENDA.

2013-075 - Moved by Councilor Gaspar, seconded by Councilor Falconbridge
THAT the agenda be adopted with the following amendments – add BA-2 – Derelict Buildings, Delete NB-2 – NDI Resolution an add that we will move to in-camera at the end of the meeting – Janitorial CC90-1-c.
CARRIED

2. PETITIONS, DELEGATIONS & OPENING OF SEALED TENDERS.

3. MINUTES.

M-1 – Regular Meeting of Council Monday March 4, 2013
2013-076 – Moved by Councilor Gaspar, seconded by Councilor Falconbridge
THAT we accept the minutes from the March 4, 2013 Regular Council meeting as presented.
CARRIED

4. BUSINESS ARISING FROM THE MINUTES & UNFINISHED BUSINESS.

BA-1 – Small Craft Harbor Committee
2013-077 – Moved by Councilor Gould, seconded by Councilor Gaspar
THAT we accept the report as presented and move forward with appointing members to the committee.
CARRIED

2013-078 – Moved by Councilor Gould, seconded by Councilor Falconbridge
THAT we appoint Councilors Falconbridge, Gaspar and Gould to the ad hoc Small Craft Harbor Committee.
CARRIED

5. ORIGINAL CORRESPONDENCE.

C-1 – Day of the Honey Bee Proclamation
2013-079 - Moved by Councilor Gould, seconded by Councilor Falconbridge
THAT we endorse sections a & f of the request and that in addition we forward our proclamation to the Observer and other communities.
CARRIED

C-2 – Cliff Bell-Brown response to live-aboard discussion
2013-080 – Moved by Councilor Gould, seconded by Councilor Gaspar
THAT we receive and file this information.
CARRIED

6. GOVERNMENT.

G-1 – Coastal GasLink Environmental Application
2013-081 – Moved by Councilor Falconbridge, seconded by Councilor Gaspar
THAT we receive and file this correspondence.
CARRIED

G-2 – Amendment to Employee Benefits Policy
2013-082 – Moved by Councilor Falconbridge, seconded by Councilor Gould
THAT we adopt the amended Employee Benefits Policy as presented.
CARRIED

7. FINANCE.

F-1 – Cheque listing to March 13, 2013
2013-083 – Moved by Councilor Falconbridge, seconded by Councilor Gaspar
THAT we accept the cheque listing as presented.
CARRIED

F-2 – NDI 2013 Ec Dev Capacity Building application to MIEDS
2013-084 – Moved by Councilor Falconbridge, seconded by Councilor Gould
THAT we approve the allocation of our $35,000.00 NDI Economic Development grant be paid to MIEDs for 2013.
CARRIED

8. NEW BUSINESS.

NB-1 – Sewer Hook-up option for Bayview Drive South
2013-085 – Moved by Councilor Gaspar, seconded by Councilor Gould
THAT we open this topic for discussion.
CARRIED

2013-086 – Moved by Councilor Falconbridge, seconded by Councilor Gould
THAT we get an approximate updated cost on the extension and reword the letter and bring both these items back to Council for review as well as report on the results of the 2010 poll.
CARRIED

9. ACTION ITEMS:

Decision to delete item A2 off the list at this time.

10. REPORTS AND DISCUSSIONS.

Councilor Gould – Barge mtgs & Regional District mtg
Mayor Cheer – MIEDS, Barge mtgs, Sunset park & trail walkthrough with PW
Councilor Gaspar – No report
Councilor Falconbridge – Budget mtg
Councilor Thomas – NDIT & Ec Dev meetings in Terrace
Administrator – Ec Dev mtg in Terrace, Emergency Planning Training, LED hydro rate discussions

2013-087 – Moved by Councilor Gould, seconded by Councilor Falconbridge
THAT we direct staff to research and make recommendations back to Council on how we might assist BC Ambulance in getting more staff for Port Clements.
CARRIED

2013-088 – Moved by Councilor Gould, seconded by Councilor Gaspar
THAT we move to in-camera per CC 90 – 1- c

CARRIED

ADJOURNMENT.

2013-089 - Moved by Councilor Gould, seconded by Councilor Gaspar
THAT the meeting be adjourned at 8:50pm
CARRIED

_____
Wally Cheer,
Mayor

_____
Kim Mushynsky,
Clerk/Treasurer

VILLAGE OF PORT CLEMENTS

BYLAW #398, 2013

Being a Bylaw to designate an Official Community Plan
Under Section 882(1) of the Local Government Act.

The Village of Port Clements Council, in open meeting assembled, enacts as follows:

1. The Official Community Plan for the Village of Port Clements which shall be:
   a. Schedule A – Text of the document
   b. Schedule B – Map of Municipal/OCP Boundary & Land Designation
   c. Schedule C – Map of Community Water Service Area
   d. Schedule D – Map of Community Sewer Service Area
   e. Schedule E – Map of Road System
   f. Schedule F – List of Short, Medium & Long Term Green House Gas Action Plans

   Which are found in a document entitled "Official Community Plan – Village of Port Clements – 2013" and which schedules are attached hereto and form part of this bylaw.

2. Bylaw #140, 1984 cited as the "Official community Plan of Port Clements #140, 1984" is herewith repealed.

Read a first time this 2nd day of April, 2013

Read a second time this day of , 2013

Read a third time this day of , 2013

Reconsidered and Adopted this day of , 2013

_____ _____

Mayor Wally Cheer CAO Kim Mushynsky

Certified a true copy of Bylaw #398, 2013 cited as the
"Official Community Plan for Port Clements"

_____

CAO

OFFICIAL COMMUNITY PLAN

VILLAGE OF PORT CLEMENTS

2013

TABLE OF CONTENTS

OFFICIAL COMMUNITY PLAN (OCP) SCHEDULES

SCHEDULE A – TEXT

OFFICIAL COMMUNITY PLAN (OCP) SCHEDULES:

This Official Community Plan, the boundaries of which coincide with the municipal boundaries, consists of the following Schedules:

Schedule A: the text of the official community plan;
Schedule B: map of the various land use designations;
Schedule C: map of community water service areas;
Schedule D: map of community sewer service area;
Schedule E: map depicting road system (network); and
Schedule F: Table of Short, Medium and Long Term GHG reduction strategies.

SCHEDULE A

PART A: INTRODUCTION

1.0 OFFICIAL COMMUNITY PLAN REVIEW AND UPDATE

The Village of Port Clements underwent its first Official Community Plan process in 1983-84. Municipalities are always evolving and responding to changing conditions and therefore it was felt that the timing was right to review the existing Official Community Plan and update it as needed. In addition, senior government legislative requirements relating to Official Community Plans change over time, as do enabling measures to manage growth and development and to protect the natural environment. Official Community Plans should be updated to reflect these changes.

2.0 PURPOSE AND LAYOUT OF AN OFFICIAL COMMUNITY PLAN

The purpose and content of an OCP is formally outlined in the *Local Government Act* of British Columbia, Chapter 323. Section 875(1) of the *Local Government Act* defines a community plan as:

"...a statement of objectives and policies to guide decisions on planning and land use management, within the area covered by the plan, respecting the purposes of local government."

Additional context for the OCP is found in Section 7 of the *Community Charter* which lists the following purposes of a municipality:

(a) provide for good government of its community;

(b) provide for services, laws and other matters for community benefit;

(c) provide for stewardship of the public assets of its community, and

(d) foster the economic, social; and environmental well-being of its community.

The process of land use planning involves continual decision making regarding the use of land for both present and future activities. The role of the Official

Community Plan is to provide a framework for such decisions, reflecting the values and objectives of residents regarding the type of community in which they choose to live. Without a plan, development and community servicing decisions are often made on an ad hoc basis which can lead to conflicts in land use. An overall Community Plan gives residents some certainty as to what future development may be permitted and guides the business and development interests toward appropriate locations.

It is intended that Council will use the OCP as a general reference in its annual budgetary process, its decisions about programs and capital expenditures, and its review of, and support for, proposed land developments, service extensions and other land related matters.

Part A- Introduction: includes the scope and purpose of an OCP, contextual background information, a description of the community's OCP vision, and a series of growth management and social well being policies.

Part B - Objectives and Policies: makes up the main body of the Plan and includes the objectives and policies for the different types of land use designations, which are depicted on Schedule B, and described in Section 20. Each policy section contains subsections on background, objectives, and policies. The background gives an overview of the specific land use and why it is in the Plan, the objectives lay out the considerations and vision for the future, and the policies have been developed to implement the objectives. Some of the objectives are in point form and others are in paragraph form.

Part C – Glossary of Terms: provides definitions for many of the terms used in the Plan.

Part D – Implementation Guide: provides tables depicting corresponding zones to implement land use designations in the OCP; reviews of zoning bylaw provisions, potential studies to be undertaken, and potential applicability of development permit designations.

3.0 Public Consultation and Plan Use

The *Local Government Act* requires local governments to provide consultation, in addition to a public hearing, and outlines the adoption procedure for an OCP. Once an OCP is adopted as a bylaw, the Plan becomes "official", and all future land use decisions made by Council must be consistent with the objectives and policies outlined therein. It is important to remember that an OCP is strictly a policy document. In order for an OCP to be effective, several tools are required to implement a Plan's policies and objectives. This includes the use of development regulations such as zoning, development permits, capital expenditures planning, development cost charges, and subdivision control. When adopted, these bylaws and regulations must be consistent with the Plan.

An OCP is not intended to be a static document, but should adapt to new trends within society and the community and respond to changing circumstances. As such, following careful consideration by Council, policies and land use designations in an OCP may be revised by an amending bylaw pursuant to provisions outlined within the *Local Government Act*. Official

Community Plans are typically reviewed at least once every five to seven years to assess whether the main policy directions remain valid.

4.0 The Community of Port Clements

4.1 Area Characteristics and History

Early settlement of the Port Clements area consisted of scattered settlement by Haida, particularly on Rudd Island in the estuary of the Yakoun River. Martin Point at the south end of Kumdis Island is thought to have been a Haida village of considerable size and the Mamin River was the site of the Mamin Village of the Eagle Crest Masset Gituns, as well as a favourite region for obtaining large cedar trees for canoes. The Yakoun River sites are now part of the 78 ha Lanas Reserve, and a 2.4 ha reserve was established at the former Mamin Village.
European settlement from the late 1800's to the Second World War consisted mainly of prospectors in search of coal and gold deposits, and homesteaders in search of agricultural land. Initial survey and exploration work was carried out in 1885 by William Robertson. One of the first established mines was Camp Robertson, located east of Yakoun Lake, where coal development was carried out in 1914.

Between 1904-1918 there was a steady influx of settlers due to the promotion of Graham Island by the Provincial Government offering land for pre-emption. Several people acquired homesteads on Kumdis Island. Two townsites were developed as a result of this. The north end of the peninsula separating Masset Inlet from Kumdis Bay was preemted by Charles Adam in 1907 and began a townsite named Graham Centre in 1912. The second townsite, originally known as Queenstown, was named by Elias Tingley in 1913, which developed into present day Port Clements. Tingley established a school and had the government wharf located in town. The Graham Centre townsite was eventually abandoned as Port Clements developed. Port Clements was incorporated in December 1975.

Port Clements grew slowly to its present size with mining interests being replaced by logging operations. With recent long term declines in logging employment, other industries such as tourism and secondary manufacturing are expanding. The Baxter Pole Co. went into production on Kumdis Island in the 1930's. This was followed by a logging camp in Justkatla in 1941. This operation was taken over by the War Munitions Board which sold it to the Powell River Co. following World War II. Haida Gwaii Sitka Spruce was in extreme demand to build bombers for the WW II effort. Since then it has been owned by MacMillian Bloedel, Weyerhauser, Cascadia, Western Forest Products and currently is owned by the Haida based company Taan.

4.2 Economic and Demographic Overview

Since the establishment of the logging camp at Justkatla, forestry has always been the dominant economy in the area. Recent initiatives are underway to increase Port Clements' participation in the tourism industry. Fishing, which is more prominent in Masset and Queen Charlotte communities, has a small presence in Port Clements as well. There is potential for Port Clements to expand its role as a winter moorage and barge facility

area due to its protected waters. Sports fishing could become an avenue for expanding the tourism industry. Both the Yakoun River and Kumdis Creek are productive streams for salmon and the Yakoun also has steelhead. Both are accessible in many places. Other valuable sports fishing streams include the Mamin River, Datlaman River, Ain River and Awun River. While there are no definite ventures at the present time, the area surrounding Port Clements contains gold and oil shale deposits as well as coal formations which may prove feasible for future mining activities.

Demographics based on 2011 & 2006 Census data:

Population 2011	378
Population 2006	440
Total Private Dwellings 2011	222
People per km^2	29.0
Land Area km^2	13.04

Labour Force Indicators (2006)

	Total	Male	Female
Participation Rate	75.0%	75.0%	71.4%
Employment Rate	69.1%	67.5%	64.3%
Unemployment Rate	5.9%	7.5%	7.1%

Industry Classes (2006)

	Total	Percentage
Resource Based	55	22.0%
Construction	20	8.0%
Wholesale/Retail	20	12.0%
Health/Education	45	18.0%
Business Services	45	18.0%
Other services	55	22.0%

4.3 Residential Growth Capacity

The Village of Port Clements has considerable capacity under existing residential zoning in existing serviced areas to accommodate residential growth in the foreseeable future. Examples include the area between Park Street and Dyson Street which represents approximately 50 residential lots and is owned by the Municipality. In addition there are several privately held lots and parcels available for development.

5.0 Community Vision

As the hub of Haida Gwaii we seek economic growth and prosperity for our citizens as well as an inclusive and sustainable lifestyle.

6.0 Community Growth

6.1 Background

A community plan should consider future growth and allow for residential, commercial and industrial development and change in a manner that maximizes efficient use of existing infrastructure and is laid out to reduce the need for excessive Zoning and Community Plan amendments in the future.

6.2 Objectives

The objectives of community growth policies that guide all development are as follows:

1. Encourage long-term growth through densification within the built up area (see section 6.3.3 for explanation of densification).

2. Promote development immediately adjacent to the built up area.

3. Focus on creating a liveable community that supports growth and minimizes sprawl.

4. Promote and encourage development that does not add to the tax burden.

5. Encourage culturally and environmentally responsible growth.

6. Encourages economic growth in the Community.

6.3 POLICIES

1. Encourage growth through new residential development that shall be fiscally self-supporting and will not create a tax burden for the existing resident population.

2. Ensure that adequate land areas to support long-term growth and attract new residents will be provided through the residential, commercial, marine oriented and industrial land uses described in Section 20 and designated by Schedule B.

3. Ensure new development occurs in a manner based on available services. Infilling of areas that are currently serviced with roads, community water and sewer systems are considered to have priority over un-serviced areas.

4. Create more mixed-use and higher density developments with sidewalks, trails, green spaces, bike lanes in order to decrease energy use and the reliance on vehicles.

5. Review and ensure Zoning, Water Conservation and other Bylaws support the policies of this Plan.

7.0 SOCIAL WELL BEING

7.1 BACKGROUND

Improving the quality of life for Port Clements residents is a high priority for Council.

Port Clements' social well being is a result of our relationships and interactions with our neighbours both within and outside our municipal boundaries. Dialogue and partnerships with all island communities, helps us to identify issues and ways that we can improve social well being.

Social well being also means planning for an array of facilities and services that support residents of all ages.

7.2 OBJECTIVES

To continue working towards enhancing the quality of life for our residents through:

1. promoting community stability
2. promoting a safe community
3. encouraging volunteerism
4. providing adequate and safe infrastructure
5. encouraging the development of a range of employment opportunities
6. working with other government agencies and groups that address social issues.
7. Ensuring that public buildings are safe and accessible
8. Promoting a range of age friendly recreational opportunities.

7.3 POLICIES

1. Encourage the provision and expansion of recreational and entertainment facilities in order to address the needs of all ages and to attract more families.

2. Support expansion of educational opportunities.

3. Encourage economic development balanced with the carrying capacity of the environment with the aim of creating more job opportunities and reducing unemployment.

4. Continue to work with seniors and citizens groups, as well as government agencies and community groups to increase housing services and facilities that will be required to meet the needs of an ageing population and those with special needs.

5. Encourage the provision of seniors' housing options that include independent living in a support setting, such as a congregate housing development or a campus of care as defined by the Ministry of Health.

6. Encourage the development or renovation of public and commercial buildings to ensure that they are fully accessible for those who are physically and/or mentally challenged.

7. Work with other agencies to promote a more integrated approach to mental health issues, addictions and homelessness.

8. Work with the RCMP to improve personal safety by encouraging residents and neighbourhoods to participate in a range of crime prevention programs such as Neighbourhood Watch, Citizens on Patrol and Crime Stoppers.

9. Work with the RCMP to encourage crime prevention through building and landscaping design techniques.

10. Work with the PC Volunteer Fire Department to plan and implement a fire inspection program for public buildings.

11. Encourage youth to become involved in community planning activities and programs.

8.0 Economic Development

8.1 Introduction

At the time of completing this Official Community Plan in 2012 funding to build a Barge Container Port was being sought by the Village of Port Clements. Tree Farm License 60 had just transferred ownership to Taan Forests, a newly formed Haida Logging Company. The economy was still in recovery from the crash of 2008 and Tourism was being pursued to represent a larger piece of the economic future of Port Clements.

8.2 Forestry

There have been dramatic changes in the landscape of the forestry industry on Haida Gwaii in the last couple of years. With the

reduction in annual allowable cut, the high percentage of protected lands and the move from old growth to second growth it is imperative that we look to secondary manufacturing in order to bring employment in this area back to levels seen in the 1990's. The development of a container Port is one part of a strategy to allow cost effective methods for transporting raw logs as well as forestry products in any degree of manufactured state. With the development of reasonably priced lots in our Industrial Park Port Clements hopes to entice secondary manufacturing business investment located in close proximity to the container port. In addition, the Village of Port Clements is committed to finding an economic use for wood waste thereby assisting Industrial Park users turn this problem into an opportunity and supporting Clean Energy as discussed in section 8.5.

8.3 Tourism

Port Clements has positioned itself island wide as the "Gateway to the Wilderness". With our central location, miles of ocean front property and access to boating, sightseeing, hunting and fishing in pristine, calm, waters there are a lot of selling points. Port Clements boasts a variety of parks, groomed and natural walking trails, RV and tenting space as well as an assortment of accommodation options for travellers. Port Clements is committed to pursuing and supporting tourism initiatives in our Community.

8.4 Secondary Manufacturing

As indicated in 8.2, the logging portion of our economy has been dramatically reduced. We need to focus on primary breakdown and secondary manufacturing as a means of stimulating the economy and securing long term meaningful employment for the residents of Port Clements.

8.5 Clean Energy

The North Grid of Haida Gwaii (which includes Port Clements) is powered by Diesel Generated Electricity. Port Clements is committed to the promotion of green energy alternatives. Biomass, the use of our waste wood as indicated in section 8.2, is one potential for both dealing with waste wood and reducing our carbon footprint by switching to a cleaner form of energy generation. The generation of clean energy can also assist in the Economic Development of our community by providing affordable, reliable energy options for new and existing businesses.

PART B: OBJECTIVES & POLICIES

9.0 RESIDENTIAL LAND USE

9.1 BACKGROUND

Port Clements has developed following the Stewart Bay and Masset Inlet shorelines and mainly lies west of Highway 16. Commercial and residential development is somewhat intermingled throughout the main section of town with an Industrial area lying to the north.

The core area of the community houses approximately 400 people and commercial services. It is serviced by the community water and sewer systems and a network of municipal roads. The remaining residential development is south along Bayview Drive heading towards Juskatla. This area is serviced by municipal water but not sewer. There is also a small development west of Highway 16 which has both sewer and water services but minimal municipal roads.

9.2 OBJECTIVES

1. Encourage attractive residential development.

2. Welcome growth while discouraging further sprawl.

3. Encourage infilling of lots.
4. Protect the rural nature of properties designated **Rural Residential** on Schedule B.

5. Provide for self employment opportunities consistent with the residential character of single family and duplex areas.

9.3 POLICIES

1. Encourage the development of a range of affordable and potentially rentable housing models in serviced areas through the following land use designations: (Schedule B and Section 20):

    - **Urban Residential** - where the parcel size requirement for single family and duplex subdivisions is 558 square meters;

    - **Multi-Family Residential** – where multi-family housing up to 25 units per hectare are permitted;

    - **Mobile Home Park** - where the site area requirement for a mobile home is 370 square meters.

2. Protect the character of the parcels designated **Rural Residential** on Schedule B by maintaining a minimum parcel size requirement for subdivision of 5000 square meters.

3. Encourage and support home occupations as a secondary use to residential use in residential areas, and regulate them to ensure that the residential character of the site is maintained and that there is sufficient provision for parking, water supply and approved waste disposal and minimal impact on adjacent properties.

4. Permit secondary suites within houses and two separate dwellings on a lot.

5. Accommodate bed and breakfast operations within single family dwellings provided that they meet the regulations contained within the Port Clements Zoning Bylaw.

10.0 COMMERCIAL LAND USE

10.1 Background

The objectives and policies of the OCP support new investment, the retention of existing businesses and a commitment to growing within Port Clements.

Within the village core, the heart of the retail business runs along Bayview Drive. There are also several commercial / residential mixed use buildings throughout the Village.

Many successful home occupations exist in the residential area and this sector of the local economy continues to grow.

The tourism industry is a component of the economic base of the Village of Port Clements that we would like to see grow. Development of year round tourism and affordable infrastructure to support this are priorities for Port Clements.

The focus is on developing a tourism destination of regional and international significance while maintaining and encouraging the economic growth of other commercial and industrial ventures. Successful achievement of a balanced economy will require working and communicating with all stakeholders.

10.2 Objectives

1. Encourage commercial development that offers a range of commercial activities and services.

2. Support the revitalization of our downtown core through measures available under the Community Charter.

3. Protect the environment from degradation and resources from depletion while providing opportunity for commercial activities.

4. Protect the integrity of residential and rural neighbourhoods where commercial development is proposed in proximity to such areas.

5. Ensure the scale, form, and character of all commercial developments harmonize with the natural surroundings and the rural character of the Village.

6. Encourage the development of tourism facilities and activities compatible with the natural setting and environment of the community and surrounding area, including development of parks and trail systems.

7. Promote the community as an attractive and distinct tourist destination.

8. Provide opportunities outside the village centre for highway oriented commercial services and activities.

9. Provide opportunities for mobile vendors in the village centre.

10.3 Policies – Town

1. Concentrate the majority of retail commercial uses within the land designated **Commercial Core** on Schedule B.

2. Encourage a pedestrian and bicycle oriented vibrant commercial centre.

3. Permit and encourage residential use in conjunction with ground level commercial uses in the areas designated **Commercial Core** by Schedule B.

4. Encourage future development and upgrading for the pedestrian environment in the town centre through the promotion of such amenities as coordinated street lighting, signage, tree planting, street furniture, and sidewalk construction.

5. Ensure that suitable vegetative buffer areas or setback distances are maintained around town centre commercial developments that border on residential areas.

6. Designate areas for mobile vendors within the **Commercial Core** and institute a mobile vendor permitting program.

10.4 Policies – Commercial Service

1. Permit commercial activities and services that require relatively large parcels and highway exposure, as well as other compatible commercial uses, in the areas designated by **Schedule B as Commercial Service**

2. Permit residential use in conjunction with ground level commercial uses in the areas designated **Commercial Service** by Schedule B.

10.5 Policies – Marine Commercial

1. Accommodate and encourage the development of a range of marine-oriented commercial uses including marinas, hotels and motels, pubs, retail stores, restaurants, and marine transportation facilities (wharfs, anchorage, dry-docking, launching ramps) in the area designated **Marine Commercial** by Schedule B.

2. Subject to providing adequate on-site parking and storage facilities, commercial businesses offering activities related to non-motorized marine vessels may locate on properties designated **Commercial Core** or **Commercial Service** on Schedule B.

3. Encourage development of a land - based marine cleaning and repair facility.

4. Permit and encourage residential use in conjunction with ground level commercial uses in the areas designated **Marine Commercial** by Schedule B.

10.6 Policies - Tourist Commercial

1. Encourage and accommodate marine oriented tourist facilities such as marinas, boat rentals, charters, fishing lodge, wilderness retreat and restaurants in areas designated by Schedule B as **Marine Tourism,** and encourage development of supporting marine transportation infrastructure.

2 Work in partnership with the business community and tourism associations on a variety of community initiatives to enhance the year round appeal of Port Clements to tourists, and to attract, over the long term, new investment in tourist commercial facilities.

3. Encourage and support the beautification of the ocean front along Bayview Drive and develop public attractions along this waterfront area.

4. Encourage and support the development of a Parks and Trails Master Plan.

5. Identify and retain as many public accesses to the foreshore areas as possible.

6. Continue to maintain and enhance the Sunset Park RV and tent facility.

10.7 Policies – General

1. Promote and encourage the use of green building designs and practices and energy efficiency measures where infill commercial development including renovation, land assembly and redevelopment are proposed.

2. Evaluate all future commercial development in terms of their traffic generation, parking and environmental impact (e.g. noise, odours) upon the surrounding area rather than solely in terms of land use designation requirements.

3. Encourage all commercial and industrial enterprises to provide night sky friendly exterior lighting for their premises.

11.0 INDUSTRIAL LAND USE

11.1 Background

Port Clements is interested in attracting appropriate industrial businesses to our Industrial Park area.

11.2 Objectives

1. Attract and encourage industries that manage their operations to meet environmental standards and best practices.

2. Encourage the development of synergies between industries and commercial businesses in the community.

3. Encourage the development of locally made, resource based specialty products.

4. Encourage the development of higher capacity energy infrastructure to service industrial lands.

5. Encourage and provide for a range of industrial activities (marine oriented, light and heavy industries) and supporting marine transportation infrastructure to diversify the economic base.

11.3 Policies

1. Encourage and direct new industrial development, as appropriate and as

follows, to the following areas designated by Schedule B as:

- **Marine Industrial** – marine oriented industrial operations and supporting marine transportation infrastructure (e.g. wharfs, ramps, barge facilities, dry-docking). Examples of potential marine industrial uses are fuel sale/storage; log booming, dryland sort and dewatering facilities, food processing and boat building and repairs.

- **Light Industrial** - services such as automotive sales, body shops, lumber, and storage yards, sales of equipment, and mobile homes, light manufacturing and transportation depots; and

- **Heavy Industrial** – industrial facilities that potentially have an impact on the community, such as junk yards, sawmills and gravel processing.

2. Support industrial development; clean technology and industrial uses which are environmentally responsible. Protect environmentally sensitive areas such as Kumdis Bay.

3. Ensure that industrial-generated traffic does not travel through residential areas where ever possible. Consider the development of a bypass road by developing Alder Avenue and thereby re-routing commercial traffic around town and to the highway.

4. Ensure that industrial activities are separated, screened, and/or buffered from any adjoining major roadways, residential, commercial or recreational uses, particularly those that produce effluent, emissions, or noise.

5. Ensure that industrial uses that require the storage of bulk fuels, chemicals, explosives, radioactive material, or other hazardous materials are not located in close proximity to adjacent residential, commercial, institutional, recreational or sensitive environmental areas.

6. Permit retail activity within industrial areas provided that it is compatible and complimentary to industry.

7. Accommodate a barge facility to be included as part of the Industrial Park infrastructure.

12.0 TEMPORARY USE PERMITS

12.1 BACKGROUND

Section 920.2 of the *Local Government Act* enables a municipality to designate areas where temporary uses may be allowed and to specify the general conditions regarding the issue of temporary permits in those areas.

12.2 OBJECTIVES

1. Enable Council to consider the issuance of a temporary permit for commercial and industrial purposes.

12.3 POLICIES

1. The entire area included in this Official Community Plan is designated as an area where temporary permits may be issued for commercial and industrial purposes pursuant to Section 920.2 and 921 of the *Local Government Act.*

2. General conditions to be considered in issuing a permit may include, but will not be limited to, the impact on adjacent land uses, provision of off-street parking, and public input which shall include the holding of a public hearing.

3. A temporary use permit will not be approved where the Ministry of Transportation and Infrastructure indicates that it has objections to the proposed use with respect to traffic safety.

4. A temporary use permit shall indicate the length on the approval but under no circumstances shall a temporary use permit exist beyond two years from the date of issue.

13.0 AGRICULTURAL LAND USE

13.1 BACKGROUND

Port Clements supports development of an agriculture and food security strategy for Haida Gwaii that will lead to a significant increase in the production and consumption of locally grown food and lessen the dependency on off island food sources.

An area located in the south west boundary of the municipality in DL 995 is within the Agricultural Land Reserve (ALR), which was established to protect land that is suitable for agriculture, and prevent it from being developed for non-agricultural purposes. As such this area is currently subject to the *Agricultural Land Commission Act*, and regulations pursuant to that Act, and the *Farm Practices Protection (Right to Farm) Act.*

13.2 OBJECTIVES

1. Encourage group gardening, the creation of community gardens and greenhouses for food production, positive social interaction and increased community health and well being.

2. Work toward adoption of an island wide food security plan, seed bank and food storage facilities where appropriate.

3. Support a Farmers Market and seasonal mobile vendors of fruit, vegetables and aquaculture products.

4. Encourage the development of a residential green waste/composting strategy for homeowners and for commercial production of soils.

5. Encourage agriculture production and protect lands within the Agricultural Land Reserve.

13.3 POLICIES

1. Accommodate food production and shared gardening ventures such as cooperatives, village community gardens, and neighbourhood gardens in appropriate areas and in areas designated **Resource Areas** on Schedule B.

2. Consider the agricultural potential of areas designated **Resource Areas** on Schedule B when proposed for other forms of development.

3. Ensure that water used for large scale commercial agricultural purposes is from a source other than the Village domestic water supply.

4. Encourage development of a community green waste and compost facility.

5. Support the Agricultural Land Commission's objective of preserving agricultural lands in the area designated **Agriculture** by Schedule B.

6. Subdivision of land within the ALR and exclusion from the ALR will not be supported unless it can be demonstrated that the land is generally not capable of supporting agriculture, and if there is clear community support, in which case a **Rural Residential** designation may be considered.

7. Support the control of invasive species, such as Japanese knotweed which was introduced to the islands in the 1950's and is becoming a serious problem in many jurisdictions, through limited and careful chemical treatment as mechanical treatment is not effective for some species.

14.0 RESOURCE MANAGEMENT LAND USE

14.1 BACKGROUND

For the purpose of this Plan, resource management applies to forestry activities (logging, logging road construction, and silviculture activities) and gravel and rock pit developments for commercial purposes on Crown and private lands within the Village boundaries. Many of these areas also have limited access and are isolated from community services. A significant portion of the land used for resource management purposes is Crown Land. Most of these areas have seen considerable logging activity over the past century.

Any other primary resource extraction (mining and other non timber forest products), energy development (wind, hydro-electric or other) on land or in marine areas is addressed on a development-specific basis by the Village in co-operation with relevant Haida, Provincial and Federal agencies.

14.2 OBJECTIVES

1. Recognize existing and potential resource activities via the **Resource Areas** designation on Schedule B.

2. Minimize impacts of resource management or extraction activities on water quality, fish habitat, air quality, recreational values and noise. This includes providing a

significant enough buffer to avoid wind throw in areas outside of the harvested area.

14.3 POLICIES

1. Work with Provincial, Federal and local authorities to ensure that resource extraction and logging activities shall only be undertaken after suitable potential impacts of the proposed activity on terrain, water quality and fish habitat, air quality, noise levels, visual landscapes and recreation assessments have been completed. Ensure public consultation prior to any new developments in these areas.

15.0 PARKS, TRAILS, AND RECREATION LAND USE

15.1 BACKGROUND

Many of the recreational opportunities for residents of Port Clements depend on the open space or forests, lands and water surrounding the Village. These areas provide opportunities for boating, fishing, hiking, camping and hunting as well as a high quality natural landscape as a background to daily activities. Access to marine waterfront areas within Port Clements is provided to some extent by road allowances which lead to the shore at regular intervals. In order to improve recreational use of waterfront areas the OCP encourages the development of upland park, picnic and boat launch facilities in addition to the access lanes which alone are of limited value.

Opportunities exist for increasing use and accessibility of waterfront areas as future development occurs. A foreshore walking trail is recommended along the perimeter of the residential area fronting on Masset Inlet, which may eventually connect to a path along Stewart Bay with the co-operation of property owners.

15.2 OBJECTIVES

1. Provide a system of parks, trails and recreational areas which meet the needs of local residents and visitors.

2. Preserve areas of high environmental quality within and adjacent to Port Clements which represent valuable recreational or scenic resources.

3. Retain and consider acquiring public access to the ocean and other areas of public interest.

4. Encourage the development of trails for walking and cycling through the Village. Identify trails suitable for all ages and fitness levels.

5. Pursue the development of a sea walk.

6. Enhance the visual quality of Village developments by retaining buffer strips or natural or replanted vegetation adjacent to major highways and surrounding dense residential or industrial use.

7. Support development of a teen centre.

8. Encourage and support volunteer organizations that supply recreational and community services.

9. Create a meaningful system of open space areas, including walking trails, which connect residential neighbourhoods to schools, parks and community facilities.

15.3 POLICIES

1. Existing parks and public recreational facilities that will continue to serve the needs of residents are designated as **Public Use and Park** by Schedule B.

2. Identify potential park sites in each neighbourhood of the community designed with all age groups use in mind.

3. Consider acquiring land for parks and trails under the park dedication and acquisition process pursuant to Section 941 of the *Local Government Act.*

4. Work with all interested parties, and any appropriate agencies to develop appropriate sites for parks and trails.

5. Place signage to identify and protect sensitive areas.

6. Develop and maintain a recreational trail system as an alternative to road travel.

7. Tot lots shall be considered as part of residential development: these active play areas should also be developed within existing neighbourhoods.

8. Review recreational facilities to ensure that they are meeting current and emerging trends and that they are accessible to all ages, ethnicity, incomes, and abilities.

16.0 TRANSPORTATION

16.1 BACKGROUND

An expanding community should plan to provide a road system which facilitates movement of traffic while minimizing impacts on surrounding land use. To achieve this three types of roads are utilized being:

1. Arterial – main traffic routes that link together the various parts of the community and connect to regional or highway routes;
2. Collector – receive traffic from local streets and discharge them on to Arterial streets; and
3. Local – whose main purpose is to front on to individual parcels of land and can include neighbourhood cul-de-sacs or loops.

In addition to roads directly within Port Clements, Council would like to see the industrial logging road connection between Port Clements and Queen Charlotte upgraded and maintained to a standard that would enable its use as a bypass route in the event that the Highway 16 is closed due to a washout or other emergency, as a means to move industrial and commercial goods between communities; and, as a circle route for tourists

While street lights improve road safety for pedestrians and vehicles and improve public security, the community also values clear night skies. The municipality is responsible for the costs of streetlights and is reimbursed by the province for those situated on the highway right of way.

Being an island community, Port Clements is also heavily dependent on water and air transportation services and facilities. These include: BC Ferries and terminal operations; the Small Craft Harbour; the boat launch and other public and private landings; float plane docks; water access points in the community that are available for recreational use; and the potential barge site.

16.2 Objectives

1. Promote a walkable and barrier free community.

2. Ensure that future development improves the existing road network.

3. Decrease traffic congestion and emissions.

4. Support local and island wide public transit concepts.

5. Redirect heavy commercial traffic to bypass the main corridor of Port Clements.

6. Support commercial marine and air transportation facilities and services.

7. Protect the night sky from light pollution.

16.3 Policies – Roads And Trails

1. Develop and maintain the hierarchal road network depicted on Schedule E.

2. Work with the Ministry of Transportation and Infrastructure to make Bayview Drive pedestrian friendly by providing separation between pedestrians and vehicles where appropriate.

3. Complete a road assessment for all roads, laneways and rights of way to determine construction and maintenance standards.

4. Formulate a plan for ensuring that adequate public and private parking is available.

5. In consultation with waterfront propery owners, seek to complete a safe continuous pedestrian walkway along the waterfront .

6. Encourage bike riding by supporting bike paths and secure, safe bicycle parking.

16.4 Policies – Water Transport

1. Support the Small Craft Harbour in their efforts to improve harbour infrastructure and cooperate in future development of the adjoining lands to benefit both locals and tourism initiatives.

2. Promote recreational water use by supporting the development of

accesses to the water for non-motorized (canoes, kayaks, etc.) and motorized vessels.

3. Seek partnerships for the creation of a barge/container loading and unloading site.

4. Seek improvements to Rainbow Wharf which will support its use for both commercial and tourism initiatives as well as local enjoyment.

17.0 MUNICIPAL INFRASTRUCTURE AND COMMUNITY SERVICES

17.1 BACKGROUND

Currently both water and sewer systems presently developed in Port Clements have been designed to accommodate a population of up to 1,000 people. This allows for considerable growth before new facilities are needed and allows for infilling of much of the existing Village area.

Water is currently serviced by two wells drilled in 1993 & 1998 respectively. The well drilled in 1993 is slated for replacement by 2015. As of 2012 our annual supply capacity is 182,865m^3 and annual demand is 70,693m^3.

Waste water treatment consists of an aerated stabilization pond and related appurtenances and an outfall terminating 6.4 metres below low water level.

Solid waste management is the responsibility of the Skeena Queen Charlotte Regional District (RD) which provides weekly curb side garbage pick-up from residences and businesses. Dumpster service is provided by a private company.

Recycling is also provided by the RD which maintains community depots in Queen Charlotte, Masset and Port Clements for residents and businesses to drop off a variety of recyclable materials which include: range of paper, cardboard, tin cans, plastics, refundable containers, etc. A great deal of recyclable material still enters the solid waste facilities.

Composting has been supported by some citizens in their back yard for many years. The Village is investigating the concept of a Community Compost site perhaps in conjunction with the SQCRD as a means of reducing volume in the landfill site.

The Port Clements Branch of the **Vancouver Island Regional Library** (VIRL) is heavily utilized. This service is organized and maintained by the VIRL Board on which Port Clements has one seat.

The Village of Port Clements encourages the recognition of our historic roots in logging through such venues as the **Port Clements Museum**.

According to School District 50, enrolment for the **Port Clements Elementary school** is expected to decline over the next decade.

Medical services are supplied by the Province through Northern Health with hospitals located in both Masset and Queen Charlotte. Port Clements has a clinic which is open 3 days per week and serviced by doctors from the Masset Clinic one day per week.

The Port Clements Volunteer **Fire Department** consists of a fire chief, deputy chief and members who train weekly and maintain the fire hall and equipment necessary to respond to fires in the community.

The Masset **RCMP Detachment** provides policing services to Port Clements and area. As Port Clements is under 5000 population, this service is provided under contract with the province of BC.

The BC **Ambulance Service** shares space with the clinic and provides service to Port Clements and area.

Port Clements has a volunteer **Emergency Preparedness Committee** which meets quarterly.

Port Clements has a large assortment of **parks** which include **nature trails** and a two story **bird tower**.

Port Clements has a **Multiplex building** which includes a Senior's Room, the Elementary school, the Municipal offices, the public library plus other rooms available for rental and public events.

Port Clements has a **Community Hall** which is run by a volunteer society.

Port Clements is working through the legalities of ownership to the **Cemetery** in town.

Port Clements owns **Rainbow Wharf** which is used both commercially and recreationally.

17.2 Objectives

1. Provide sufficient community water in a cost effective and equitable manner to areas where development is to be focused.

2. Undertake measures to conserve and minimize the use of water.

3. Provide a cost effective sewer system to service development.

4. Work towards minimizing the volume of waste water to be treated, and the environmental impact of treating waste water.

5. Work with the community and agencies to minimize the volume and impact of solid waste generated for disposal.

6. Support the continued provision of community facilities and services.

7. Support measures to enhance electronic communications to the community.

17.3 Policies – Water Supply

1. Provide a community water service and develop and maintain the necessary facilities depicted by **Schedule C.**

2. Maximize efficiency of water use by minimizing leaks, installing water meters and requiring water-saving fixtures in all new construction.

3. Educate, engage & empower residents of Port Clements in water management through interactive communication with residents, via

education initiatives aimed at the elementary school students and by monitoring and reporting on water usage annually.

4. Ensure costs of water are shared fairly among the benefitting parties by creating an equitable, consistent, volume-based pricing structure to coincide with meter installation.

17.4 Policies – Waste Water

1. Provide a community sewer service and develop and maintain the necessary facilities depicted by **Schedule D.**

2. Encourage new development to maximize the use of recycled water for appropriate applications including outdoor irrigation, toilet flushing, and commercial and industrial processes.

3. Encourage use of plumbing fixtures and appliances that consume minimal water.

4. Encourage the use of technologies that improve treatment and/or enable it to take place with a smaller foot print on the land.

17.5 Policies - Solid Waste and Recycling

1. Promote practices that "reduce, reuse and recycle" as key components of a solid waste policy, and undertake periodic public awareness campaigns to reduce, reuse and recycle.

2. Encourage businesses and commercial establishments to secure and screen their dumpsters and maintain an orderly area.

3. Undertake periodic collection of car bodies and large solid waste objects.

4. Work with the Regional District to encourage, support and seek to expand opportunities for recycling all categories of waste without increasing GHG emissions.

5. Support the Regional District's public education on proper, safe and secure composting.

17.6 Policies – Others

1. Encourage the development or expansion of services that offer opportunities for local residents to learn or to access resources and materials to facilitate learning or enhance their experience living in Port Clements.

2. Support shared use of facilities for the benefit of the whole community.

17.7 Policies-Communications

1. Encourage the upgrading of communications infrastructure (e.g. fibre optics, cellular phones, high band width) to support local small business and community facilities, and to permit development of high tech knowledge-based industries, businesses and institutions.

17.8 Policies-Institutional Uses

1. Existing institutional uses, such as the elementary school, firehall,

library, and ambulance service designated as **Public Use and Park** by **Schedule B** will continue to serve residents.

18.0 GREENHOUSE GAS EMISSION STRATEGY

18.1 BACKGROUND

Pursuant to Section 877(3) of the *Local Government Act*, local governments are required to incorporate within their official community plans targets, policies, and actions for the reduction of greenhouse gas emissions. Municipal governments have an important contribution to make to climate protection and energy security.

In 2008, the Village of Port Clements signed on to the Climate Action Charter, joining 178 other municipalities in British Columbia. The Charter commits local governments to become carbon neutral in their operations by 2012, measure and report on their community's Green House Gas (GHG) emissions profile and create complete, compact, more energy efficient communities.

The priority of the aspects that municipalities can influence is determined by the difficulty of modifying that aspect at a future date. The areas of influence that reduce GHG emissions include:

1. Land-use and infrastructure;
2. Transportation management and building design and heating;
3. Energy-using equipment such as vehicles and appliances.

18.2 OBJECTIVES

1. Promote land-use patterns that facilitate walking and cycling to reduce GHG emissions from vehicles.
2. Decrease household, commercial and municipal energy costs for electricity and heating through demand side management.
3. Engage residents in efforts to reduce greenhouse gas emissions.
4. Ensure that future development supports reliable and affordable access to clean technologies for transportation, electricity and heating.
5. Support community economic development in clean energy and energy retrofits.

18.3 TARGETS

The Village of Port Clements will reduce GHG emissions by 20% over 2007 levels by 2020.

18.4 POLICIES

1. The Community GHG Inventory will be updated every three years and progress will be reported to Council.
2. The Port Clements Climate Action Plan will be updated on a biennial basis and submitted to Council with the financial year.
3. Support a co-ordinated effort amongst all municipalities on Haida Gwaii to establish a revolving energy efficiency loan fund and to develop a transportation strategy.
4. Support new development within walking distance of the commercial centre
5. Encourage mixed-used developments with attached dwellings.
6. Encourage the development of renewable energy both through

utility generation and household scale generation.
7. Investigate the feasibility of a district energy system.
8. Develop a walking and cycling plan.
9. Develop a policy supporting local purchasing where feasible to reduce the GHG caused by shipping to the islands.

Please see **Schedule G** for a list of potential short, medium and long term GHG actions.

19.0 ENVIRONMENTAL MANAGEMENT

19.1 Background

Within and adjacent to the Plan area is a natural environment with forests and environmentally sensitive areas in the form of streamside habitats and associated wetland areas, and biologically productive foreshore areas. Some areas are prone to flooding and other forms of natural hazards may exist. Culturally sensitive sites and features are present.

19.2 Objectives

1. Minimize risks to life and property from natural hazards and disasters such as sea level rise, floods, erosion, earthquakes, tsunamis and slides.

2. Promote good air quality through education around smoke emissions and human health.

3. Protect water courses and riparian habitat.

4. Protect, maintain and restore environmentally sensitive areas.

5. Protect residential and commercial viewscapes.

6. Protect the integrity of archaeological and heritage features.

7. Develop strategies to adapt to or mitigate the impacts of climate change.

8. Recognize that noise pollution is a quality of life issue that must be considered when making community decisions.

19.3 Policies – Geotechnical Hazards

1. If warranted by slope instability and other geotechnical issues that become a concern, undertake a geotechnical reconnaissance study to identify the extent of problem areas. Identify in a zoning bylaw any geotechnical or environmental studies that are required prior to development or expansion of buildings in the vicinity of steep slopes.

2. Require new development proposals for private lands which may have a moderate to high probability of hazard occurrence, to complete a detailed site-specific geotechnical investigation which carries the stamp and seal of a professional engineer registered in the Province of British Columbia.

3. Ensure that any site specific geotechnical assessments are filed in

the corresponding property file at the Village office and/or registered on the property title.

19.4 Policies – Floodplain Hazard

1. Prepare Floodplain mapping to identify floodplain and tsunami prone areas.

2. Mitigate risks of flooding by establishing setback requirements and building elevation.

3. Accommodate passive uses such as parks and trails in floodplain areas.

19.5 Policies – Wildfire Interface

1. Consider the preparation of a wildfire interface study that would identify areas for future development that may be susceptible to wild fires and actions that could be taken to mitigate.

19.6 Policies – Streams and Streamside Setbacks

1. Any work done in or near a stream must be undertaken in compliance with provincial and/or federal permits and regulations as appropriate.

19.7 Policies – Environmentally Sensitive Areas

1. Development applications will identify impacts on environmentally sensitive areas depicted by Schedule F and will propose mitigation strategies.

2. Work with federal and provincial government agencies to protect riparian areas and other environmentally sensitive areas.

19.8 Policies - Culturally Sensitive Areas

1. Work with provincial agencies and the Council of Haida Nations to review and update the inventory of archaeological sites and to develop policies and protocols for their protection.

2. Develop an inventory of the community's heritage and culturally significant features and areas.

20.0 LAND USE DESIGNATIONS

Port Clements has been divided into several land use designations as mapped on Schedule B. The intent of and anticipated uses within these designations are described as follows:

1. **Urban Residential**

   This designation applies to small urban parcels with community water and sewer servicing, where single family and two family dwellings (duplex) are permitted.

   Potential auxiliary uses include bed and breakfast

and boarding accommodation.

2. Rural Residential

This designation allows for a combination of dwellings and some rural land uses on relatively large parcels within a community water service area.

Single family and two family dwellings and auxillary uses (bed and breakfast and boarding accommodation) are permitted.

The types of rural uses that can occur include animal hospitals and kennels; agriculture and horticulture, and the small scale sale of on-site produce; and logging & forestry.

3. Multi-family Residential

This designation permits low-rise multi-family housing that includes triplexes, fourplexes, apartments, and townhouses or row houses, as well as single and two family dwellings.

4. Mobile Home Park

This designation permits parcels that are 8,000 square meters and larger in size to developed into sites for mobile homes.

A portion (25%) may be used as a tourist trailer park and campground.

5. Commercial Core

While the primary intent of this designation is to provide for a multitude of commercial uses, residential complexes and associated auxiliary uses (bed and breakfast and boarding accommodation) are also permitted in conjunction with commercial uses.

The following are examples of potential commercial uses: indoor retail, banking, offices, personal services, medical and dental clinics, vet, hotels and motels, restaurants, funeral homes, libraries, art galleries, inside theatre, public transit depot, and health clubs.

6. Commercial Service

The designation provides for the larger commercial ventures and those requiring highway exposure. Examples include automotive sales, service and gas services, shopping centres, building & garden supply, and motels. Some smaller outlets such as personal service establishments, contractor's office, funeral parlour and convenience stores are also permitted.

Residential complexes and associated auxiliary uses (bed and breakfast and boarding

accommodation) are also permitted in conjunction with commercial uses.

7. Marine Commercial

This designation permits marinas and supporting commercial uses, as well as residential complexes in combination with commercial uses.

Types of commercial uses permitted include: marinas, retail, hotels & motels, licensed public houses, restaurants, wharfs & dry docking, marine freight & salvage. Bed & breakfast and boarding accommodation are permitted in conjunction with the residential use.

8. Marine Tourism

The purpose is to accommodate tourist oriented marine uses and recreational activities related to a coastal location.

Potential uses include boat rentals, launching & storage, float plane docks, storage for fish camp and logging equipment, fishing lodge, wilderness retreat, restaurant, bed & breakfast and boarding house.

9. Marine Industrial

The purpose is to accommodate marine and foreshore activities of an industrial nature.

Potential uses include fuel sale/storage, wharves, log booming, dry land sort and dewatering facilities, barge facilities, food processing, boat building & repairs, limited staff accommodations, sawmill & other lumber processing and single family dwelling.

10. Light Industrial

This designation permits light industrial uses and commercial uses which are integral to the industrial operation.

Examples of potential uses include: automotive sales, service and body shops, lumber yards, storage yards, industrial and agricultural equipment sales, light manufacturing, warehousing, contractor office & yards, fuel storage, gas station, mobile home sales, restaurants, transportation depot including airports, vet., and single family dwellings.

11. Heavy Industrial

This designation provides for industries which have a significant impact on other land uses, as well as providing for light industrial uses.

The higher impact uses include junk yards, sawmills, gravel extraction & processing and storage yards.

Light industrial uses and single family dwellings are also permitted.

12. Agriculture

This designation applies to land within the Agricultural Land Reserve (ALR), and as such permits farm use as defined by the *Agricultural Land Commission Act* and *Farm Practices Protection (Right to Farm) Act.*

It generally includes the growing, producing, raising or keeping of animals or plants. It also includes ancilliary uses such as farm retail sales, the storage, packing, product preparation of farm products, agric-tourism activities, timber production, harvesting, silviculture and forest production, agroforestry, including botantical forest products production, and horse riding, training and boarding.

13. Resource Areas

The purpose of this designation is to accommodate resource oriented land uses and outdoor recreation facilities compatible with the natural environment.

Resource related uses include agriculture and the ancillary sale of products; forestry and logging and small domestic on-site sawmill, and gravel extraction, storage and processing.

A tourist trailer park and campground are the permitted recreational facilities.

Single and two family dwellings, professional practice, home occupation, animal hospital and kennels are also permitted.

14. Public Use and Park

The intent is to accommodate parks and public institutions to serve the educational, cultural and recreational needs of the community.

Uses permitted include parks and recreational facilities, schools, hospitals, nursing homes, parks, libraries, halls, cemeteries, campgrounds, government offices and helipads.

PART C: GLOSSARY OF TERMS

The following terms used in this plan shall have the meaning stated:

ACCESSIBLE: homes, buildings, public spaces, technology, programs and support services being free of barriers enabling all people to use them independently;

AGRICULTURE: the use of land for the growing, rearing, producing, and harvesting of agricultural products and may include the auxiliary sale of products; and in the case of land within the Agricultural Land Reserve, permitted activities are subject to the *Agricultural Land Commission Act* and the *Farm Practices Protection (Right to Farm Act).*

COMMUNITY SEWER SYSTEM means a public or private system of pipes of sufficient capacity to carry sewage from an area to connected treatment and disposal facilities pursuant to the *Environmental Management Act*;

COMMUNITY WATER SYSTEM means a system of waterworks within the meaning of the *Drinking Water Protection Act*, which services two or more parcels;

GEOTECHNICAL STUDY means a study or studies prepared by a professional engineer licensed in the Province of British Columbia which interprets the physical conditions of surface or subsurface features in a study area with respect to stability, potential seismic disturbance, interrelated chemical activity, and size and volume analysis; specifically addresses the possible effects of physical alterations or deformations of the land related to proposed building or other projects; and, may establish standards for the siting and construction of proposed buildings or the nature and location or proposed uses;

HOME OCCUPATION means a customary accessory use of a gainful nature carried on within a dwelling unit or accessory structure by the person or persons residing therein.

INSTITUTIONAL USE is a facility provided by a government or their agencies for a public use, such as schools, health care facilities, libraries, museums, parks, play grounds, and other non-commercial recreational facilities, fire halls, and uses ancillary to public functions and community services.

LAND USE DESIGNATION means the area of land to which the land-area objectives and policies of the Official Community Plan apply. The OCP land use designations and map set the pattern for development in the community by identifying where certain types of development will occur.

MOBILE HOME OR UNIT a structure, excluding recreation vehicles, designed or manufactured as a habitable area which is located on the ground surface, on a concrete or asphalt pad, or a poured in a place concrete perimeter foundation.

OFFICIAL COMMUNITY PLAN a plan prepared and adopted by bylaw pursuant to the *Local Government Act*, which applies to all or parts of Port Clements;

PARK recreation, conservation or green belt

PUBLIC ACCESS the unrestricted right of the general public to cross lands without the need for any approvals or specified permits.

PUBLIC USE means the use of land by a government or administrative body intended primarily to serve the day-to-day needs of the population residing in the local vicinity, and includes civic, utility, institutional, recreation and conservation uses but excludes commercial recreation use.

RECREATIONAL USE means a public park, conservation area, recreation facility, and other ancillary uses but excludes commercial recreation uses.

SERVICED AREA means an area or parcel capable of receiving water or a combination of water and sewer services provided by the Village of Port Clements

TEMPORARY USE PERMITS means a permit which may be granted to allow commercial or industrial uses to operate within the plan area pursuant to Section 920.2 and 921 of the *Local Government Act.*

TRANSPORTATION USE means facilities for the movement of goods and people such as docks, barge facilities, truck terminals, helicopter landing pads, trails, sidewalks, and roads.

PART D: IMPLEMENTATION GUIDE

OCP LAND USE DESIGNATION	ZONES TO IMPLEMENT LAND USE DESIGNATION
Urban Residential	Urban Residential (R-1)
Rural Residential	Rural Residential (R-2)
Multi-Family Residential	Multi-Family Residential (RM-1)
Mobile Home Park	Mobile Home Park (MH-2)
Commercial Core	Commercial Core (C-1)
Commercial Service	Commercial Service (C-2)
Marine Commercial	Marine Commercial (M-1)
Marine Industrial	Marine Industrial (M-2)
Marine Tourism	Marine Tourism (M-3)
Light Industrial	Light Industrial (I-1)
Heavy Industrial	Heavy Industrial (I-2)
Agriculture	Develop a new zone (A-1)
Resource Areas	Resource Areas (RS)
Public Use and Park	Public Use and Parks (P)

OCP POLICY	ZONING REVIEW/CHANGE TO IMPLEMENT POLICY
Policy 9.3, 4.	Amend zones where secondary suites and two separate dwellings will be permitted on a parcel.
Policies 10.3, 5. 11.3,4.	Review existing zoning provisions for setbacks of commercial and industrial uses from residential areas and consider the introduction of screening provisions pursuant to Section 909 of the *Local Government Act.*
Policy 11.3, 5.	Amend the I-2 zone to delete the statement "All manufacturing, processing and assembly industries which are not offensive within the meaning of the *Health Act*" and maintain existing list of permitted uses (i.e. junk yards, auto wreckers, sawmills and shake mills, lumber processing, gravel extraction, storage and processing and storage yards). Develop new industrial zones (e.g. I-3, I-4, etc) at the time of application for other high impact uses and apply them to appropriate sites.
Policies 13.3, 5. 13.3, 6	Develop a new zone (A-1) to permit uses in compliance with the *Agricultural Land Commission Act* and the *Farm Practices Protection (Right to Farm) Act* and with a minimum parcel size requirement for subdivision that would preclude subdivision.

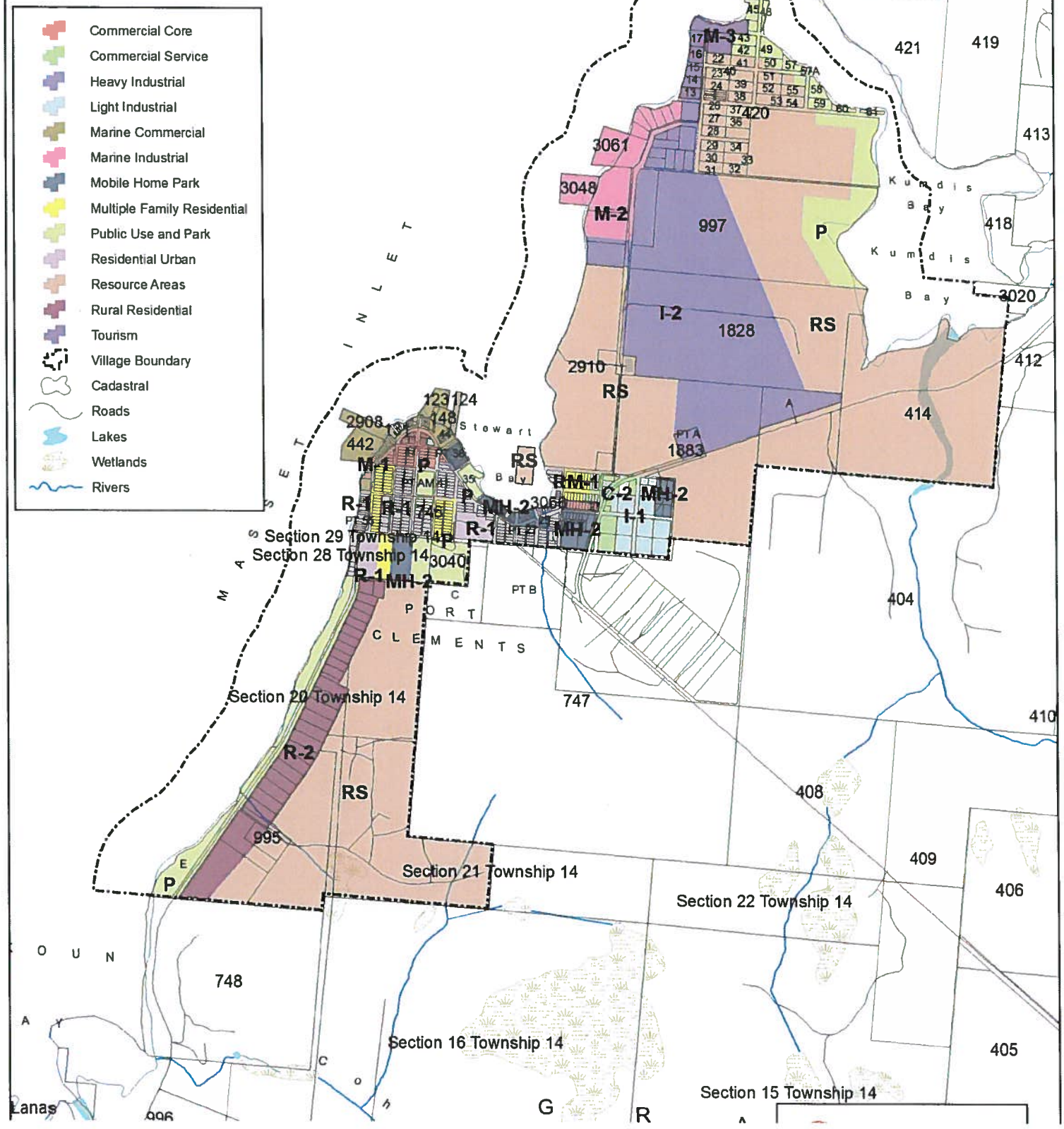
OCP POLICY	POTENTIAL STUDIES
Policy 10.6, 4.	Parks and Trail Master Plan
Policy 19.3, 1.	Potential geotechnical reconnaissance study if geotechnical issues become apparent in a particular area
Policy 19.4, 1	Floodplain mapping and review flood protection provisions under the zoning bylaw upon completion of the mapping.
Policy 19.5, 1	Wildfire Interface Study
Policy 19.8, 1	Up-to-date inventory of archaeological sites
Policy 19.8 2	Inventory of Community's Heritage and Culturally Significant Features and Sites

OCP POLICY	CONSIDERATION OF THE NEED FOR DEVELOPMENT PERMIT DESIGNATIONS TO IMPLEMENT POLICIES – (will require an amendment to the OCP if development permits are pursued and possibly corresponding zoning amendments*)
Policy 19.3, 1 Policy 19.3, 2	Development Permit designation to protect development from hazardous conditions
Policy 19.7, 1	Development Permit designations to protect the natural environment, its ecosystems and biological diversity.

Note: Section 919.1 of the *Local Government Act* provides for the designation of development permits for a number of purposes including the following: protection of the natural environment, its ecosystems and biological diversity; protection of development from hazardous conditions; and establishment of objectives for the form and character of commercial, industrial, or multi-family development.

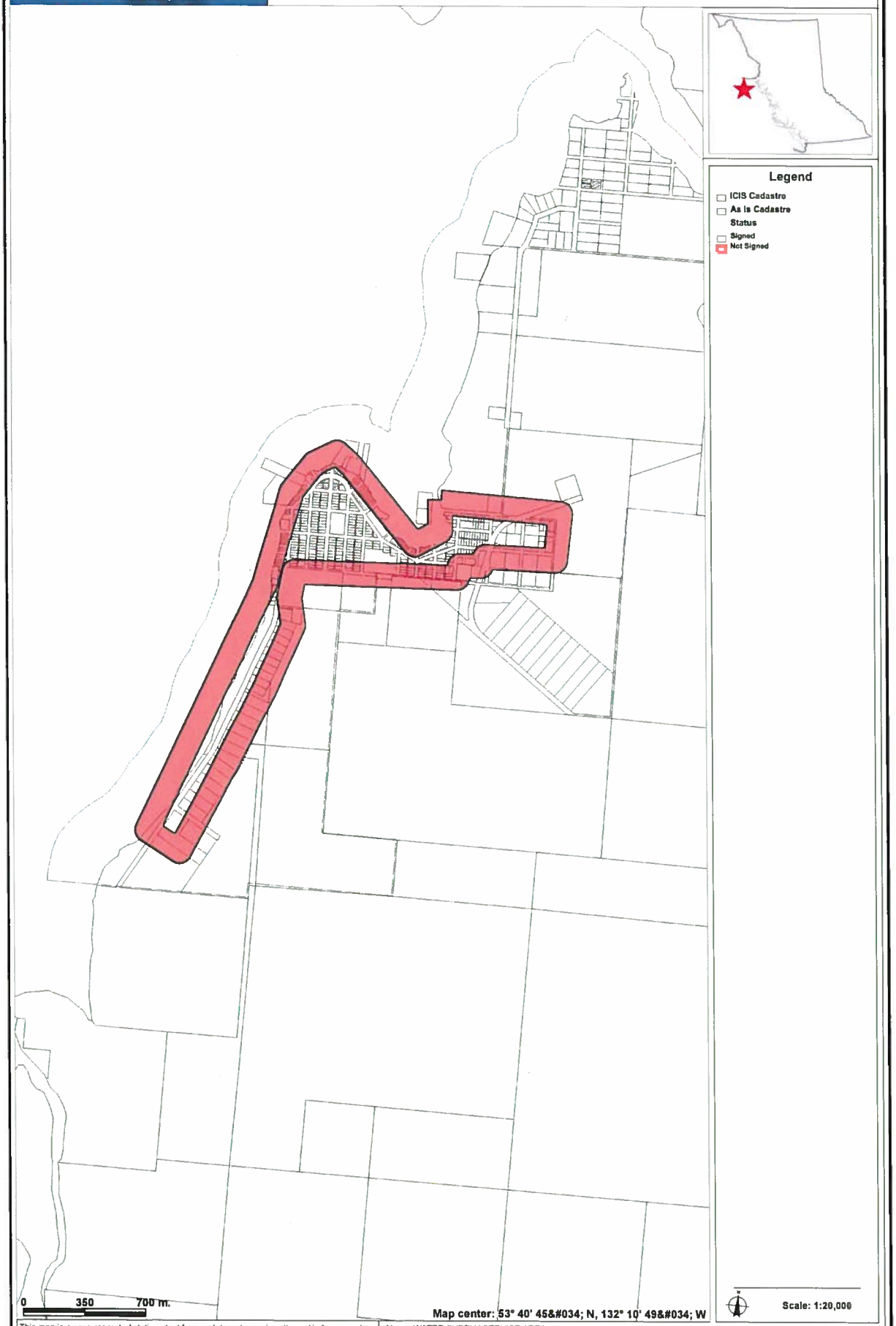
* While Section 919.1 (3) of the *Local Government Act* enables development permit guidelines to be specified in a zoning bylaw, the OCP must designate areas for the respective types of development permits.

Schedule B Zoning Map
January 29, 2013



ICIS Members Datastore Web Map Site

VILLAGE OF PORT CLEMENTS



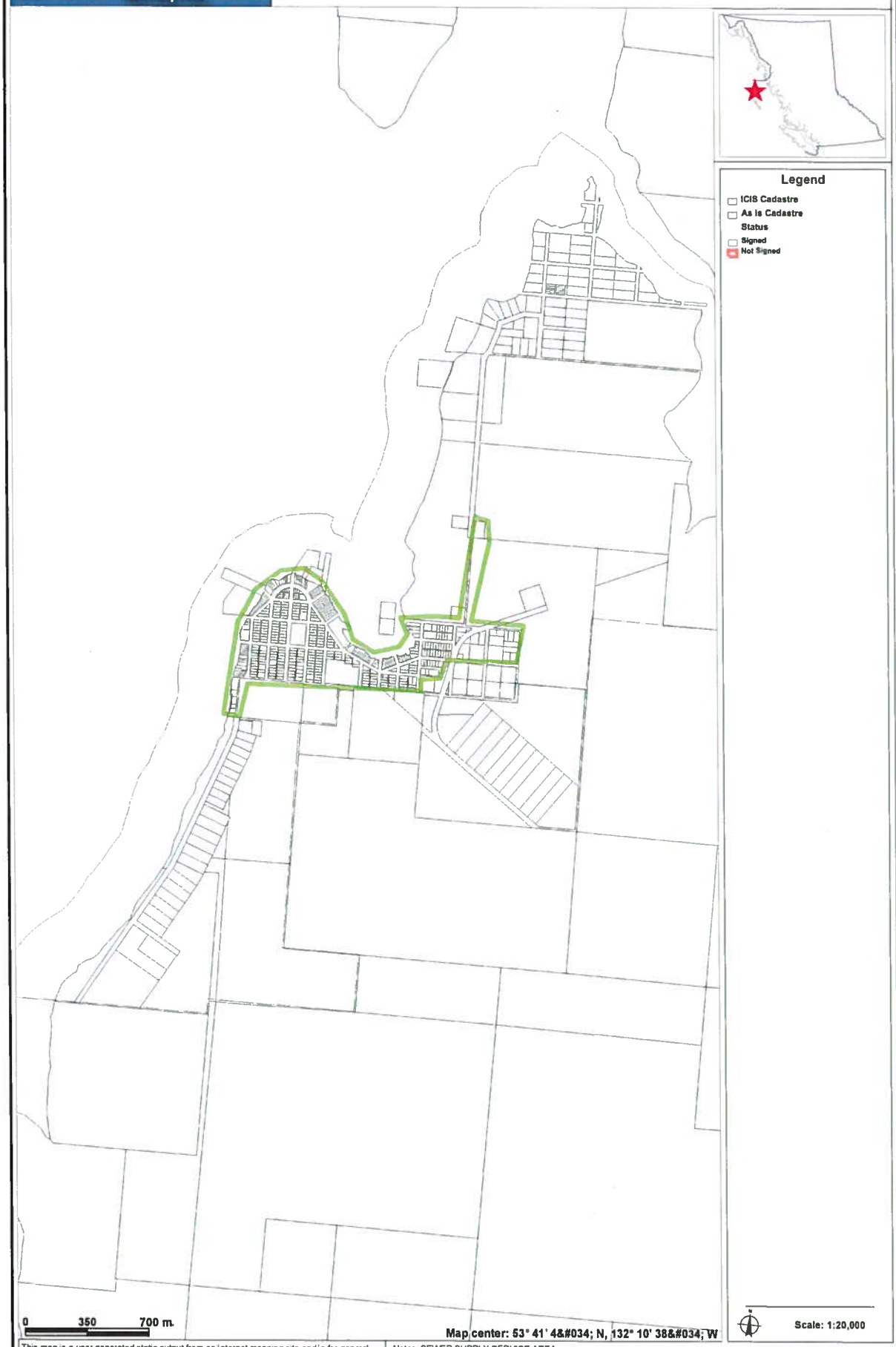
This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: WATER SUPPLY SERVICE AREA

geocortex INTERNET MAPPING

ICIS Members Datastore Web Map Site

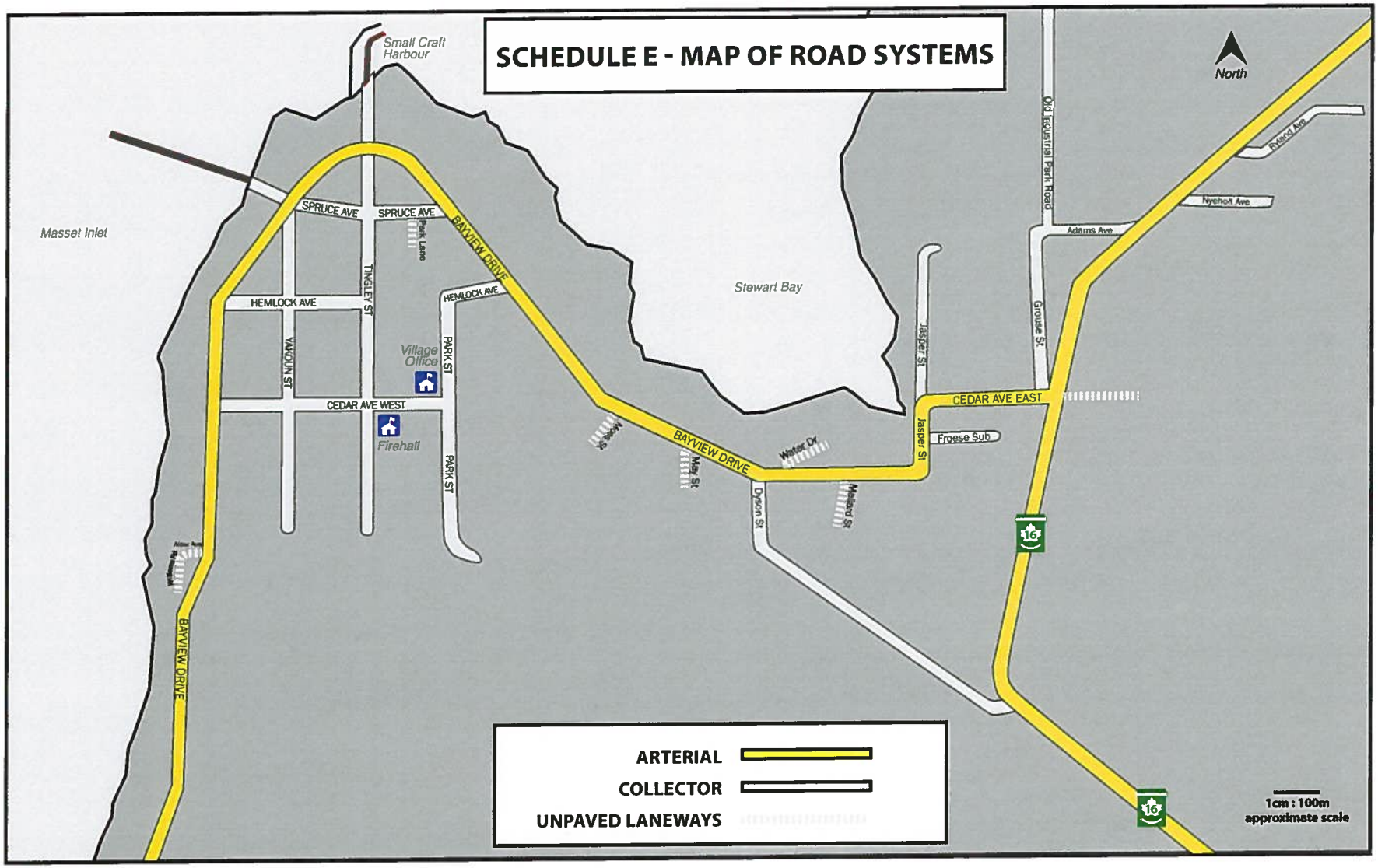
VILLAGE OF PORT CLEMENTS



This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes: SEWER SUPPLY SERVICE AREA

geocortex


SCHEDULE E - MAP OF ROAD SYSTEMS
Small Craft Harbour
Masset Inlet
Stewart Bay
North
SPRUCE AVE
SPRUCE AVE
BAYVIEW DRIVE
TINGLEY ST
Park Lane
HEMLOCK AVE
HEMLOCK AVE
YAKOUN ST
PARK ST
Village Office
CEDAR AVE WEST
Firehall
PARK ST
BAYVIEW DRIVE
BAYVIEW DRIVE
Water Dr
Main St
Dixon St
Mallard St
Jasper St
CEDAR AVE EAST
Froese Sub
Jasper St
Grouse St
Old Industrial Park Road
Adams Ave
Nyeholt Ave
Peter A Ave
16
16
ARTERIAL
COLLECTOR
UNPAVED LANEWAYS
1cm : 100m
approximate scale

SCHEDULE F
SHORT, MEDIUM AND LONG TERM GHG EMISSION STRATEGIES

Theme	Action	Environmental benefit	Social benefit	Economic benefit
Short Term				
Transportation	*1. Create a walking/cycling path*	Reduces car usage.	Improved walking conditions and health outcomes.	Reduces transportation costs for residents.
Transportation	*2. Create a secure ride share system.*	Reduces car usage.	Enables mobility for low- income.	Reduces transportation costs for residents.
Buildings	*3. Replace street lights with LED lights*	Reduces GHG emissions	Higher quality of light, less impact on the night sky.	Reduces municipal energy costs.
Medium Term				
Waste	*4. Compost and waste mgmt. program*	Reduced GHG emissions from dump	Provides soil for vegetable gardens. Tangible impacts.	Business opportunity
Buildings/Air Quality	*5. Wood stove change-out program*	Reduced air pollution, reduced GHG emissions	Reduced wood consumption for elders.	Stimulates purchase of new wood stoves.
Buildings	*6. Revolving energy efficiency loan fund*	Reduced GHG emissions.	Improved living conditions.	Stimulates retrofit activities. Decreased energy costs.
Agriculture	*7. Encourage a community garden*	Reduce imported food	Encourage social interaction.	Stimulates local agricultural activity.
Long term				
Buildings	*8. Renewable Energy district energy system*	Significant GHG emissions reductions.	Drives smart growth development.	Captures economic leakage currently going to diesel fuel.

VILLAGE OF PORT CLEMENTS

BYLAW NO.401, 2013

A Bylaw of the Village of Port Clements
Respecting the Financial Plan for the Years 2013-2017

The Council for the Village of Port Clements in open meeting assembled, enacts as follows:

1. Schedule "A" attached hereto and made a part of this bylaw is hereby adopted and comprises the Financial Plan for the Village of Port Clements for the years 2013 through 2017, ending December 31, 2017.

2. This bylaw may be cited for all purposes as the "Financial Plan Bylaw No. 401, 2013.

READ A FIRST TIME THIS 2nd DAY OF APRIL, 2013.

READ A SECOND TIME THIS 2nd DAY OF APRIL, 2013.

READ A THIRD TIME THIS 2nd DAY OF APRIL, 2013.

RECONSIDERED AND FINALLY ADOPTED THIS DAY OF , 2013.

WALLY CHEER
MAYOR

KIM MUSHYNSKY
CLERK/TREASURER

CERTIFIED A TRUE COPY OF VILLAGE OF
PORT CLEMENTS FINANCIAL PLAN, BYLAW NO. 401, 2013

G-2

Schedule "A" (Page 1 of 3)

General Fund

	2013 Budget	2014 Budget	2015 Budget	2016 Budget	2017 Budget
Property Tax	125000	125100	125100	125100	125100
Payments in Lieu	6645	6800	6800	6800	6800
Sales of Services	26265	9290	9315	9340	9365
Revenue from own Sources	62280	60430	60630	60830	61130
Unconditional Transfers	400000	400000	400000	400000	400000
Conditional Transfers	46025	46025	46025	46025	46025
Multi-purpose Building Revenue	12850	12850	12850	12900	13000
Transfer from Reserves	5215	0	2624	3819	5258
Collections for Other Agencies	206710	211710	211710	211710	211710
Total Revenues	**890990**	**872205**	**875054**	**876524**	**878388**
Legislative Expenses	34800	34800	39300	36300	36300
General Administration	190900	193736	195564	197934	197848
Fire Department	40650	41150	41900	42650	43400
Emergency Services	750	750	750	750	750
Common Services	20000	20000	20000	20000	20000
Wharf Services	27500	7500	10500	10500	10500
Small Craft Harbour	7850	7850	7850	7850	7850
Roads	57450	48950	49950	50450	50950
Environment Health	1830	1830	1830	1830	1830
Environmental Development	2000	2100	2200	2300	2500
Parks and Recreation	35500	36000	36000	36000	36000
Fiscal Services	1500	1500	1500	1500	1500
Contribution to Reserves	0	9079	0	0	0
Capital Expenses	54000	45000	45000	45000	45000
Multi-purpose building expenses	54050	54750	55500	56250	56750
Amortized asset contribution	155000	155000	155000	155000	155000
Taxes levied for other Agencies	207210	212210	212210	212210	212210
Total Expenses	**890990**	**872205**	**875054**	**876524**	**878388**
Surplus/(Deficit)	**0**	**0**	**0**	**0**	**0**

	2013 Budget	2014 Budget	2015 Budget	2016 Budget	2017 Budget
Water Fund					
Fees & Taxation	97000	97185	97185	97185	97185
Transfer from Reserve					
Grants	40000	40000	40000	40000	40000
Total Revenues	**137000**	**137185**	**137185**	**137185**	**137185**
Operating Expenses	60750	61000	62600	63100	63700
Capital Expenses	0	0	0	0	0
Contribution to Reserves	4235	4170	2570	2070	1470
Contribution to Amortization	72015	72015	72015	72015	72015
Total Expenses	**137000**	**137185**	**137185**	**137185**	**137185**
Surplus/(Deficit)	**0**	**0**	**0**	**0**	**0**

	2013 Budget	2014 Budget	2015 Budget	2016 Budget	2017 Budget
Sewer Fund					
Fees & Taxation	61816	61816	61816	61816	61816
Transfer from Reserves	10000	0	0	0	0
Grants	0	0	0	0	0
Total Revenues	**71816**	**61816**	**61816**	**61816**	**61816**
Operating Expenses	56780	43600	41600	42100	42600
Capital Expenses	0	0	0	0	0
Contribution to Reserves	0	3180	5180	4680	4180
Contribution to Amortization	15036	15036	15036	15036	15036
Total Expenses	**71816**	**61816**	**61816**	**61816**	**61816**
Surplus/(Deficit)	**0**	**0**	**0**	**0**	**0**

Schedule "A" **(Page 3 of 3)**

Capital Projects

	2013 Budget	2014 Budget	2015 Budget	2016 Budget	2017 Budget
General					
Barge Facility	0	10000000	0	0	0
Water					
New Well	0	0	0	0	0
Sewer					
Sewage Upgrade	0	0	0	0	0
Total Capital Projects	0	10000000	0	0	0

Village of Port Clements
2013-2017 Financial Plan
Statement of Objectives
of Bylaw No. 401, 2013

In accordance with Section 165(3.1) of the *Community Charter,* the Village of Port Clements (Village) is required to include in the Five Year Financial Plan, objectives and policies regarding each of the following:

1. The proportion of total revenue that comes from each of the funding sources described in Section 165(7) of the *Community Charter*;
2. The distribution of property taxes among the property classes
3. Permissive Tax exemptions

Funding Sources

Table 1 shows the proportion of total revenue proposed to be raised from each funding source in 2013. Government grants form the greatest proportion of revenue. The government grants that are included in this total include the following: $400,000 for the small community Grant, and the community works fund.

Property taxes make up the second highest amount for 2013.

The third highest source of revenue is User Fees and Charges.

Objective

- For the 2013 – 2017 years to incorporate a 0% tax increase annually as well as 0% increase for both water and sewer annually.
- Council has planned to incorporate local employment where possible, and encourage contractors bidding on works with the Village to utilize unemployed workers.

Policies

- The Village is re-writing the Official Community Plan including Climate Action and Water Conservation Policies. This process should be completed by June 2013.

Table 1: Sources of Revenue

Revenue Source	% of Total Revenue	Dollar Value
Property taxes	25%	217,161.00
User Fees and charges	20%	175,720.00
Other sources	5%	45,000.00
Proceeds from borrowing	0%	0.00
Government grants	50%	440,000.00
Total	**100%**	**$877,881.00**

Distribution of Property Tax Rates
Table 2 outlines the distribution of property taxes among the property classes. The residential property class provides the largest proportion of property tax revenue. This is appropriate as this class also forms the largest portion of the assessment base and consumes the majority of the Village's services.

Objectives

Policies
- Continue to maintain and encourage economic development initiatives designed to attract more retail and commercial businesses to invest in the community. Align the distribution of tax rates among the property classes with the social and economic goals of the community, particularly to encourage a range of employment opportunities.
- Regularly review and compare the Village's distributions of tax burden relative to other municipalities in British Columbia.

Table 2: Distribution of Property Tax Rates

Property Class	% of Total Property Taxation	Dollar Value
Residential (1)	57%	71132.00
Utilities (2)	0.3%	383.00
Major Industrial (4)	0	0.00
Light Industrial (5)	17%	21485.00
Business and Other (6)	20%	25113.00
Managed Forest (7)	5.4%	6648.00
Recreation/Non-profit (8)	0.3%	369.00
Farmland (9)	0	0.00
Total	**100%**	**125130.00**

Permissive Tax Exemptions
- The Village does not issue permissive tax exemptions

VILLAGE OF PORT CLEMENTS

Cheque Listing For Council

2013-Mar-27
12:12:06PM

Cheque #	Cheque Date	Vendor Name	General Ledger	Invoice #	Invoice Description	Invoice Amount	Cheque Amount
						Batch #	**4822**
20130148	2013-03-25	BLUE CROSS			PAYMENT		890.64
			10-2-12-10-10	APRIL 2013	BENEFIT PREMIUMS	890.64	
20130149	2013-03-25	Haida Gwaii Trader			PAYMENT		418.25
			10-2-12-11-50	614D	4TH/4 PAYMENTS AD PACKAGE	398.64	
20130150	2013-03-25	ICBC			PAYMENT		5,267.00
			10-2-12-99-60	MAY 1 2013	Public Works	663.72	
			10-2-24-70-20	MAY 1 2013	fire department	2,102.30	
			10-2-32-31-00	MAY 1 2013	street maintenance	240.97	
			40-2-42-90-50	MAY 1 2013	sewer	85.92	
			30-2-41-30-40	MAY 1 2013	Public Works	221.24	
			40-2-42-90-70	MAY 1 2013	Public Works	221.24	
			10-3-73-90-00	MAY 1 2013	Prepaid Ins. 2014	1,731.61	
20130151	2013-03-25	MINISTER OF FINANCE			PAYMENT		50.00
			10-2-12-11-70	MOBILE HOME	BEACHY MOBILE HOME TAX SAI	50.00	
20130152	2013-03-25	OBSERVER PUBLISHING (			PAYMENT		123.20
			10-2-12-11-50	15144	2013 FINANCIAL PLAN	117.42	
20130153	2013-03-25	Stewart, McDannold, Stuart			PAYMENT		28.84
			10-2-12-10-50	63651	REAL ESTATE	27.49	
20130154	2013-03-25	Thwaites, Carey			PAYMENT		440.00
			40-2-42-30-00	WDS COURSE	PER DIEMS	220.00	
			30-2-41-10-25	WDS COURSE	PER DIEMS	220.00	
20130155	2013-03-25	Chartwell Consultants Ltd.			PAYMENT		2,818.00
			10-2-12-99-08	13-177	APPRAISAL OF TIMBER	2,685.91	
20130156	2013-03-25	GHW Appraisals Northwest			PAYMENT		1,344.00
			10-2-12-99-08	13-083	INDUSTRIAL PARK ROAD	1,281.00	

Total 11,379.93

*** End of Report ***

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NORTHERN SAVINGS
CREDIT UNION

STATEMENT OF ACCOUNTS

PO Box 94
Masset BC V0T 1M0

COPY

MASSET BRANCH	250-626-5231
MEMBER NUMBER	56440
STATEMENT DATE	February 28, 2013
PAGE	1 of 4

Village Of Port Clements
Box 198
Port Clements BC V0T 1R0

DEMAND ACCOUNTS

Date	Description	Number	Withdrawals	Deposits	Balance
Business 75					
31Jan2013	Balance Forward				1,300,069.67
01Feb2013	Pre-Authorized Credit - PROVINCE OF B.C			1,388.80	1,301,458.47
01Feb2013	Deposit			674.45	1,302,132.92
08Feb2013	Deposit			3,993.87	1,306,126.79
08Feb2013	Bill Payment CIBC VISA 4503386141757010 cibc 7010-replacing ch n. 20130072	2105000	432.72		1,305,694.07
13Feb2013	Transfer out to sav		500,000.00		805,694.07
13Feb2013	Transfer out to term 7		250,000.00		555,694.07
13Feb2013	Transfer out to term 8		250,000.00		305,694.07
15Feb2013	Deposit			20,548.94	326,243.01
21Feb2013	Deposit			16,812.43	343,055.44
28Feb2013	Credit Interest			573.70	343,629.14
28Feb2013	Monthly Service Fee		55.00		343,574.14
	Total Withdrawals and Deposits		**1,000,487.72**	**43,992.19**	
Membership Shares					
31Jan2013	Balance Forward				36.08
	Total Withdrawals and Deposits		**.00**	**.00**	
Business Simply Savings					
31Jan2013	Balance Forward				323,812.40
13Feb2013	Transfer in from cheq			500,000.00	823,812.40
28Feb2013	Credit Interest			631.24	824,443.64
	Total Withdrawals and Deposits		**.00**	**500,631.24**	

ontinued...

F-2

NORTHERN SAVINGS
CREDIT UNION

STATEMENT OF ACCOUNTS

PO Box 94
Masset BC V0T 1M0

MASSET BRANCH	250-626-5231
MEMBER NUMBER	56440
STATEMENT DATE	February 28, 2013
PAGE	2 of 4

Village Of Port Clements

TERM DEPOSITS

Date	Description	Withdrawals	Deposits	Balance
Term 4: Short Term GSP (30 - 364 Days) -				
31Jan2013	Balance Forward			11,091.16
Start 27Oct2012 - Rate 1.1000% - NextInt 29Jul2013 - Matures 29Jul2013				
Term 7: 12 - 60 Month Term -				
31Jan2013	Balance Forward			.00
13Feb2013	Transfer in from cheq to new 3 yr term		250,000.00	250,000.00
Start 13Feb2013 - Rate 2.1500% - NextInt 13Feb2014 - Matures 13Feb2016				
Term 8: 12 - 60 Month Term -				
31Jan2013	Balance Forward			.00
13Feb2013	Transfer in from cheq to new 12 m term		250,000.00	250,000.00
Start 13Feb2013 - Rate 1.7500% - NextInt 13Feb2014 - Matures 13Feb2014				

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NORTHERN SAVINGS
CREDIT UNION

STATEMENT OF ACCOUNTS

PO Box 94
Masset BC V0T 1M0

MASSET BRANCH	250-626-5231
MEMBER NUMBER	56440
STATEMENT DATE	February 28, 2013
PAGE	3 of 4

Village Of Port Clements

Assets		Canadian Dollars	US Dollars
	Chequing	343,574.14	.00
	Savings	824,443.64	.00
	Terms	511,091.16	.00
	Registered Plans	.00	.00
	Shares	36.08	.00
	Total Assets	**1,679,145.02**	**.00**

Liabilities		Canadian Dollars	US Dollars
	Line of Credit	.00	.00
	Over limit LOC/overdraft	.00	.00
	Loans	.00	.00
	Mortgage	.00	.00
	Total Liabilities	**.00**	**.00**
		.00	**.00**

Over limit Lines of Credit / Overdrafts interest rate is 24 0000

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CIBC Business Operating Account™ Statement

COPY

*0115865

00180 012/000394 (E)
VILLAGE OF PORT CLEMENTS
PO BOX 198
PORT CLEMENTS BC V0T 1R0

For Feb 1 to Feb 28, 2013

Account number
00180 93-00813

Branch transit number
00180

Account summary

Opening balance on Feb 1, 2013		$315,044.90
Withdrawals	-	64,004.15
Deposits	+	6,122.21
Closing balance on Feb 28, 2013	=	**$257,162.96**

Your authorized overdraft limit: $189,510.00

Contact information

1 800 465 CIBC (2422)
Contact us by phone for questions on this update, change of personal information, and general inquiries, 24 hours a day, 7 days a week.

TTY hearing impaired
1 800 465 7401

Outside Canada and the U.S.
1 902 420 CIBC (2422)

www.cibc.com

Your branch
500 - 3RD AVE W
PRINCE RUPERT BC V8J 1L8

Transaction details

Date	Description	Withdrawals ($)	Deposits ($)	Balance ($)
Feb 01	**Opening balance**			**$315,044.90**
Feb 01	DEBIT MEMO CHARGE FOR JAN CIBC EFT SERVICE CHARGE	64.40		314,980.50
	Cheque 20130048 000000059218229	125.00		314,855.50
	Cheque 20130056 000000060128947	890.64		313,964.86
Feb 04	CREDIT MEMO INT @ 0.2500% CIBC-AUTOMATED INTEREST SYSTEM		71.31	314,036.17
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		150.00	314,186.17
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		50.00	314,236.17
	Cheque 20130038 000000060238054	58.35		314,177.82
	Cheque 20130040 000000060275767	483.59		313,694.23
Feb 05	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		35.00	313,729.23
	Cheque 20130065 000000059372150	334.82		313,394.41
	Cheque 20130060 000000059382297	561.93		312,832.48
	Cheque 20130039 000000059382580	307.56		312,524.92
	Cheque 20130064 000000060423322	5,659.49		306,865.43

(continued on next page)

Transaction details (continued)

Date	Description	Withdrawals ($)	Deposits ($)	Balance ($)
Feb 05	**Balance forward**			**$306,865.43**
	Cheque 20130055 000000060430071	539.31		306,326.12
	Cheque 20130046 000000060432156	168.07		306,158.05
Feb 06	DEBIT MEMO SETTLEMENT: 0061 CIBC DATA CENTRE: 00	4,411.86		301,746.19
	Cheque 000 00000001 7146889M	3,485.08		298,261.11
Feb 07	Cheque 20130047 000000059575254	145.60		298,115.51
Feb 08	DEBIT MEMO Feb 08, 2013 Municipal Pensi	605.86		297,509.65
	Cheque 20130050 000000059030397	3,252.00		294,257.65
	Cheque 20130058 000000059084657	639.23		293,618.42
Feb 12	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		1,234.25	294,852.67
	MISC PAYMENT SCHOOL DISTRICT 50		11.48	294,864.15
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		825.85	295,690.00
	Cheque 20130057 000000059149820	12.00		295,678.00
	Cheque 20130062 000000059156832	950.00		294,728.00
Feb 13	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		163.95	294,891.95
	Cheque 20130076 000000059282025	1,120.00		293,771.95
Feb 14	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		200.00	293,971.95
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		263.95	294,235.90
	Cheque 20130053 000000060194150	28.00		294,207.90
	Cheque 20130066 000000060218692	22,232.00		271,975.90
Feb 15	MISC PAYMENT SCHOOL DISTRICT 50		430.80	272,406.70
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		622.05	273,028.75
	Cheque 20130073 000000059380225	424.79		272,603.96
Feb 18	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		448.90	273,052.86
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		163.95	273,216.81
	Cheque 20130080 000000059445511	126.76		273,090.05
	Cheque 20130063 000000060254527	44.00		273,046.05
Feb 19	CREDIT MEMO CREDIT UNION CENTRAL OF B.C.		294.15	273,340.20
	Cheque 20130075 000000059491862	133.28		273,206.92
	Cheque 20130059 000000059555535	92.96		273,113.96
	Cheque 20130086 000000059557394	555.57		272,558.39
Feb 20	DEBIT MEMO SETTLEMENT: 0062 CIBC DATA CENTRE: 00	4,890.26		267,668.13
	Cheque 20130090 000000060463802	1,485.96		266,182.17

(continued on next page)

CIBC Business Operating Account Statement

For Feb 1 to Feb 28, 2013
Account number: 00180 93-00813
Branch transit number: 00180

Transaction details (continued)

Date	Description	Withdrawals ($)	Deposits ($)	Balance ($)
Feb 20	**Balance forward**			**$266,182.17**
	Cheque 20130088 000000060463803	568.69		265,613.48
	Cheque 20130051 000000060463807	75.00		265,538.48
	Cheque 20130092 000000060463830	720.33		264,818.15
	Cheque 20130083 000000060463831	720.62		264,097.53
	Cheque 20130085 000000060463833	276.63		263,820.90
Feb 21	CREDIT MEMO CREDIT UNION CENTRAL OF B.C		163.95	263,984.85
	Cheque 20130077 000000059089134	120.00		263,864.85
	Cheque 20130082 000000060473989	44.03		263,820.82
	Cheque 20130081 000000060473990	270.48		263,550.34
Feb 22	TRANSFER 00440 FROM: 08910/74-47531 8TH ST. AND CLIFFE AVE		72.00	263,622.34
	DEBIT MEMO Feb 22, 2013 Municipal Pensi	620.06		263,002.28
	Cheque 20130091 000000060485962	94.91		262,907.37
	Cheque 20130087 000000060509545	457.62		262,449.75
	Cheque 20130074 000000060566698	874.72		261,575.03
Feb 25	CREDIT MEMO CREDIT UNION CENTRAL OF B.C		358.57	261,933.60
	CREDIT MEMO CREDIT UNION CENTRAL OF B.C		100.00	262,033.60
Feb 26	Cheque 20130101 000000059200019	1,568.13		260,465.47
	Cheque 20130099 000000059216042	33.60		260,431.87
Feb 27	CREDIT MEMO CREDIT UNION CENTRAL OF B.C		462.05	260,893.92
Feb 28	Cheque 20130100 000000017070836M	3,730.96		257,162.96
Feb 28	**Closing balance**			**$257,162.96**

The Village of
PORT CLEMENTS
"Gateway to the Wilderness"

36 Cedar Avenue West
PO Box 198
Port Clements, BC
V0T1R0
OFFICE :250-557-4295
Public Works :250-557-4326
FAX :250-557-4568
Email : office@portclements.ca
Web : www.portclements.ca

REPORT TO COUNCIL

Author: Kim Mushynsky

Date: March 21, 2013

Re: **Bayview Sewer Extension**

Background: In January 2010 a poll was done of residents from #242 - #300 Bayview Drive seeking their opinion on whether or not they would be interested in Sewer being extended down Bayview Drive. 26 letters were sent out (which represents the total parcels of land along that stretch). We received 17 responses – 3 said an unqualified yes, 4 said yes if the government subsidized the cost by 50% and 10 said no. The costs quoted in that letter were $480,000 based on a study done in 1993. I found a newer quote for the same work done by McElhanney in 2005 which was $638,000. From Stats Canada website I determined that the total inflation between 2005 and 2013 was 15.19%. Applying this factor to the 2005 figure we now have a ballpark cost of $735,000.

Recommendation: I recommend that Council re-poll the 26 property owners along Bayview Drive using the amended questionnaire attached. If we receive a supportive response in excess of 70% (19 or more respondents) then we should proceed to get a firm quote on the cost to proceed. With this updated information we can then approach the property owners again and if the decision is to proceed we start looking for funding opportunities.

Respectfully submitted:

NB-1

The Village of
PORT CLEMENTS
"Gateway to the Wilderness"

36 Cedar Avenue West
PO Box 198
Port Clements, BC
V0T1R0
Phone :250-557-4295
FAX :250-557-4568
Email : office@portclements.ca
Web : www.portclements.ca

April 2, 2013

Attention: Residents from 241-300 Bayview Drive

In January 2010 a poll was taken, of the 26 property owners identified above, to determine if they were interested in having sewer services extended to their properties on Bayview Drive to allow them to use the town sewer system rather than maintain private septic systems. The results of that poll were 11% unconditionally in favor, 15% in favor if a minimum 50% government subsidy was in place and the remaining 74% were opposed.

Recently a few residents in this group have approached Council wishing to revisit this question.

Without hiring an engineer to re-quote the project, an estimation of the 2013 costs for this extension is roughly $735,000. If we were to split this cost between 26 properties over a 20 year period the annual added cost to taxes, for these property owners, would be approximately $1,500.00. This cost is fixed to the property and would transfer to any future owners until the end of the 20 year period.

Based on this information please indicate which of the following choices apply to you:

1. I wish to have the sewer line extended and am willing to pay $1500.00 per year for 20 years, in addition to standard sewer user fees, to have this service provided.

2. I wish to have the sewer line extended but only if the Village of Port Clements can secure at least 40% grant funding for this project.

3. I am not interested in connecting to town sewer at this time.

Thank you for your input.

Sincerely,

Kim Mushynsky - CAO

The Village of
PORT CLEMENTS

36 Cedar Avenue West
PO Box 198
Port Clements, BC
V0T1R0
PH : 250-557-4295
FAX :250-557-4568
Email : office@portclements.com
Web : www.portclements.com

241 - 300

January 4th, 2010

find this study and

Attention: Residents along Bayview Drive

Port Clements Village Council is reviewing their Strategic Planning that was done in 2009. A study was done 1993 and $480,000.00 was established to provide sewer hookup to the residents along Bayview Drive that are currently on septic systems.

We are offering to you to choose one of the three following options that would best reflect your opinion:

1. Willing to pay for the sewer hookup at a rate of _________.
2. Share the amount with the Village with a possible 50/50 grant.
3. Do not want to participate with a Sewer hookup.

Thank you for opinions

4. Do you have any alternatives to the above options?

~~5. Should Would you recommend a new engineering study~~

Pallant Rundle
2 yes
everyone else NO

2013 price approximately

$735,000

638,000 per 2005 estimation by McElhanney
plus 15.19% inflation between 2005 - 2013

NB-1 lots:
25 ~~Residents~~

Dennis Reindl currently pays $402.00 water frontage

---

26 letters
17 responded –

3 yes flat out
4 yes with 50% gov't assistance
& reserve
10 no.

Northern Development INITIATIVE TRUST

301-1268 Fifth Avenue
Prince George, BC V2L 3L2
Tel: 250-561-2525
Fax: 250-561-2563
info@northerndevelopment.bc.ca
www.northerndevelopment.bc.ca

March 8, 2013

RECEIVED March 20/13

CONFIDENTIAL

Village of Port Clements
PO Box 198; 36 Cedar Avenue W.
Port Clements, BC V0T 1R0

Attention: **Mayor Wally Cheer**

Dear Mayor Cheer:

Subject: **2013 Grant Writing Support Funding**
Northern Development Project Number 3064 20

The Board of the Northern Development Initiative Trust appreciates your interest and application to the Grant Writing Support program. We are pleased to offer a rebate grant of $7,500 toward a community grant writing position, pending your notification to Northern Development of the person hired in this position. This position should be filled by a local candidate with the writing skills to meet the requirements of the program. We look forward to receiving the name of your 2013 grant writer at your earliest convenience.

Northern Development is flexible as to when you contract or hire these services during 2013, but does want to be able to accurately report the amount of job creation at .33 of a full-time position of direct employment for each grant.

The Village of Port Clements must submit documentation verifying a minimum of $10,000 in incremental wages or contract payments along with the required final grant writing support reporting prior to Northern Development issuing a $7,500 rebate. Northern Development staff will review and verify complete reporting for the year and, based on acceptance, a grant reimbursement will be issued. Complete reports are required prior to January 31st of the following calendar year.

The Northern Development Board wants to see the Village of Port Clements reach its economic potential and we look forward to being a partner in that endeavor.

Sincerely,

Janine North
Chief Executive Officer

c: Kim Mushynsky, Chief Administrative Officer, Village of Port Clements

→ minimum 400 hours of employment.
→ our cost $2,500
→ wage rate $25/hour
→ must apply for at least $200,000 in grants.

Catalyst for Opportunities

NB-2

Misty Isles Economic Development Society & Village of Port Clements

Port of Haida Gwaii and Short-Haul Inter-Coastal Barge Services

Business Case

March 21, 2013

NB-3

Table of Contents

1. Executive Summary

Haida Gwaii is contemplating the development of two related economic initiatives (or 'Projects') intended at reducing transportation costs on and off Haida Gwaii. These two Projects are:

1) The development of a new barge terminal in the Village of Port Clements; and

2) The acquisition of a community owned and operated barge system.

The Projects are aligned with the objectives of (1) the Misty Isles Economic Development Society and Village of Port Clements, of addressing barriers to development and strengthening the economic capacity of Haida Gwaii, and (2) Provincial and Federal objectives, of creating and sustaining employment and working with communities and First Nations.

High transportation costs to and from Haida Gwaii have been a historical barrier to economic development, both for the logging industry and for the wider community. In recent years, the community has seen a notable decline in population, in part due to the depressed forestry industry in British Columbia upon which Haida Gwaii has a strong dependency. Possible solutions to these issues have been explored in this document, to determine if a community owned and operated transport system could result in lower transportation costs than existing methods. A reduction in current costs could facilitate local industry development and improve the economic conditions on Haida Gwaii. The scope of this report is limited to the consideration of the benefits and costs related to the Project objectives identified above.

In order to determine the potential benefits of the transportation options, this report examined the current and potential cargos which could be transported by a new terminal and barge. The analysis of Haida Gwaii's industries and respective cargo volumes concluded that the major industry to benefit from a reduction in transportation costs would be the forest industry, which indirectly supports other industries on Haida Gwaii. The principal cargo would be logs bound for either export or domestic markets. Initially this could account for three-quarters or more of the total containerized traffic moving to and from Haida Gwaii. As a result, the analyses contained in this report focus on this cargo, as it will determine overall feasibility of the proposed barge service

Barge Terminal

The development of the proposed barge terminal at the Village of Port Clements would result in Haida Gwaii's first terminal capable of receiving/shipping containerised cargo. Currently, limited volumes of containers are received on Haida Gwaii by truck, travelling on BC Ferries. Most goods travelling to and from Haida Gwaii travel in regular trucks, log barges, deck barges and bulk fuel barges. The ability for goods to be brought on to the island by container, means potentially lower transportation costs and also greater opportunities for the logging industry to ship containerised cargo off island and expand the export market. The capital cost of this proposed facility is estimated at approximately **$8.4M** and the variable operating costs of the terminal facility are estimated at **$4.24 per m^3** of transported goods.

Community Owned and Operated Barge System

This report has also examined the benefits and costs associated with a community owned and operated barge. This barge would be capable of loading/unloading containers, as well as other cargo, using its own gear (onboard cranes). This study has identified a potential barge that is currently for sale and it is assumed that it can be purchased for $3.0 million. The barge would need to be towed by a tug boat, but due to crewing, maintenance, back-up and specialty skills required for its operation, this report assumes that the tug boat can be chartered from existing operators when required, and these operating costs

have been included in the costs noted below. There is thus no capital associated with acquiring tug boats.

Based on the analysis performed and summarized below, such a transportation service would be cost competitive with existing log barge service, provided there is funding provided for the capital cost of the terminal and the barge (estimated at $11.4 million being $8.4 million for the terminal and $3.0 million for the barge).

The transportation service (barge and terminal combined) is competitive with the existing log barge service to Prince Rupert (including the option that adds a service to/from Stewart) on an operating cost basis. Capital costs are the issue. On a total cost basis, the services to Prince Rupert (including the Stewart option) are at a slight cost disadvantage to the existing log barge service. Since the capital and financing costs are a fixed cost, these become more of an issue with lower volumes, as evidenced with the reduction in volumes from Port Clements from 304,000 to 196,000 m^3. A capital grant would provide a cushion against volume uncertainty and assist in developing a viable alternative transportation service for Haida Gwaii.

	Port Clements to Prince Rupert		Port Clements to Vancouver	Port Clements to Prince Rupert and Stewart
Assumed volume	304,000 m^3	196,000 m^3	124,800 m^3	180,800 m^3
Assumed annual capacity utilization	80%	51%	80%	80%
Existing log barge service, per m^3	$24.50	$24.50	$20.00	$24.50
Operating costs of proposed barge system, per m^3	$20.54	$20.83	$27.56	$19.91
Operating Cost Advantage/(Disadvantage) for Proposed Barge System, per m^3	**$3.96**	**$3.67**	**($7.56)**	**$4.59**
Capital and financing costs, per m^3	$4.10	$6.36	$10.01	$5.56
Contribution margin net of capital and financing costs, per m^3	**($0.14)**	**($2.69)**	**($17.57)**	**($0.97)**

There are benefits to the proposed system beyond the measurable financial costs of the Project. These benefits include the ability of the containerised barge service to expand export markets for logs, particularly in the growing Asian market. The containerized system reduces the need to accumulate a large inventory of logs before shipment, as is current practice with log barges, which will improve working capital positions for the forest industry and provide the opportunity to take advantage of favourable market price fluctuations. Finally, the barge would be able to provide benefits to non-logging industry through cheaper transportation for both import and export goods.

Economic Impact

The economic impacts of the Projects on British Columbia have been calculated using economic multipliers developed by BC Stats from the BC Input-Output (I-O) Model. The impact on Provincial GDP is estimated at nearly $4 million per year and the impact on employment is estimated at about **58 full**

time equivalent jobs. In addition, the Projects should encourage local economic development in other industries, both those related to the forest industry in terms of higher value added manufacturing, and the associated spin off benefits to other industries being able to leverage the benefits of cheaper transportation. This will also reduce the cost of living for local residents by reduction in the costs of goods being imported.

Construction of the facility is estimated to impact Provincial GDP by about $6.7 million and create about 110 person-years of employment.

Project Risks

The Projects have a number of identified risks which are discussed in this report. A key risk of the Projects is that their success is largely tied to the economics of the forest industry, which has suffered significant volatility in recent years. The continued volatility in future periods may affect the potential cargo volumes available for transport and the benefits to be derived from the Projects. However, reducing transportation costs may mean the Haida Gwaii economy will be better positioned to cope with this volatility.

In addition, the Projects require the support of the local forest industry companies to be able to provide sufficient volume to allow the barge to be financially feasible. Without this acceptance and participation, the terminal and barge system would not be utilised above a breakeven level and would required on-going operating subsidies. Finally, the cost estimates included within this report include a number of assumptions and therefore there is a risk that actual results may differ from the estimates provided.

2. Engagement Overview

KPMG has been engaged by the Village of Port Clements (Port Clements) and Misty Isles Economic Development Society (MIEDS) to prepare a business feasibility study that examines whether the proposed terminal development and barge system achieve the objectives outlined in Section 1. This study quantifies the estimated costs for possible development options for the terminal facility as well as the barge service, together with the related economic impacts of the Projects.

The business case is structured into the following sections:

- **Section 3 Introduction/background** –This Section provides background on the current situation on Haida Gwaii and provide the background and context to the report
- **Section 4 Stakeholder Analysis** – This Section reviews the key stakeholders on the Projects and their objectives.
- **Section 5 Cargo Analysis and Project Development Options** – This Section summarizes the development options for a) the terminal facility and b) the barge system, taking into consideration different cargo types.
- **Section 6 Cost and Benefit Analysis** – This Section is a quantitative and qualitative assessment of the project, compared against the status quo, and an economic impact analysis of the Project.
- **Section 7 Risk Assessment** – This Section provides a preliminary risk assessment based on the identified risks of the project, and also the identified risks of not proceeding with the project.
- **Section 8 Recommendations and Conclusions** – This Section provides details of our conclusions and recommended future actions.
- **Section 9 Implementation Strategy** – This Section provides details of recommendations on the governance of the Projects and management strategy on a prospective basis.

3. Introduction/Background

This Section reviews the current state of the present economic situation on Haida Gwaii, and the current perceived opportunities on using available data and prior analysis.

3.1 Opportunities

The Misty Isles Economic Development Society (MIEDS) and Village of Port Clements ("Port Clements") are investigating the feasibility of two related Projects. These are:

- an island-owned container terminal facility; and
- an island-owned and operated barge, capable of carrying containerised cargo,

It is envisioned that a terminal facility could be constructed without the requirement to procure a barge, and that the barge itself may be leased or contracted as and when required. Accordingly, the barge and terminal are assessed as independent projects. However, the barge would require the terminal facility as a prerequisite given the absence of any other suitable port available on Haida Gwaii.

A consolidated barge facility capable of transporting containers, in place of current, private barge services operated by service providers and business owners will encourage and promote economic development by reducing transportation costs to and from Haida Gwaii. A reduction in transportation costs brings the opportunity for the following benefits to Haida Gwaii:

- **Reverse the significant decline in the local economy** – by strengthening connections between Haida Gwaii and coastal communities on the mainland of British Columbia. The reduction in transportation costs could help aid in the development of secondary processing business (such as mills and log peeling plants) and other, new industries on the island, or significantly expand developing industries. The expansion of existing key industries would help to attract and retain a pool of skilled labour required to generate economic growth;
- **Reduce costs and improve availability of goods on the island** – reducing transportation costs for goods to residents of Haida Gwaii would help to lower the cost of living for residents;
- **Increase access to market opportunities** – a consolidated, cost-effective barging service could provide the opportunity for small businesses to export goods off the island, which may have been prevented or discouraged from doing so due to high transportation costs; and
- **Increase profitability of local businesses** – businesses that ship goods to mainland British Columbia from Haida Gwaii, such as logging and other wood products processing for sales and export businesses, as well as those that ship goods to the island such as grocers and other retailers, would benefit from a reduction in transportation costs.

3.2 Current State

Communities located throughout Haida Gwaii have experienced a gradual and significant decline in population over the last decade. The change in population between 1997 and 2012 for Haida Gwaii is shown in **Table 3.1**. It can be seen that there has been a **16.5% decline** in population between 1997 and 2012. The decline in population is attributed to high costs of living and uncertainty over employment on Haida Gwaii.

Table 3.1: Haida Gwaii population data (Source: BC Stats, Local Health Area 50)

Year	Population
1997	5,461
2001	5,021
2007	4,816
2012	4,559

Through interviews with various business owners in Masset, Port Clements, Skidegate and Queen Charlotte City, the effects of the declining population and the impacts on businesses include:

- Drastically reduced volume of goods moving on and off the island
- Lowered local demand for retail, food and accommodation services
- Shrinkage in labour force size, resulting in a shortage of labour or scaled-back operations

Additionally, these communities' economies are largely substantiated on the logging industry, given the surrounding forest resources and the limited alterative natural resources and industry. The pressures of a declining population, and the current economic conditions, have created urgency for MIEDS and the Village of Port Clements to review the benefits of improved transportation to stimulate the local economy.

Current Marine Routes and Challenges

At present, there is no public access barge facility on Haida Gwaii and no facility which can receive containerised barges. There is a relatively small barge beaching area in Masset, a smaller vessel being more practical to use due to strong tides in this area. BC Ferries operates a terminal in Skidegate but it is only suitable for roll-on/roll-off ("RORO") of trucks from the ferry. A number of logging and small barge services are used to transport goods off island.

The logs from the forestry companies are transported on log barges. This requires the accumulation in the water of large volumes of logs prior to shipment which therefore requires an extended period of time, therefore tying up working capital for the logging companies. Non-logging exports and other imports are transported via BC Ferries at Skidegate, and by Wainwright or North Arm (fuel). It has been noted that there has been a significant decline in commercial traffic in recent years and that BC Ferry's service has been reduced.

The proposed site of the terminal facility for this Project is at the Village of Port Clements, which is on the east shore of Masset Inlet. The location is advantageous because it allows coastal vessels to reach deep inland, near to where the largest part of the forest resource on Haida Gwaii is located. The port's low lying land near the shore provides areas suitable for log handling and for forest industry activity and low tidal variance. The maximum tidal variance at Port Clements is +2.9 metres, which is a relatively low tidal variance.[1]

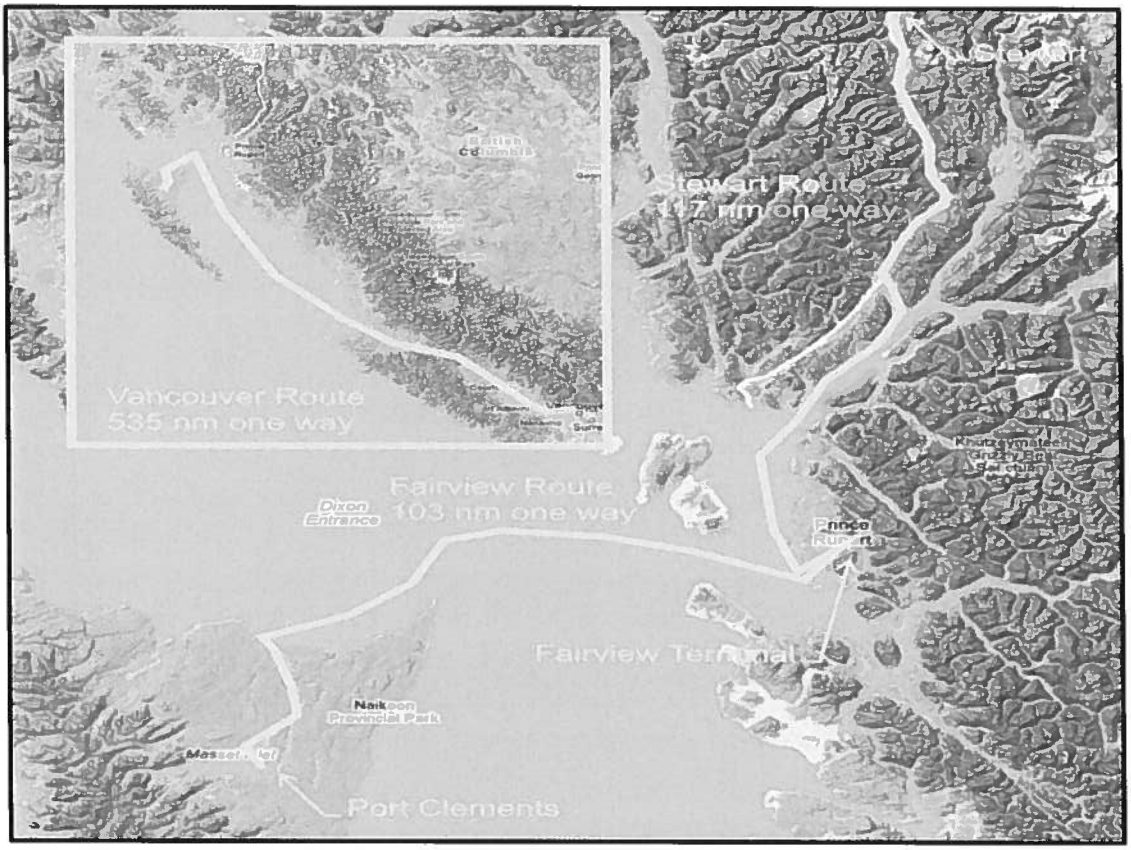
The destinations for potential cargo which have been considered in this report from Port Clements are as follows:

[1] Moffatt and Nichol *Port Clements Barge Facility – Feasibility Study*, November 18, 2010

a) **Prince Rupert.** The Fairview container terminal in Prince Rupert is a deep sea container terminal and geographically close to Port Clements. It is a potential hub for other port linkages in the proposed Port Clements barge service.

b) **Vancouver**. There are several ports in the Vancouver area. Centerm is a likely potential destination due to a similar barge service for containerized logs from the Duke Point Terminal of the Nanaimo Port Authority.

c) **Stewart.** There are two deep sea terminals in Stewart, Stewart Bulk Terminals and the District of Stewart log storage and handling facility. Stewart is a potential destination within the barge network that includes Port Clements as it allows the possibility of diversifying the risk from cargo volumes, as the barge service would also work to deliver logs from Stewart to Prince Rupert, and mining supplies from Prince Rupert to Stewart. The two way nature of the service to Stewart also improves the economics of the overall barge service. This cargo potential is discussed in more in Section 5.1. This route is illustrated below[2]:



Industry on Haida Gwaii

The following table summarizes the labour force by sectors based on statistics collected in 2010 and 2011 by MIEDS. This illustrates that the economy is driven by a few key sectors (1) government services; (2) tourism; and (3) forestry and logging. It should be noted that the forestry and logging industry has a significant indirect benefit which is felt across different employment sectors on Haida Gwaii.

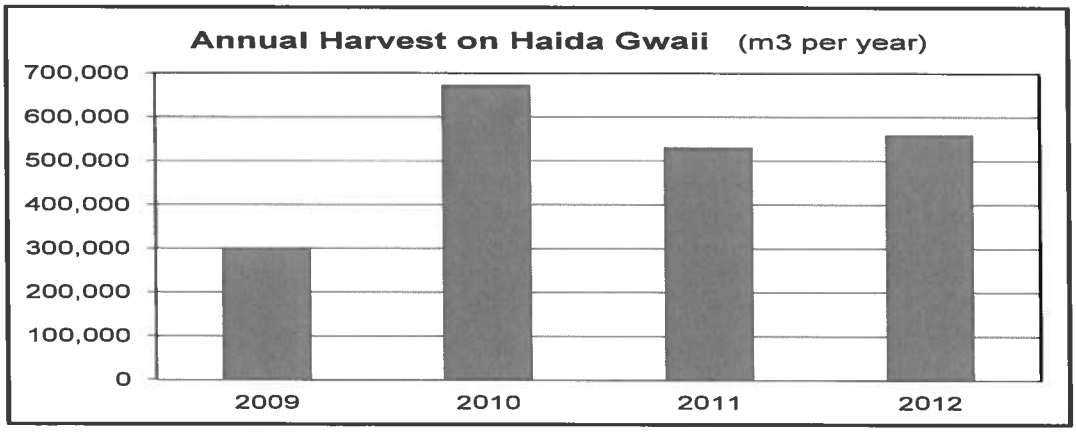
[2] Source: Lauga & Associates Consulting Ltd, *Port Clements Barge Facility Analysis of Markets, Logistics and Costs*

Table 3.2: Employment by Sector on Haida Gwaii

Employment by Sector on Haida Gwaii, 2009		
Sector	**Employees**	**% by Sector**
Government Services	847	37.20%
Tourism	361	15.85%
Forestry & Logging	334	14.67%
Retail Outlets	235	10.32%
Services & Trade	124	5.45%
Accomodations	119	5.23%
Artists & Craftspeople	78	3.43%
Commercial Fishing	67	2.94%
Construction	39	1.71%
Finances	30	1.32%
Transportation	29	1.27%
Agriculture	14	0.61%
Total	**2277**	
**Data Source: Labour Market Information-Astute Management Consulting Inc, 2011*		

Haida Gwaii's major export has historically been forest products – mostly raw logs – and this still remains the case. Effective April 4, 2012, the annual allowable cut (AAC) for Haida Gwaii was reduced to 929,000 cubic metres from its previous 1,780,092 cubic metres[3]. The reduction was noted, by the Haida Gwaii Management Council[4] (HGMC), to account for "all newly protected conservancies and heritage sites, as well as the EBM regime outlines in the Strategic Land Use Agreement and the Land Use Objectives Order" (HGMC, 2012). The actual cut has fallen short of the AAC in recent years due to the weakness in the BC lumber industry and uncertainty of the Land Use process. Locally, Western Forest Products, which held Tree Farm License ("TFL") 60, ceased operations in 2009. Taan Forest Products took over TFL 60 and has required some time to set up its operations and in this period, actual cut has been significantly lower than in the past. As the actual level of cut has been substantially below the AAC, revenue potential is not being fully realized by the forestry industry.

Table 3.3: Actual cut in cubic metres on Haida Gwaii[5]



[3] This represents a 47.8% reduction; AAC's were attained as per Haida Gwaii Management Council's report in 2012.
[4] The HGMC consists of two Haida Nation representatives and two Province of BC representatives.
[5] Sourced from Lauga & Associates Consulting Ltd, *Port Clements Barge Facility Analysis of Markets, Logistics and Costs.*

Taan holds TFL 60, which means that it is the largest single holder of the total AAC allocated on Haida Gwaii.[6] Due to its proximity to Port Clements and hence the proposed barge facility, Taan holds the single largest potential volume of goods for export off the island, and will play a critical role in determining the economic viability of a new barge service and terminal.[7]

Minimally processed wood products, such as raw logs, peeled and debarked logs compose the bulk of goods transported off the island. Due to high shipping costs which increase the cost of product sold to consumers, distributors and processors, some companies have chosen to down-scale operations on the island and sell products locally or cease milling operations on the island altogether.[8]

Currently Transported Non-Logging Cargo Types and Volumes

Discussions with various local businesses[9] involved in movement of cargoes on and off the island, either as a service provider or user, indicate that more goods are imported from British Columbia's mainland to Haida Gwaii than goods exported. Such goods include fuel, which is imported by barge to Masset, and food, building materials and retail goods moved by trucks transported by BC Ferries.

There has been a substantial decline in the level of goods being brought on to Haida Gwaii and a general increase in the cost of such goods. In discussions with the owner of Clearbrook Trucking, four trailers per week are typically currently handled by the company during winter months, which is a decrease from eight to nine trailers per week ten years ago. Volumes during summer months are currently 10 trailers weekly, which is a decrease from fourteen to sixteen trailers a week ten years ago. The increase in volumes during the summer is related to increased tourist volumes during the summer months. Due to diminishing scales of economy faced by the declining volume of goods demanded in the northerly communities of Graham Island, prices for consumer goods have steadily increased in the past two decades, as noted in several conversations with local business owners.

Energy Distribution and Consumption

Communities of Haida Gwaii are currently not connected to BC Hydro's electrical grid established within the Province of BC. BC Hydro provides power to the northern grid that serves Old Masset, Masset and Port Clements through its diesel generating system in Masset. The southern grid that serves Skidegate, Queen Charlotte City, Tlell and Sandspit receives power from a private hydroelectric plant (Queen Charlotte Power Corporation) that is backed up by BC Hydro's diesel generation station in Sandspit. We

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[6] The largest forest cut areas identified are Tree Farm License 60 (TFL 60), with an AAC of 340,000 m^3 which is held by Taan Forest, and Timber Supply Area 25 (TSA 25), with an AAC of 512,000 m^3, which is held by the Crown through BC Timber Sales. The rights to cut TSA 25 are held by entities, such as the Council of Haida Nations communities and other wood lot holders.

[7] Taan currently owns and operates its own dry sort and booming ground, and has expressed that the company may choose to move their products through the proposed barge facility at Port Clements, if it is cost effective and helps its existing business operations. Information noted from interview with Bob Brash, President of Taan Forest.

[8] Watchman Forest Products, a company largely focused on salvage logging, is potentially shifting its business model to small-scale furniture products. Abfam Enterprises Ltd has, periodically, ceased or limited its milling operation depending on conditions, but is still an active company in Haida Gwaii.

[9] Businesses currently providing transportation services for goods on and off Haida Gwaii (Masset) are mostly handled by Clearbrook Trucking Services, Bandstra, Wainwright, North Arm Transportation and O'Brien & Fuerst. KPMG also spoke with Aaron Mark Services and Delmas Co-op – both businesses transport house renovation and construction materials from Prince Rupert regularly. Delmas Co-op mostly transports grocery goods via BC Ferries services weekly, where goods originate from Edmonton and are shipped from the Port of Prince Rupert. Goods are then moved in trailer trucks mostly operated by Bandstra and Canadian Freightways.

understand through our discussions with North Arm Transportation that diesel fuel is supplied largely by Imperial Oil (Esso).

Transporting diesel and other containerized fuel products requires possession of licences for transporting dangerous goods on shipping vessels. Facilities receiving the dangerous good cargoes must also be certified with appropriately trained staff alongside equipment specifically designed to handle such goods.

3.3 Work Completed to Date

To date, there have been several independent studies completed in assessing needs, options and details of the proposed barging terminal facility and community owner barge system as follows:

- **Port Clements Barge Facility Feasibility Study** – conducted by the Moffatt & Nichol in November 2010. The study focused on the feasibility of implementing and operating a terminal facility at the proposed site in Port Clements. An overview of the project design criteria and barge ramp concepts were provided. Governance and operational scenarios were developed for the purposes of determining, at a high-level, the estimated costs for the project. An overview environmental scan was conducted along with a determination of the required permits and authorizations to move forward with the project.
- **Freight Opportunity Analysis** – conducted by the Resource Management Group in October 2010. An overview of historic and current freight movement on and off Haida Gwaii was provided. Current and proposed ports on Haida Gwaii were assessed for suitability in implementing the proposed barge facility. Potential cost savings to address on and off-island shipping as well as issues related to capacities and volumes of current and potential freight movement were described.
- **MIEDS Economic Development Strategy (Draft)** – provided by the MIEDS, the document contains draft mandates for the society. Though in "draft" status, the document provides an overview of the direction and focuses in economic development planned for Haida Gwaii.
- **Haida Gwaii Community Viability Strategy** – prepared jointly by Lions Gate Consulting Inc., Westcoast CED Consulting and Peak Solutions Consulting in May 2007. The document outlines strategic development goals for economies on Haida Gwaii. The report contains detailed survey responses from residents of Haida Gwaii regarding issues such as perceived development priorities as well as gaps that should be addressed in economic development of communities on the Haida Gwaii.
- **Haida Gwaii Labour Market Information** – prepared by Astute Management Consulting Inc. in December 2011. The report draws from census and other data collected by MIEDS in 2010 and 2011 to describe the, then, current state of employment on Haida Gwaii. Major sectors and employers were identified while labour supply challenges faced on and off the island (those related to servicing Haida Gwaii) were described.

4. Project Stakeholders

The table below describes key stakeholders, their requirements and potential level of impact that the successful implementation of the Projects would have on respective stakeholders. Stakeholders are categorized into one of two types:

- **Primary Stakeholders** – those directly impacted and involved with the Projects. The impacts from the Projects will most immediately pertain to these stakeholders.
- **Secondary Stakeholders** – those not directly involved in the Projects, but will experience indirect impacts as a result of the Projects.

Table 4.1: Summary of Stakeholder Analysis

Stakeholder	Overview of Requirements	Anticipated impacts from Projects
Primary Stakeholders		
Residents and Businesses of Haida Gwaii	• Economic growth in key sectors and small businesses for jobs and earnings; • A sustainable, reliable, cost-effective and competitive alternative means of transporting goods to and from Haida Gwaii • Opportunities for skills, training, jobs, and economic development for First Nations and the local community; • Cost of living standard improvements.	**Growth in key sectors of Haida Gwaii by providing a reliable and cost-effective means of marine transportation of goods** – the consolidated barge service can provide a reliable source of marine transportation for business exporting goods off Haida Gwaii. The increased reliability and availability of service can, in turn, increase market access for business to become more connected and competitive in larger export markets. **Retention of skilled labour in key industries** – as key sectors on Haida Gwaii, such as forestry and logging, grow as a result of the Projects in the long term, the labour force for such sectors will also stabilize and expand in due time, attracting skilled labour.. **Reduction in the price of goods on Haida Gwaii** – a reduction in the transportation costs to Haida Gwaii would reduce such costs.
Council of the Haida Nation (CHN)	• Promoting overall economic development; • Achieving self-sufficiency of the Haida Nation; • Perpetuate the Haida identity; • Promote peaceful co-existence with governments and other peoples; • Establish sustainable land use policies.[10]	**CHN is a dominant player in the logging and forestry industry** – Taan Forest, owned and operated by the CHN, holds close to a majority of forest cut available for logging on Haida Gwaii. As such, CHN stands to benefit directly from any reduction in transportation costs. The Projects work in coordination with the Haida First Nations to help build and strengthen working relationships between communities of Haida Gwaii, by specifically promoting economic development through Taan Forest and other industries in the transportation of goods on and off Haida Gwaii.

[10] Extracted from the *Council of the Haida Nation's* mandate and responsibilities.

Stakeholder	Overview of Requirements	Anticipated impacts from Projects
Misty Isles Economic Development Society	The proposed mandates[11] of the Misty Isles Economic Development Society are: • Actively addressing barriers to development • Developing and supporting initiatives that strengthen the economic capacity of the islands and/or of islanders; and • Engaging in workforce and business development initiatives.	• Economic growth in key sectors and small businesses; • A sustainable, reliable, cost-effective and competitive alternative means of transporting goods to and from all communities of Haida Gwaii; and • Opportunities for skills, training, jobs, and economic development for First Nations and the local community • The Projects build and strengthen relationships with the Council of the Haida Nation through the close co-operation required for the community owned Projects.
Secondary Stakeholders		
Provincial Government	The key areas of focus[12] of the Ministry of Jobs, Tourism and Skills Training in British Columbia are: • Working with communities, First Nations, local governments, businesses and international partners to stimulate the provincial economy and create an environment where small and large businesses can thrive and create permanent, sustainable employment; and • Working with small businesses to advance their economic competitiveness by providing access to venture capital, tools and resources, and by streamlining regulatory requirements.	• **Creating permanent and sustainable employment** – through both direct employment as a result of the barge facility and barging services. Additionally, indirect employment will result from this project through expansion of key sectors on Haida Gwaii. • **Providing access to venture capital to advance economic competitiveness** – the Ministry can be a key stakeholder in assisting communities of Haida Gwaii through capital investments for the proposed facility. Assistance through capital investment by the Ministry can help businesses on Haida Gwaii to become more connected and competitive.

[11] The mandate referenced for this business case was in draft format, provided by the Misty Isles Economic Development Society. These were formulated from a series of public consultations in May 2012, which assessed the community's perception of the most important mandates for the agency.

[12] The quoted focuses are described in the 2012/13 – 2014/15 Service Plan from Ministry of Jobs, Tourism and Skills Training of the Provincial Government of British Columbia.

Stakeholder	Overview of Requirements	Anticipated impacts from Projects
Federal Government	The objectives of the Community Economic Development and Western Diversification Program of the Department of Western Economic Diversification are as follows: • Helping rural communities identify and capitalize on new sources of economic growth and employment; • Increasing the capacity of rural communities to undertake value-added processing and encourage new opportunities for skilled employment; • Enhancing Aboriginal participation in the economy, • Designing and delivering regional and community development programs to help western Canadian communities make a successful transition into the 21st century economy; and • Investing in infrastructure to sustain rural and urban communities.	• **Increasing value-added processing and skilled employment opportunities** – the Projects envision helping key sectors of Haida Gwaii expand beyond logging operations into value-add processing sectors. Ultimately, the implementation of the proposed facility and service can potentially attract, retain and train skilled employment to strengthen and grow local economies. • **Investing in infrastructure to sustain rural communities** - the Projects would allow businesses on Haida Gwaii to become more competitive which would help sustain the local economy.
Existing barge and marine transportation service providers	• Maintaining existing barge services for the supply of cargos to and from Haida Gwaii; and • Expanding services to additional terminal destinations, if economic.	**Existing service providers with vessels docking at Skidegate and Masset** – may view this port as an alternative location to consider in their routing for delivery of goods. Port Clements may contribute to savings in transportation cost of goods by decreasing truck freight distances. The barge itself would however be in competition to existing transport services.
Container Owners	• Containers are primarily owned by the major container lines. Containers are key assets of these companies and their utilization rates and availability for overseas cargo are paramount to their operations. • Container lines may provide containers for movement of cargos from Haida Gwaii if that cargo is ultimately bound for export markets. They are very unlikely to provide containers for domestic movement of goods as this is not in their interest, unless they can charge for their use.	• The container line will provide empty containers in Prince Rupert (or elsewhere) for relocation to Haida Gwaii and then transport export goods from Prince Rupert to overseas markets. • If the container lines will not provide containers for domestic movements of logs, other sources of containers will have to be found, or containers will have to be purchased or leased. • The price the container lines or other owners of containers charge may have a significant impact on the project. Container lines currently charge demurrage rates for delayed containers that can amount to about $100 per day ($3 - $4 per cubic metre), which can significantly affect the economics of log movements from Haida Gwaii.

5. Cargo Analysis and Project Development Options

The purpose of this section is to discuss the types of cargo that would make use of the Projects and the potential development options for the new barge terminal and barge system. In addition, the Section explores the terminal facility options available and the proposed barge solution to meet with the project objectives.

5.1 Types of Cargo

The financial feasibility of a barge system is heavily dependent on the volume of traffic carried by the barge system and the utilisation of its capacity given the fixed nature of certain costs. Cost efficiencies can be gained to the extent that volumes carried on each individual journey on both exports from the island and return journey can be maximized. Accordingly, the analysis below examines the potential exports from the logging industry and possible additional cargos which may be transported by the barge system to and from Haida Gwaii.

Logging

The major cargo for export from Haida Gwaii has been identified as logs and lumber. This industry is by far the most significant in terms of volumes of cargo and therefore is the industry where the majority of benefits would accrue from reduced transport costs.

As discussed in Section 3.2, the Annual Allowable Cut (AAC) on Haida Gwaii was substantially reduced on Sept 20, 2012 to 929,000 m^3 per annum. However, the total harvest on Haida Gwaii in 2012 was 560,000 m^3. Even at this reduced AAC level, this amount represents substantial potential cargo volume (approximately 32,000 containers of logs per annum assuming an average of 29 m^3 for a standard 40 foot container). Per the analysis in Section 6.1.2 the maximum volume for the Port Clements to Prince Rupert barge service route has been assumed at 380,000 m^3.

The volume of logs which may be shipped is impacted by not only the AAC limit itself, but also the distribution of that limit across different parties on Haida Gwaii, the type of available cut and the restrictions which have been put in place regarding exports and logging. The AAC which has been set on Haida Gwaii is broken down into three areas:

- **Tree Farm Licence 60** - held by Taan Forest Inc. The company has an allowable annual cut of 340,000 cubic metres, of which red and yellow cedar should not exceed, on average, 133,000 m^3. Taan also has access to an additional 120,000 cubic metres from its Haida Forest License, which is in addition to the allowable annual cut amount.

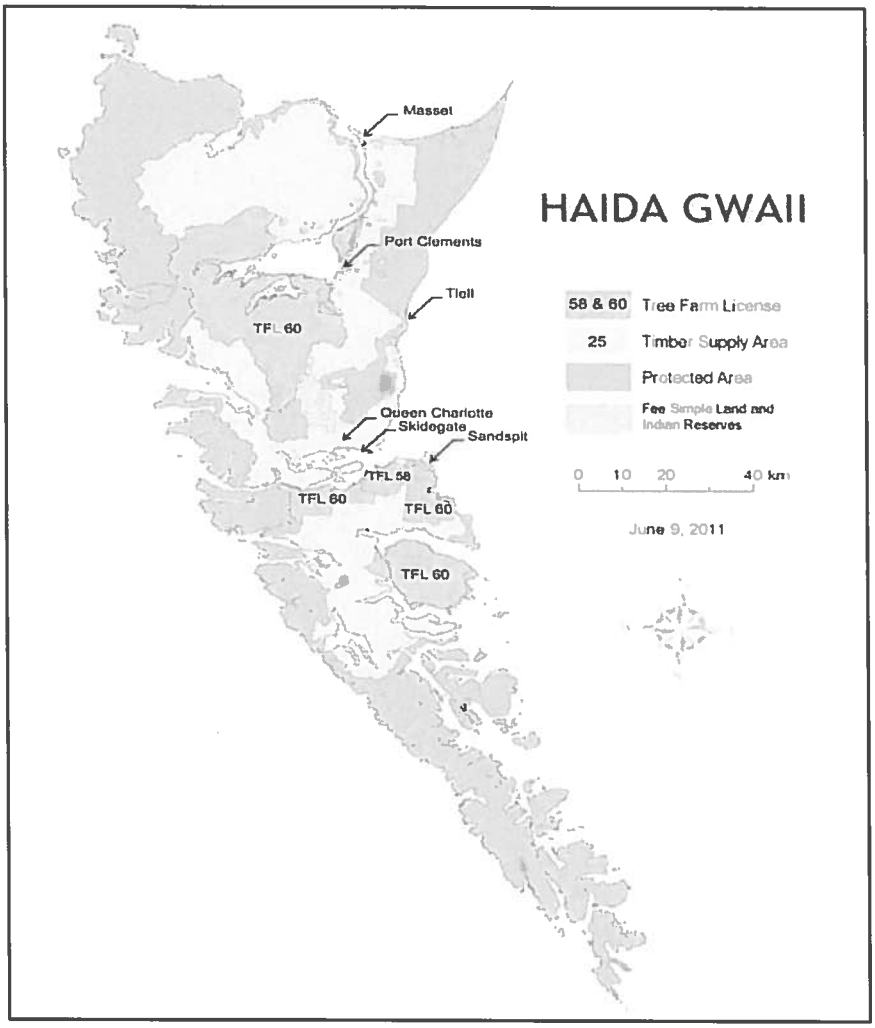
- **Tree Farm Licence 58** – TFL 58 is held by the Teal-Jones Group which now has a cut level of 79,000 m^3per year, of which red and yellow cedar should not exceed, on average, 32,000 m^3 per year. TFL 58 is on Moresby Island and, therefore, may not be relevant to the proposed barge terminal because of the cost of bringing logs from Moresby Island to Port Clements.

- **Timber Supply Area 25** – This area has an allowable annual cut of 512,000 cubic metres, of which red and yellow cedar should not exceed, on average, 195,000 m3. A substantial part of TSA 25 is offered by BC Timber Sales[13] which, from time to time, auctions cutting rights to certain areas. The remainder is held by a variety of wood lot holders, forestry companies and the Haida Nation.

If the Tree Farm License 58 is excluded, the effective level of AAC relevant to the terminal facility and barge is reduced to 850,000 m^3 per year.

[13] BC Timber Sales is a stand-alone organization within the Ministry of Forests and Range, created to develop Crown timber for public auction.

Table 5.1 Forest Tenures on Haida Gwaii



In addition, there are restrictions placed on the type of wood which can be exported. The most important and abundant species on Haida Gwaii are the cedars, and white wood species, hemlock and spruce. Both the "red wood" cedar species, western red cedar and yellow cedar, are relatively high value. However, these identified cedars are *not* exportable as logs under provincial government log export regulations from Haida Gwaii, although the Council of Haida Nations (i.e. Taan Forest) does have an option to export cedar from its Haida Forest License.

Hemlock and spruce, which are the major "white wood" species, are exportable as logs. In the near term, the majority of the export volume will be hemlock, which is of a lower value. In the medium to longer term, the proportion of higher-value spruce available for export is expected to increase. This means that future years should see an increase in the value of log exports.

Furthermore, there are restrictions on the volume of logs which can be exported from Canada. An Order in Council approved on July 29, 2010, provides a blanket exemption to allow up to 35% of harvested logs to be exported. All tree species except cedar and cypress are included in this exemption. The amount of the exemption is calculated by measuring the total actual harvest, including cedar and cypress, over the preceding twelve months and multiplying by 35%.

Given that cedar and cypress logs cannot be exported, most of the exportable wood is likely to be hemlock. However, this 35% exemption is applied separately for each forest licensee. This means that if forest license holder X does not export, license holder Y can use his own 35% allowance but cannot take advantage of forest holder X's unused log export exemption allowance. Any volume beyond 35% must be advertised for local market use first, but if there are no takers this can be exported. The total harvest on Haida Gwaii in 2012 was 560,000 m^3, leading to a potential for exempted log exports in 2013 of as much as 196,000 m^3, a significantly lower volume than the AAC.

Log-related products

Below are summarized log-related products which could stimulate the local economy. These are higher-value products which would not necessarily increase the volume of product shipped, but which would lead to a higher value of goods being shipped goods.

Pulp wood

Pulp wood is being shipped off Haida Gwaii in small amounts based on our discussions with local forestry companies. Based on our discussions with forest and logging companies on Haida Gwaii, pulp wood is typically bound for Vancouver Island or BC's mainland. The current market price of pulp wood averages $40 - $42 per m^3. Shipping rates for pulp wood bound for Vancouver Island and BC's mainland are expensive and it is often hard to justify the associated costs with logging and barging pulp wood.

Based on discussions with local industry, the costs of cutting and moving pulp far exceed the market price. The current estimate of the costs involved is approximately $95 per m^3, exclusive of barge transportation costs. Despite the costs per m^3 for pulp wood exceeding market value, where there exists a requirement or making such a cut is unavoidable e.g. because of the location to other valuable wood product, local industry would be able to benefit through a reduction in transportation costs because this would reduce the incurred loss for each cubic meter cut. There are penalties which are imposed on forest license operators for portions of the forest that are not harvested relative to the permitted cut, referred to as the "utilization rate" however these penalties ($0.25 per m^3) are not significant in relation to the overall costs involved.

Wood chips

Wood chips represent another potential source of exports. Wood chips are typically produced as a by-product from sawmill operations. At present, there is no sawmill operating on Haida Gwaii except for the custom-cut mill which is owned by Abfam. Therefore, wood chips are not currently a significant consideration unless a portable chipping mill is brought to Haida Gwaii. The economics of such an operation are not known at this time as none of the existing license holders have implemented this in their operations.

Wood pellets

Wood pellets are a possible cargo for the barge however there are issues with the delivery of this product to market, required capital investment and no benefit to be leveraged from a containerised barge. Wood pellets are shipped in bulk, just like grain and coal; hence the containerization of wood pellets would not be of specific benefit. The wood pellet terminal in Prince Rupert is owned by Pinnacle Pellet and is likely to be used solely for Pinnacle's own export product from pellet mills in Houston, Prince George, Quesnel and Williams Lake. The terminal would need a special piece of equipment to unload the wood pellets from the container.

Normally, wood pellets are made from sawdust, woodchips and wood scraps from adjoining sawmills, which does not exist on Haida Gwaii at the moment. Wood pellets from bark are not in common use due to moisture problems with bark as an input and the ash content of the final product. The investment in a common size wood pellet plant is in the order of several million dollars. A significant volume of potential product would be required on a sustained basis to make such a plant effective.

Hog fuel

Hog fuel (unprocessed mix of coarse chips of bark and wood fiber) is a lower value cargo option. Hog fuel has a relatively high moisture content, but can be used a substitute for diesel. Hog fuel, due to its nature, is not suited for long transportation routes which limit its ability for export from Haida Gwaii.

Non-logging

Aside from the forest industry, there are several other industries based on Haida Gwaii which hold some potential for the export of goods. These are as follows:

- **Custom wood and other locally manufactured products.** There are approximately 70-80 people employed on the island in this sector. However, these types of products are typically physically smaller and of a higher value, and therefore, the shipping costs compared to product value are less of a concern than for logging. However, this cost is still relevant for large furniture items and crafts (e.g. totem poles). The volume of goods from this sector being exported is currently low.
- **Commercial fishing**. Though commercial fishing exists on the island, it is only during summer months and the fish would be transported back to the mainland. This cargo requires specialised containers for transport, and therefore would require a modified container for transport.
- **Aquaculture**. The industry has been on the rise on Haida Gwaii though most ventures involved in the aquaculture industry are still in early stages and have only recently received approval and permits to move forward with building facilities on Haida Gwaii. Almost all products of aquaculture (sea cucumber, scallops and geoduck) from British Columbia, including those originating from Haida Gwaii, are sold to fresh markets in Asia. As a result, most products are expected to be transported by air either through Prince Rupert or Vancouver to international markets. There is potential for industry expansion because of ongoing supply shortages from the BC aquaculture industry.
- **Agriculture**. There is potential for export of specialty agricultural products where present transportation costs may have inhibited development of local industry. The local agriculture industry would also be made more competitive by a reduction in the costs of certain agricultural inputs – such as grain, feed and hay.
- **Recycled goods**. It has been identified that there is no economic means of disposing of products for recycling to collection points on the mainland. There is potential that this cargo could represent constant volume levels. However, the economic value of this would be low and with limited economic benefit.
- **Shake blocks**. At present, there is limited activity in this area on Haida Gwaii. There is potential for shake blocks export however, at the time of writing this report, this sector has only experienced several weeks of operation in the past several years. This lack of activity is attributed in part to availability of supply.

In addition to the benefits of lower transportation costs for exports, there are benefits which may be realised from cost reductions for imports. The major import cargos identified are as follows:

- **Food stuffs and non-perishable products.** The main importers to Haida Gwaii are the local Co-op in Masset and the AMS Building Centre in Queen Charlotte City. The estimated combined level of food and perishable items imported approximate 10-14 containers per week. The Timely and reliable delivery of supply is critical for perishable food items. Presently, such items are being brought in to the island by way of BC Ferries from Prince Rupert, with the approximate time for crossing being 5-6 hours. Non-perishable items include various household products, retail goods and small industrial or construction type items (building and roofing supplies).
- **Fuel**. At present, fuel is being imported to the island and this requires the operation of a 'dangerous goods' barge. Currently, approximately 9-10 million liters of diesel fuel is brought into Haida Gwaii for electricity generation by BC Hydro to the two diesel plants on the island (the Masset Diesel Generating Station and the Sandspit Diesel Generating Station, the latter being on Moresby Island). Home heating fuel, gasoline and propane are also moved to Haida Gwaii by barge, though information related to exact volumes of such goods were unavailable at the time of this report. Fuel cargoes can potentially make up a substantial amount of volume for goods moving to and from Haida Gwaii, though considerations for additional safety requirements and due diligence must be considered.
- **Logging equipment**. North Arm, through their own barge service, will make between 2-15 times per year runs a year for logging equipment. The volumes and value of such equipment are limited.
- **Construction**. There are imports to the island for building and other supplies which take place on a regular basis; however the volume of these shipments is relatively low given the limited amount of construction which takes place on the island.

We also note that there are two large capital projects which will require the shipment of construction materials into Haida Gwaii. These projects are:

- BC Hydro proposal. There are two proposed options which have been submitted to BC Hydro for either a "green diesel" operating facility or a 2 MW biomass plant. This project is currently awaiting approvals by BC Hydro;
- Queen Charlotte City Hospital/ Haida Gwaii Hospital Replacement project. This is an estimated $50 million dollar project, which commences in 2013 and is scheduled to complete by 2015.

The inflow of items on to Haida Gwaii itself is therefore fairly limited in quantities and volumes and is primarily brought in via a combination of BC Ferries, North Arm Transportation (for fuel) and by barge service on an ad-hoc basis by Wainwright.

Resupply cargo from Stewart

In addition to imports on to the island itself, there is potential for backhaul cargos to surrounding areas. As discussed in Section 3.2, the inclusion of a route involving Stewart from Prince Rupert would result in the potential for diversification of the risk of cargos being transported by the barge. Though there is no traffic for mine supply on Haida Gwaii itself, materials and goods for mine re-supply are likely to be a suitable return haul cargo to be sourced from deep sea container terminals in Prince Rupert to Stewart.

There are a number of existing and potential mines that could provide the basis for a flow of return cargoes to be carried on the container barge. Many of these mine projects and mines are in Stewart's port hinterland. For mines, a rough estimate of the volume of inbound mine supplies, excluding fuel for power generation and the re-supply of food and supplies for mine workers, can be obtained by examining the daily production rate of the mine. Based on a mine supply ratio of 1.1 tonnes/year for each tonne per day of processing capacity, this could result in total in 20,600 forty foot containers of cargo, if filled to maximum weight. The following table illustrates the potential supply tonnes/yr based on the process rate of each mine.

Mine Name	Process Rate tpd	Supply tonnes/yr
Galore Creek	84,000	92,400
Gibraltar	85,000	93,500
Huckleberry	15,000	16,500
KSM	120,000	132,000
Kutcho Creek	2,500	2,750
Morrison	30,000	33,000
Mt Milligan	60,000	66,000
Red Cris	30,000	33,000
Schaft Creek	65,000	71,500
Wolverine	1,700	1,870

Table 5.2 Estimated process chemicals requirements for existing mines and mines in advanced development near Stewart.

Summary of cargo potential

The following table provides an assessment of the available cargoes and illustrates those that are most likely to benefit from the Projects. The potential value demand by cargo and the ensuing revenue stream needs to be compared against the cost of investment in the terminal infrastructure and the barge service. Therefore, the cargo types have been considered against three criteria for the determination of the

current and potential economic value. An additional criterion has been added to determine suitability for transport by barge (i.e. whether the product is perishable or nor-perishable).

Cargo	Evaluation criteria			
	Present volumes of shipments from Haida Gwaii	Potential future industry growth	Economic value of shipment	Perishable*
Export from Haida Gwaii				
Logs and lumber	High[14]	Medium[15]	High	No
Wood pulp	Low	Low	Low	No
Wood chips	Low	Low	Low	No
Wood pellets	Low	Low	Low	No
Hog fuel	Low	Low	Low	No
Local manufactured products	Low	Low	Low	No
Shake and shingles	Low	Medium	Low	Low
Aquaculture	Low	Medium	Medium	Yes
Commercial fishing	Low	Low	Low	No
Agriculture	Low	Low	Low	Yes
Recycled goods	Low	Low	Low	No
Import to Haida Gwaii				
Food stuffs	Low	Low	Low	Yes
Fuel	Moderate[16]	Low	Moderate	No
Logging equipment	Low	Low	Low	No
Construction and other industrial	Low	Moderate[17]	Low	No
Mine re-supply**	None	High[18]	High	No

*Perishable products cannot be subject to long load times or transit routes due to their nature, making them less likely to be suitable for a barge service with a long route (e.g. Vancouver). The approximate transit time to Port Clements from Prince Rupert by barge is 15 hours, compared with 5-6 hours on BC Ferries (excluding loading and unloading time). The transit time with Vancouver by comparison is over 3 days.
** This cargo is only applicable to cargo being transported from Prince Rupert to Stewart. There is no value in this cargo being returned to Port Clements.

[14] The AAC for Haida Gwaii would result in 32,000 containers of product.
[15] Based on the assumption that the maximum AAC can be reached, versus the historical actual cut, which has fallen short of the potential volumes.
[16] The noted current volumes are approximately 9-10 million liters of fuel per annum.
[17] Moderate due to the major development projects identified.
[18] The mine resupply industry has the potential for 20,000 containers of product.

Based on the analysis above, the type of cargo that has the highest potential of benefitting from this project is logs. The main import/backhaul cargos identified are fuel (with the caveat that the fuel transportation would require modification to the barge vessel which is likely to negate any benefits) and mine re-supply (as a cargo transportable from Prince Rupert to Stewart).

5.2 Terminal facility development options

Moffatt & Nichol, in their Port Clements Barge Feasibility Study, identified three preliminary barge ramp concepts options for an industrial barge facility. The facility in question was to be situated in an industrial lot on the north side of the Village of Port Clements. In addition, we have considered the cost of a dredged channel option located at the same site in the Village of Port Clements.

Dredged Channel

The dredging of a channel to provide sufficient depth for a barge vessel to dock closer to or at the shore would reduce the time required to load and unload a barge vessel. There are two main options for dredging. The first option assumes a barge berth, with the barge berth being parallel to the shore ("Parallel Berth"). The second option is for a barge berth cut into the land, such that the barge would be surrounded on all three sides by land with the barge approaching the shore bow first ("Shoreline Cut Berth").

Parallel berth

The cost of a parallel berth is a product of the volume which has to be dredged and the cost of dredging. The estimated channel required to access the barge dock would be 430 metres long and 400 metres wide, with the average depth of material to be removed of about 4.8 metres[19]. The length is determined by the depth of water as illustrated in the Moffatt and Nichol report – 6.74 metres is achieved at about 430 metres from the high tide mark. The depth is required due to the draft of the proposed barge (Mauna Kea). In addition, the proposed barge (discussed below in Section 5.3) is about 120 metres long and will need a channel width of about three times its length for manoeuvring into and out of the dock (360 metres) plus room to allow for side cuts to maintain underwater slope stability. Therefore, the total volume of material to be removed is at least 400 m x 430 m x 4.8 m = **825,000 m^3**.

An approximation of the cost of dredging is **$12 per m^3**, based on comparable dredging projects in the Lower Mainland, including an allowance for higher costs due to the remote location of Haida Gwaii.[20] This would therefore result in an approximate cost of $10M for the dredging work, which is significantly more expensive than a Shoreline Cut Berth option (discussed below). In addition to the dredging, additional construction costs for the berth are approximately $1.8M. The total cost for this option, inclusive of environmental, project management and procurement costs, would be thus approximately **$15M.**

Shoreline cut berth

A shoreline cut berth would consist of a channel and a berth. The channel would need to be, 430 metres in length and approximately 90 metres wide. The width is determined by the approximate width of a barge (20 metres) and based on TERMPOL[21] guidelines, a channel should be four times the beam of the

[19] Maximum high tide is +2.9 metres according to the Moffatt and Nichol report. Assuming a constant grade to the sea floor from deep water (-6.74 metres) to the maximum high tide line (+2.9 metres), the average depth of material to be removed would be about 4.8 metres

[20] Recent US projects on a similar scale have seen a cost of approximately $26 m^3.

[21] "Technical Review Process of Marine Terminal Systems and Transshipment Sites". This is an exclusively voluntary process which developed guidance on navigational risks associated with marine terminals. The US Army Corps of Engineers [USACE] marine design manual recommends a channel width of 2.5 to 4 times vessel beam plus a side slope allowance.

vessel (that is, 80 metres) whilst allowing 10 metres of additional width to be dredged on a slope to stabilise the seabed. The depth required is 6.74 metres, the same as noted above. The berth is estimated to require dimensions of 120 metres by 30.5 metres by 8 metres. The total amount of dredging therefore required is **215,000 m^3** equating to a dredging cost of $2.6M. This option would also require additional sheet pile walls. Based on the costing contained within the Moffatt and Nichol report cited previously, this would be a cost of **$2.39M**.

In total, inclusive of the dredging costs, the sheet pile walls plus environmental, project management and procurement costs, the cost of this option may be approximately **$7.4M.** This cost excludes the cost of equipment and land preparation for the site.

Dredging risks and conclusion

There are inherent risks in the use of a dredging approach – namely, that it is difficult to determine in advance the composition of the seabed and whether this contains bedrock which is expensive to remove, and secondly, whether there are any environmental related issues from dredging which may arise – for instance, contaminants from previous log handling. There is also the additional cost of the disposal of dredgate, given that there are likely to be significant quantities of organic material on this site, which may translate to additional costs.

In addition, the choice of a dredged trench would result in a higher ongoing annual maintenance cost due to annual siltation of the dredged trench by tidal currents.

Causeway

Excluding the options discussed above, there is a requirement that a causeway be constructed to a sufficient depth of water requisite for a barge vessel due to the water depths located beside the Village of Port Clement. These depths are estimated to be between 380 to 406 metres from the shore. Two options for the causeway were identified: a filled rock causeway or a piled causeway (composed of steel pipes driven into the seabed and a concrete deck). The former is a more cost effective solution, though it has a large environmental impact due to the large footprint. There is some variation in the expected cost of the causeway depending on the barge ramp option. Due the environmental impact of the filled rock causeway, it was noted that further investigation would be required with the Department of Fisheries and Oceans and modelling of the coastline impact be undertaken.

It is feasible that a mixed option, of a partially dredged channel combined with a shorter causeway be constructed. The cost of this option would be broadly in proportion to the cost of the component parts discussed above. There have been no engineering studies conducted on such an option to date.

Barge ramp options

In addition to the causeway, a barge ramp will be required regardless of the causeway options pursued. Moffatt and Nichol[22] identified three barge ramp concepts as follows:

- **Concrete foreshore ramp**. This design is for a boat launch ramp which requires the barge to beach onto a concrete ramp. This is the simplest form of facility and lowest cost. The downside is that there is a risk of hull damage to the barge, as the barge has to beach on top of the ramp. This option is not practical for the proposed barge (Mauna Kea) which uses cranes to unload.
- **Bulk head option.** The Moffatt and Nichol design proposed a three stage bulk head option for three different elevations and grades for loading and unloading which would be performed with a steel ramp. The different elevations and grades are in place to take account of tidal variances. There would be no requirement for the beaching of a barge in such a design. It is likely that a more simple design for a single bulk head would be more appropriate given limited tidal variances at the proposed site.

[22] *Port Clements Barge Facility – Feasibility Study*, November 18, 2010

- **Mechanical barge ramp.** This mechanical ramp is a more complex and costly design which would be operated through life towers. This design is more flexible in that it can accept barges with or without ramps, and it can also be upgraded to support container handling equipment.

The range of cost estimates for these options is as follows, inclusive of the causeway cost. The table shows the midpoint of the range in bold with the estimated range in brackets. A full and updated cost analysis should be conducted before a final determination of the option which should be chosen.

	Causeway option	
	Filled rock causeway	Piled Causeway
Concrete Ramp	**$4.8M** ($3.3M to $6.2M)	**$6.8M** ($4.7M to $8.9M)
Bulkhead	**$5.3M** ($3.7M to $6.8M)	**$8.0M** ($5.6M to $10.4M)
Mechanical barge	**$5.7M** ($4.0M to $7.4M)	**$8.5M** ($5.9M to $11.0M)

In addition to the capital costs associated with either the dredged options or the causeway options, an estimated $500,000 to $1,500,000 of costs would be required for site preparation costs to level and prepare the land for the site. These costs will be dependent on whether ground-stored containers will be utilised in the storage area or whether the containers will be stored on trailers. Trailers will pose issues with respect to additional capital costs (potentially several million dollars) and maintenance, hence are not considered further in this analysis. Based on the development of a grounded container operation, the site development cost would be at the higher end of this estimate.

	Evaluation criteria						
Ramp option	Cost	Supports container transport	Beaching required?	Maintenance costs	Operating costs	Environmental impact	Barge loading type
Concrete Ramp	Low	Yes	Yes	Low	Low	High	RORO
Bulkhead	Moderate	Yes	No	Low	Low	Low	RORO, LOLO
Mechanical barge ramp	High	Can be upgraded	No	High	High	Low	Deck barges

The filled rock causeway with bulkhead option represents the most appropriate solution given initial costs, maintenance cost and operational cost, the ability to support container traffic, and the ability to avoid beaching of barges for docking, which integrates with the barge analysis discussed in Section 5.3 below. The total cost of the bulkhead and causeway, the ground preparation costs and container handling equipment would be approximately **$8.4M**[23], including an estimated $1.55M for the equipment required. This compares favourably with the dredging option noted above, as the dredging option would cost approximately $7.4M before consideration of the costs of equipment or site preparation.

5.3 Barge evaluation

We have identified the following criteria which the proposed barge project should be evaluated against in order to determine whether the project is technically feasible and represents economic benefit for the Village and island.

[23] That is, $5.4M for the bulkhead option, inclusive of the causeway, $1.55M for equipment and $1.5M for ground preparation costs.

Criteria	Evaluation
Ability to handle multiple cargo types	It is a requirement that in order to benefit the general local economy a low cost transport solution must be able to accommodate containers. This allows transport of multiple cargo types, including fuel, non-perishable items and large cargo type items. Therefore, the barge would have to be able to carry containerised cargo.
Cost	A barge which is able to handle a high volume of containerised cargo results in more cost efficient operations. Previous studies[24] have concluded that the cost per container is substantially reduced when containers are shipped in a stacked configuration, thereby maximizing value transported in each shipment.
Ability to dock in destination ports	Given the location of Haida Gwaii, there are two feasible port origin/destinations. Both ports require containerised barges. *Fairview – Prince Rupert*. Due to capacity issues at Fairview and due to the relative small size of a barge from Port Clements, it is likely that there would be requirement for the barge to possess its own cranes at Prince Rupert for the loading and unloading of containers. The barge would need to be able to transport containers for unloading at this destination as the port would accept containerised cargo. *Centerm - Vancouver* – The terminal has its own cranes capable of unloading the size of barge from Port Clements. Centerm has two berths and, therefore, more operational flexibility to handle container barges than a single berth terminal (such as Fairview).
Capacity	The capacity of the barge has to be sufficient to ensure that there is a reduction in cost gained through sufficient economies of scale; however, due to the volume of the expected goods being shipped, the barge itself should not be significantly over-sized with respect to the available supply of traffic.
Fit with existing proposed terminal solutions	The depth of the water beside the terminal represents a limiting factor on the maximum size of the barge. The proposed barge solution must fit within the proposed terminal location, water depth and berthing.
Market access	For log shippers and for value added shippers, a container barge allows connections to most major ports in China. The existing system for using log barges provides more limited access to the China market as only two ports, Putian and Taicang, handle logs transported via break bulk, which is how product handled by log barges is ultimately transported overseas.

As an example of the market cost of a suitable barge, Infinity West Enterprises, a local Haida Gwaii company, has proposed to purchase the Mauna Kea barge for an estimated purchase price of **$3M from Matson Line**. This vessel was formerly utilized by Matson Line to carry containers to Hawaii from Seattle and is thus suitable for operation in the waters between Haida Gwaii and the mainland.

[24] Moffatt and Nichol, *Port Clements Barge Facility – Feasibility Study*, November 18, 2010

This proposed barge solution would meet with the above criteria based on the physical specifications of this vessel. The vessel is able to transport 380 twenty foot equivalent containers and has dimensions which make it operable within the proposed Port Clements facility. The vessel is equipped with two cranes, and can transport refrigerated containers. Therefore it will be able to handle multiple cargo types and be able to dock in the destination ports noted above. This example of a barge vessel has been used in Section 6 for the purpose of quantifying the estimated expenditures and costs for the barge service. As there are a range of potential barge types which may be acquired, this represents an example case only.

5.4 Summary of Opportunities Analysis

- Only the transport of logs currently has the volumes to make the barge and facility economically viable. The potential volume of logs available for transport from Haida Gwaii is equivalent to about 32,000 containers per annum.

- The most significant types of potential backhaul cargos are fuel (estimated 120,000 gallons of fuel, which is being shipped presently to Haida Gwaii) and mining supplies bound for Stewart (potential volumes up to 20,600 containers, which could be captured by the barge service).

- There is more limited economic benefit given the volume and nature of other exports. For instance, the importation of food and related products to Haida Gwaii is estimated at only 120-168 trailers per annum.

- The cost and risks associated with dredging appear, based on preliminary analysis, to be punitive given the related benefits of the facility being on shore. A causeway of filled rocks between 380 to 406 metres would likely be required to provide sufficient depth for the barge from the Village of Port Clements. A bulkhead is likely the more cost effective option to take account of tidal variances. The total cost of the terminal, with ground preparation costs and equipment would be approximately $8.4M.

- A full cost analysis and updated cost estimates and engineering studies would be required to confirm these preliminary estimates and to determine a final selection between a dredged or causeway solution. It is possible for a mixed solution to be developed to partially dredge an area with a more limited causeway though no costing analysis has been conducted on this to date.

- The environmental impact of a filled rock causeway would be required.

- Given the requirement for logs and other product to shipped, containerised transport must be available.

- The estimated cost of a proposed barge system is assumed to be $3M. A barge capable of container transport would provide greater advantage to Haida Gwaii in terms of promotion of the local forest industry and other industry development on the island.

6 Cost and Benefit Analysis

This Section provides an assessment of the estimated costs and route options for the terminal facility and barge service, given the conclusions under Section 5. This Section also examines the key costing sensitivities and the economic impact of the proposed terminal and barge operations. All costing data is preliminary and is based on certain assumptions which are described more fully below[25].

6.1 Project financial feasibility

Based on the options identified in Section 5, estimates of the capital and operating expenditures of the proposed shipping routes have been developed. A summary of the estimated projects costs are described below. These costs are built on several assumptions, details of which can be found in Appendices A, B and C.

6.1.1 Terminal Facility

The costs of the terminal facility were outlined in detail in Section 5. The estimated operating costs, segregated between variable and fixed operating costs and capital costs are shown below.

Cost type	Cost description		Cost
Variable operating costs:			
Top pick container lift truck	Estimated cost of maintenance, which is calculated on a per hour basis.	$80/hour[26]	**$4.24[27] per m³** (assuming 0.012 hours per m³)
Front end loader	Estimated operating cost per hour, including fuel.	$135/hour[28]	
Labour rates	Estimated rate per hour.	$50/hour	
Fixed operating costs (per annum):			
Office costs	Estimated costs of administration, insurance, etc.		$100,000
Site maintenance	Estimated annual cost of maintaining the terminal facility.		$20,000
Hostler, log loader, trailer	Estimated annual maintenance cost, at 4% of capital value per annum.		$38,000
Total fixed operating costs			**$158,000**
Amortization of capital costs, per annum[29]			**$495,000**
Total fixed and capital costs, per annum			**$653,000**

[25] The majority of costing data contained within this analysis is sourced from Lauga & Associates Consulting Ltd, *Port Clements Barge Facility Analysis of Markets, Logistics and Costs.*

[26] Figure supplied by Western Stevedoring. A rate per hour is used for this item of equipment as a more exact figure was available for this cost.

[27] The cost is a composite of the labour costs times labour time, plus estimated time for loading each container multiplied the equipment cost per hour .This figure is sourced from Lauga & Associates Consulting Ltd, *Port Clements Barge Facility Analysis of Markets, Logistics and Costs.*

[28] Based on an $183.75 all-in hourly rate from the BC Forest Service, removing $50 per hour of labour

[29] Refer to Appendix C for details on this figure.

The operating cost per m^3 has been determined using the rates per hour noted above and an assumed time factor for loading and unloading a container. While the above analysis assumes that labour costs are entirely variable, it is likely that a certain minimum number of staff would likely have to be employed for the terminal to operate regardless of volumes. The analysis assumes that the labour in question can be contracted in for variable levels of work. The analysis has also made certain assumptions on capital maintenance costs, and the assumptions used are rates on a per hour basis for the top loader and an annual basis for other equipment.

Assuming that the capital costs can be covered by a grant, the fixed annual cost associated with operating the terminal is $158,000 per year, which will need to be recovered through terminal charges. In addition, for each m^3, it is estimated that the movement of cargo will cost $4.24 m^3.

If capital costs cannot be covered by a grant and the funding costs need to be recouped through terminal charges, based on a straight-line amortization of the capital costs, $653,000/annum would need to be recovered through terminal charges. This does not take into account any borrowing costs associated with these funds.

6.1.2 Barge service

The primary driver of the costs for the barge service is the estimated volume of logs which will be transported by the barge. The table below summarizes the estimated costs of the barge service and terminal facility (discussed in Section 6.1.1). It should be noted that these costs exclude the incremental revenue that could be earned from backhaul cargo to Haida Gwaii as this amount is considered nominal (as discussed in Section 5). The cost analysis is based on a number of assumptions which are contained in Appendix C. The barge vessel assumed for the purpose of the analysis is the Mauna Kea vessel, as noted in Section 5.

Based on our discussions with local industry on Haida Gwaii, the approximate current cost of the transport of logs by log barge from Haida Gwaii is **$9-11 per m^3** to Prince Rupert and is **$20 per m^3** to Vancouver. In addition to the cost of the barge transportation itself, there are additional costs which are associated with the logistics of log movements – loading, unloading, sorting and terminal handling costs at the port in Prince Rupert/Vancouver. These costs are estimated at **$14.50 per m^3** for the existing logging barges.

The table below presents the costs associated with three possible routes for the barge, together with a comparison to the existing costs which are being experienced. The routes which are assessed below include a direct route from (1) Port Clements to Prince Rupert; (2) Port Clements to Vancouver; (3) Port Clements to Stewart through Prince Rupert. These routes assumed no return cargos back to Port Clements. Due to the different distances involved, a route to Vancouver had a substantially lower number of possible trips per annum because of the additional time involved for travel, than the route to Prince Rupert.

An additional potential route is possible that extends the existing Port Clements to Prince Rupert route onto Stewart (and return). The primary benefit of the inclusion of Stewart is that there is a history of logs being available for export and mining supplies from Price Rupert to Stewart that could represent additional cargo (as discussed in Section 5.1). This would diversify the operation of the barge between Haida Gwaii and Stewart. However, serving this route would reduce the capacity for the project to service other routes. This routing does however provide additional sources of revenue should the demand for existing routes not use the existing capacity of the barge.

	Assumption index (Appendix C)	Port Clements to Prince Rupert	Port Clements to Vancouver	Port Clements to Prince Rupert and Stewart
Existing logging barge system				
Current market rates per m^3:				
Logging barge transport costs		$10.00	$20.00	$10.00
Loading and unloading costs	**B**	$14.50	**Note 1**	$14.50
Total		**$24.50**	**$20.00**	**$24.50**
Proposed barge system				
Variable operating costs, per m^3:				
Barge variable costs	**A**	$7.78	$22.05	$6.80
Terminal facility variable costs	**Refer Section 6.1.1**	$4.24	$4.24	$4.24
Loading and unloading costs	**B**	$8.00	**Note 1**	$8.00
Total		**$20.02**	**$26.29**	**$19.04**
Operating Cost Advantage/(Disadvantage), per m^3		**$4.48**	**($6.29)**	**$5.46**
Fixed operating costs, per annum:				
Terminal	**Refer Section 6.1.1**	$158,000	$158,000	$158,000
Barge	**A**	Nil	Nil	Nil
Total		$158,000	$158,000	$158,000
Amortization of capital costs, per annum:				
Terminal	**C**	$300,000	$300,000	$300,000
Barge	**C**	$495,000	$495,000	$495,000
Total		$795,000	$795,000	$795,000
Breakeven volume (m^3) required to cover fixed operating costs		**35,268**	**N/A**	**28,938**
Breakeven volume (m^3) required to cover fixed operating and capital costs		**212,723**	**N/A**	**174,542**
Maximum possible volume (m^3) for route per annum[30]		**380,000**	**156,000**	**226,000**
Current annual harvest of logs(m^3)			**560,000**	

Note 1 – For the route to Vancouver, the comparison has not been performed of the complete cost of the loading, unloading and booming costs due to the logical infeasibility of this route with the use of containers. The typical container would be provided on an arrangement whereby the cost would be typically free for five days however the cost thereafter may be approximately $100 per day per container (approximately $3.42 per m^3 per day). The time for the Vancouver route is 8.5 days and is therefore likely to suffer from such charges.

[30] The maximum volume is derived by the possible number of crossings made by the barge in a given year times the capacity of the barge. The maximum volume varies by route because the number of potential crossings varies.

The table above calculates the breakeven volume for the three identified routes, based on the assumption that the barge and the terminal service would charge existing market rates, and at that level, what volumes would be necessary to cover fixed operating costs, and fixed and capital costs. A volume above the breakeven level charging market rates would generate a surplus, based on the assumptions applied. The price charged would be able to be lower than market rates above the breakeven volumes.

The possible cargo volumes of logs were discussed in Section 3 and Section 5 of this report. The total harvest on Haida Gwaii in 2012 was 560,000 m^3. Therefore, achievement of the breakeven volumes appears feasible based on the volume of cut in the prior year for the Prince Rupert and for the Stewart routes but not for the Vancouver route. The Vancouver route has a higher cost than the market cost due to the lower volumes per trip which can be transported within the containerised barge than the existing logging barges, and due to the distance from Port Clements, cannot achieve necessary volumes to recover fixed or capital costs.

The costing for the routes which have been calculated below is based on the assumption that the barge vessel would be used exclusively for the route noted. It is possible that the barge could be used for a combination of the routes. The table below suggests the following:

1. The route to Prince Rupert and the route inclusive of Stewart have lower variable operating costs than the existing logging barge system and therefore have a higher contribution margin;

2. The route to Prince Rupert would be able to operate at a level where it is possible to recover both fixed operating costs and capital costs. The volume required to breakeven, inclusive of fixed and capital costs, is approximately 56% utilisation of the capacity of the barge and represents only 39% of the 560,000 m^3 of the annual harvest of logs. and would therefore need higher volumes to breakeven;

3. The route to Vancouver has significantly higher variable costs, negating any competitive advantage it has over current market rates. The higher variable costs are attributed to the longer travel distances in a containerized vessel. The current market is based on tugs hauling logs in water, which has a significantly lower cost. Therefore, this route may not be a competitive option. In addition, the costs charged by container lines for the containers on an extended route are likely to make this option cost prohibitive. The Vancouver option may result in several different end destinations, and given the high variable costs and the costs of the containers, the comparison of the existing system's cost of loading, unloading and booming against the cost at these multiple destinations has not been quantified

4. The costs involved exclude financing costs and inflation of the Projects, and furthermore, contain a number of assumptions which could result in a higher costs (refer to Section 6.2);

5. While this analysis assumes that the routes that would be operated by the project would be mutually exclusive, the number and mix of routes can be varied based on demand. The optimal mix depends would require an analysis of current and future demand and the contribution margin of each.

The table below illustrates the costs per m^3 for an assumed volume of cargo. In addition to the fixed and capital cost assumptions noted above, this table also includes a cost of financing. If the Projects are not funded through a capital grant, bank financing or some other form of municipal financing will be required and this will result in a financing cost. The financing cost is assumed for a loan equal to the amount of the initial capital investment in the project of $11.4M (ignoring working capital requirements), borrowed at a rate of 4%.

	Port Clements to Prince Rupert (Note 1)	Port Clements to Prince Rupert (Note 2)	Port Clements to Vancouver (Note 1)	Port Clements to Prince Rupert and Stewart (Note 1)
Assumed volume	304,000 m^3	196,000 m^3	124,800 m^3	180,800 m^3
Assumed capacity of maximum annual barge volume	80%	51%	80%	80%
Existing log barge service, per m^3	$24.50	$24.50	$20.00 (Note 3)	$24.50
Operating (variable and fixed) costs of proposed barge system, per m^3 (Note 4)	$20.54	$20.83	$27.56	$19.91
Operating Cost Advantage/(Disadvantage) for Proposed Barge System, per m^3	**$3.96**	**$3.67**	**($7.56)**	**$4.59**
Capital and financing costs, per m^3	$4.10	$6.36	$10.01	$5.56 (Note 5)
Contribution margin net of capital and financing costs, per m^3	**($0.14)**	**($2.69)**	**($17.57)**	**($0.97)**

Notes:

1. Assumes that the service utilizes 80% of the capacity of the proposed barge
2. Assumes that shipments are limited to 35% of 2012 harvest achieved of 560,000 m^3
3. Various loading and unloading charges could be contemplated for Vancouver due to the number of potential destinations to mills or marine terminals and it is unclear if there would be a differential. These have been eliminated for the comparison of the existing and potential barge services due to this uncertainty.
4. Includes both variable and fixed operating costs, but excludes capital and financing costs.
5. As this route will ship cargo between Prince Rupert and Stewart, only 42% of the capital and financing costs of the barge have been allocated in the figure above. The remaining element would be charged to third parties for the use of the barge on the route between Prince Rupert and Stewart.

The above table illustrates that without financing being in place to fund the capital requirements of the barge service and terminal facility, there would be an operating loss for each of the identified routes. The operating loss for the route to Prince Rupert, though only slightly negative, has to be considered in the context of the possible sensitivity of costs to factors such as lower volumes of traffic, which is considered in Section 6.2 below. The impact is also illustrated in the third column of the table above, where the annual volume of shipments declines from 304,000 m^3 to 196,000 m^3. In this instance the overall loss becomes significant.

While a potential service between Port Clements and Vancouver does not appear to be viable, there may be specific circumstances where such a service could be viable, for example: higher value logs where existing services are less cost effective, delivery to specialty mills where logs in containers are easier to receive or to meet smaller volume export commitments through Vancouver. This route could be operated on an as required basis in conjunction with more regular service to Prince Rupert.

6.2 Sensitivity Analysis of Costs

The analysis performed in Section 6.1 contains a number of cost and other assumptions. In order to highlight the sensitivity of the barge and terminal service to cost variances, the following key variables have been identified. The table shows the illustrative impact on the costs per m^3. In addition, the

estimated impact on the breakeven volume required to recovery of fixed operating costs has been calculated for the sensitivities noted. This table assumes no costs of financing.

Variable	% increase	Port Clements to Prince Rupert	Port Clements to Vancouver	Port Clements to Prince Rupert and Stewart
Contribution margin of proposed system versus market rates, per m^3		**$4.48**	**$0.21**	**$5.46**
Barge service – impact on cost per m^3				
Barge variable costs (m^3)	30%[31]	$2.33	$6.62	$2.04
Loading and unloading costs (m^3)	10%	$0.80	$0.80	$0.80
Terminal facility – impact on cost per m^3				
Variable operating costs (m^3)	10%	$0.42	$0.42	$0.42
Impact on breakeven volumes:				
Barge variable costs	30%	38,357	N/A[32]	17,261
Loading and unloading costs	10%	7,667	N/A	4,968
Variable operating costs	10%	3,687	N/A	2,436

The variances noted above have been calculated in isolation. It is possible that several negative variances may occur together or that positive and negative variances may have an offsetting impact.

6.3 Economic Impact Analysis

This Section of the report presents a summary of the economic impacts associated with the development and operation of the proposed terminal and barge service.

6.3.1 Calculating Economic Impacts

The economic impacts of the Project on British Columbia have been calculated using economic multipliers developed by BC Stats from the BC Input-Output (I-O) Model[33]. I-O models capture and disaggregate the entire production process of commodities in the economy. I-O commodities include both goods and services, including those provided by government. I-O tables are highly detailed linear mathematical models of the economy which trace the spending by various industries or commodity groups for a given period.

The data used in the model is collected by Statistics Canada on an ongoing basis and the BC Input-Output Model is recalibrated from time-to-time using this data. There are not significant changes in the economic structure of the country over short periods of time; hence the multipliers are relatively stable.

6.3.2 Definition of Economic Impacts

A number of economic impact measures included in this report are defined in this section. They include output, GDP, household income, employment, and tax revenues.

Output is a measure of the total value of production in all industries that is associated with project expenditures. It should be noted that output measures significantly overstate the total economic impact

[31] A 30% factor has been applied here as within the analysis in Section 6.1, we have assumed that a 30% discount from negotiated tug charter rates would be able to be negotiated based on a long term charter agreement.
[32] The Port Clements to Vancouver route does not breakeven given the upward swings in the costs noted.
[33] 2004 British Columbia Provincial Economic Multipliers and How to Use Them, BC Stats, March 2008.

of a project since they include the activities of every industry at every stage of production. The value of a single good or service that is used by many industries before it is sold to a final consumer may be counted multiple times in output figures.

The relationship between GDP and output is a useful analytical measure since it shows the extent to which industries rely on labour and capital as opposed to material and service inputs in production.

Gross Domestic Product (GDP) is a measure of the value added (the unduplicated total value of goods and services) to the BC economy by current productive activities attributable to the project. It includes household income from current productive activities (wages, salaries and unincorporated business income) as well as profits and other income earned by corporations Only activities that occur within the province are included in GDP.

GDP is the most appropriate measure of the overall economic impact of a project since the value of the work done by each industry is attributed to the producing industry, and is counted only once.

Employment impacts are measured in terms of full-year equivalent positions for ongoing employment (i.e., employment impacts associated with annual expenditures). Full-year equivalent positions are counted according to their duration and not according to whether they were full-time or part-time. Accordingly, an individual who is permanently employed for the entire year in a part-time capacity (e.g., hotel service staff) represents one full-year equivalent position or job.

Federal, provincial and local tax revenues include federal and provincial personal and corporation income taxes. Also included are sales taxes and other commodity taxes such as gas taxes, liquor and lottery taxes and profits, air transportation taxes, duties and excise taxes. Property tax revenues are not included in the estimates.

6.3.3 Direct, Indirect, and Induced Impacts

In the results presented in this report, we estimate direct impacts (i.e., the employment and value-added associated with the Project); indirect impacts (i.e. the employment and value-added associated with suppliers to the Project); and induced impacts (i.e., those employment and value-added impacts associated with the re-spending of direct and indirect labour income generated).

Direct impacts are the actual expenditures by the business on their direct operations. These include salaries, materials, purchased services, utilities, taxes and other operating expenditures.

Indirect impacts represent the effect of the activities of, and subsequent rounds of expenditure by, suppliers to the Project. Suppliers to the Project both employ their own workers and earn their own business income, and also generate demands for labour and goods and services produced by other industries. This pattern of expenditure flow continues in the economy and goods and services purchased in the first round ultimately become labour income, business income, and government income, or "leak" out of the economy as imports. The sum of labour income, business income, and government income constitutes value-added.

The induced impact measures the overall effect of more income accruing to local households. The estimates reflect spending by all workers (those working directly on the Project as well as those working in industries directly or indirectly supplying goods and services used by the Project). An example of an induced impact would include impacts associated with the goods and services purchased by YC employees and suppliers' employees using their wages and salaries earned.

6.3.4 Economic Impacts of the Project

The assessment of the economic impacts of the Project has been based on the total costs of operation of the most cost-competitive scenario of those that have been considered in this report – the Port Clements – Prince Rupert – Stewart barge service.

	Economic Impacts of Operations			
	Direct	Indirect	Induced	Total
Operating Expenses ($ million))	$4.7[34]			
Output ($ millions)	$4.68	$3.04	$1.78	$9.50
GDP ($ millions)	$1.78	$1.31	$0.98	$4.07
Federal Taxes ($ millions)	$0.19	$0.12	$0.07	$0.38
Provincial Taxes ($ millions)	$0.19	$0.09	$0.08	$0.36
Local Taxes ($ millions)	$0.02	$0.02	$0.01	$0.05
Employment (FTE)	23.7	19.1	15.1	57.9

The above exhibit illustrates the potential economic impacts on British Columbia of the estimated operational spending in the first year of full operation. Economic impacts outside of British Columbia are excluded. As indicated in this exhibit, the impact on GDP is estimated at nearly $4 million per year and employment is estimated at about 58 full time equivalent (FTE) jobs. The distribution of these impacts throughout the province is beyond the capability of the model to predict, but many will be in the region of the Project.

	Economic Impacts of Capital Expenditures			
	Direct	Indirect	Induced	Total
Capital Expenditure ($ millions)	$8.4[35]			
Output ($ millions)	$8.40	$4.59	$2.98	$15.97
GDP ($ millions)	$2.98	$2.04	$1.70	$6.72
Federal Taxes ($ millions)	$0.24	$0.18	$0.12	$0.54
Provincial Taxes ($ millions)	$0.41	$0.12	$0.13	$0.66
Local Taxes ($ millions)	$0.05	$0.03	$0.03	$0.11
Employment (FTE)	54.9	30.1	25.3	110.3

The above exhibit illustrates the potential economic impacts on British Columbia of the construction of the barge terminal. Economic impacts outside of British Columbia are excluded. As indicated in this exhibit, the impact on GDP is estimated at nearly $1.8 million over the construction period and

[34] This figure reflects the estimated total operating expenses of a barge and terminal facility based on the volumes applicable for a route involving Prince Rupert and Stewart assuming a volume of 178,000 m^3 of logs being transported from Port Clements. This figure excludes capital expenditures.

[35] This figure only includes the capital expenditure for the terminal. The capital expenditure for the barge is not relevant as it is being made out of country and is for an existing capital asset.

employment is estimated at about 110 person years. The distribution of these impacts throughout the province is beyond the capability of the model to predict, but many will be in the region of the Project.

6.3.5 Incremental Economic Activity

Impact on industry

In addition to the economic impacts associated with the construction and operation of the project, Haida Gwaii may well experience additional economic impacts associated with industries that are now able to better compete in domestic and international markets. These impacts are difficult to quantify due to the unknown response by industry sectors located on Haida Gwaii to the presence of the new service.

Cost of living impacts

The costs of transportation of cargos by BC Ferries on to the island were estimated, based on discussion with local business, to be approximately $1,200 per container36. The cost of a container by barge (a container being able to carry approximately 29.2 m3) is approximately $365.58 based on a $12.52 per m3 cost37 and would therefore represent a significant reduction over existing costs. However, as noted, there is limited volume of such cargos which can be shipped. Nonetheless, assuming this cost differential and just four containers per week, the costs savings for a business currently shipping containers using BC Ferries on an annual basis would be upwards of $173,00038.

6.3.6 Caveats to the Analysis

The results presented in this Section of the report need to be interpreted with care. The key caveats regarding these estimates of economic activity are as follows:

- These impacts are only estimates based on economic linkages that occurred in the BC and Canadian economy at the time the economic multipliers developed by BC Stats were developed;
- There are no guarantees that these economic impacts will occur as predicted, or at all;
- These economic impacts will not be isolated to Haida Gwaii;
- To the extent that the new marine terminal and barge service supplant an existing service of some sort, there will be an offsetting decrease (at least in part) in economic activity in the Province.
- To the extent that the government funding is made available for the construction of the barge terminal, this may limit government funding of other projects elsewhere in British Columbia, hence the net economic impacts may not be as shown.

6.4 Qualitative Project Pros and Cons

In addition to the quantitative costs, risks and potential benefits which have been discussed above, the following qualitative project pros and cons of the terminal and containerised barge service have been identified. As these benefits accrued to the stakeholders and require both the terminal and the barge service, the qualitative analysis is assessed on a combined basis.

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[36] Note this assumes transportation costs only one way from Prince Rupert to Port Clements via Skidegate inclusive of transport by truck. Discussions with local business put this figure at a far higher rate with an all in cost of near $7,500 per container which includes significant land transportation costs and return of empty containers.

[37] The costing applied here is the operating costs of the barge excluding overhead, plus the variable costs of the terminal, for a Prince Rupert route.

[38] That is, the $850 cost advantage multiplied by an expected 208 containers per annum. This cost comparison excludes overhead costs and reflects only operating costs of the terminal and barge facility.

Summary	Description	Stakeholder impacted
Cons		
Loss of control	The use of a single barge system will reduce the ability of the local forest companies to exercise control and discretion in the transportation of their goods.	Local forest industry.
Reduction in cargo traffic volumes	The reduction in cargo traffic volumes from BC Ferries may have consequences for frequency of service from BC Ferries in future periods.	BC Ferries/Island residents
Pros		
Increased access to export markets	The transportation of logs in containers provides greater access to export markets in China. Debarked logs in containers can go to any port in China with much less onerous phytosanitary controls and regulations. In addition, a greater number of ports are able to receive containerised cargo. Due to the limited domestic demand for low grade hemlock in Canada, log exports enable the full value of the logs cut on Haida Gwaii to be realized.	Local forest industry
More frequent shipments	As the barge service can operate with a smaller volume cargo than a log barge, logs do not have to be stockpiled over such a long period of time. This means that there is less of a financial lock up period for the local forestry firms with respect to inventory. The faster service may enable capture of better pricing.	Local forest industry
Improved log product	The transportation of logs by container reduces the potential for damage to the logs and eliminates the time logs have to spend in salt water.	Local forest industry
Increase in tourist traffic	The use of a containerised barge service would be able to reduce the lock up of reservations made for BC Ferries routes, which are currently made by local importers in order to ensure supply. This lock up of scheduled ferry sailing space acts as a discouragement for tourist traffic. There is a potential for additional tourist traffic if this lock did not occur due to imported goods to Haida Gwaii using the proposed barge service.	BC Ferries/Tourism industry

In addition to the above identified qualitative benefits, there is the further benefit that the reduction in transportation costs would bring to the benefit other industries on Haida Gwaii. A terminal and barge system could aid in the development of industries where there is a low level of activity at present. The identified industries in this report, including shake production, aquaculture and agriculture, pulpwood and wood chips from logging, would be able to benefit from lower transportation costs. It is not quantifiable how many future potential jobs would be able to be developed in such industries.

6.5 Summary of Qualitative Analysis

- The proposed terminal facility will have a low level of fixed overhead costs, assuming the funding of capital infrastructure investment by the Province. As the majority of costs are variable and relate to the volume shipped through the terminal facility, the required recovery of costs for the facility is close to its estimated variable costs. The variable costs depend largely on the nature of the required maintenance for the facility and how labour costs vary in relation to volumes.

- This report has examined three potential routes involving a containerised barge service – a route to Prince Rupert, a route to Vancouver and a route to Prince Rupert inclusive of Stewart

- Based on the analysis, if capital infrastructure investment is funded, the operating costs for the route to Prince Rupert and the route to Stewart would be lower than the existing costs. Without funding for project capital infrastructure, the service may not be economical or competitive with the existing system.

- In addition, the use of a containerised cargo barge should also provide qualitative benefits in addition to lower transportation costs. These benefits include greater market access to foreign export markets, such as China, and a reduction in inventory cycle from log build up.

- The containerised barge service would be able to provide cheaper transportation of cargos goods to Haida Gwaii for the local population.

- The impact of the operation of the terminal and barge service on Provincial GDP is estimated at about $4 million per year and the impact on employment is estimated at about 58 full time equivalent (FTE) jobs.

- The impact of the construction of the barge terminal on Provincial GDP is estimated at about $6.7 million and the impact on employment is estimated at about 110 person-years of employment.

- There is an unquantified impact on other industry development which may occur as a result of the reduction in transportation costs.

7 Project Risk Analysis

7.1 Identification and Evaluation of Project Risks

This Section provides a high level overview of the key risks identified with respect to the project. The risks with respect to the project are assessed as either "low," "medium" or "high" risk. The definition of risk used in this context is a combination of impact and probability which determines the overall risk assessment for each identified risk. Section 7.2 discusses the possible risk mitigation strategies which could be applied to reduce the level of the risks identified.

Due to the similar nature of both the terminal project and the barge project, many of the risks involved are in common. However, certain risks are unique to one of the projects. The risks noted have been linked to the terminal, barge or both and identified as such.

Risk	Probability	x Impact	= Risk	Rationale
External dependency with local industry BOTH	High	High	High	There is a significant risk that the barge would not be economically feasible if local industry stakeholders did not elect to use the Village's terminal and barge facility (for instance, a significant amount of the AAC is held by Taan Forest Inc.). There is a risk of resistance to the barge service, based on the loss of control of logistic operations to the Village. In addition, there is the continuing risk of local industry players switching to other services if the economics are more favourable which may render the barge uneconomical.
Capital cost management and control TERMINAL	Medium	High	High	There is risk of cost overrun in the initial capital construction of the project which may arise from factors such as availability of labour; finalising engineering and other design features; securing subcontractors to complete the project on a timely basis.
Operational cost management and control BOTH	Medium	High	High	The ongoing operation costs of the terminal and barge include labour could be higher than initial estimates. In addition, a key factor is the ability to secure tug charter on a competitive basis, the costs of which will be determined by a third party company.
Economic risks impacting shipping volumes BOTH	Medium	High	High	Over the previous decade, there has been a significant level of price volatility in the timber industry, driven in part by the economic situation globally and in particular, with the U.S. construction industry. China now plays a more significant role in the export market for BC timber and therefore there is a greater dependency of the forestry sector on this market. There are continued issues with the economic recovery and an associated number of political risks which may impact the demand and therefore price of logs. This could therefore impact the volumes which would be shipped by the terminal facility and barge service, which impacts the cost competitiveness of the facility if sufficient volumes are not achieved.

Risk	Probability	x Impact	= Risk	Rationale
Competition from local barge operations BOTH	Medium	Medium	Medium	There is a risk that the Village's terminal and barge proposal be undercut by competition from third party competitors who could offer log barging services at a lower price. This risk is moderated if there is commitment from local industry participants.
Governance and management BOTH	Medium	Medium	Medium	In order to ensure the effective operation of the barge and terminal, consideration will have to be given to who locally has the skill and expertise in order to be able to manage the service from an operational standpoint. From a local relationship standpoint, there is a risk of ensuring that all local stakeholders are properly managed to ensure that there is no risk of alienation.
Barge availability where barge is not acquired TERMINAL	Medium	Medium	Medium	In the scenario where the terminal is constructed but a barge is not acquired, there would be the risk of being able to locate and encourage use of the terminal by an available barge which is capable of carrying containers. There is a risk present that such a barge may not be available within the local vicinity.
Tug charter availability BARGE	Low	High	Medium	There is a risk that if there is not an available tug which can be chartered, the barge service will not be able to run. Consideration will therefore have to be given to ensuring that there are available tugs which will be able to run with the barge over future periods.
Access to terminal in Prince Rupert, Vancouver BARGE	Low	High	Medium	Obtain access to a terminal facility in order to be able to unload containers is important otherwise the venture would not be able to function. To mitigate this risk, more formal commitments with Price Rupert should be secured prior to the commencement of capital construction, in addition to other funds is significant to the overall project.
Backhaul cargo BARGE	Low	High	Medium	The quantification of the costing with the extension of the route to Stewart is based on the premise that suitable backhaul cargo be obtained for transport. Given that there should be sufficient mining supplies requiring transportation, there should be adequate available cargos, but the barge service would be forced to compete with other services for this destination.
Barge maintenance BARGE	Low	Medium	Low	As there will be a single barge being run from the terminal, the maintenance of the barge is important to avoid the risk of downtime and to ensure the retention of customers for its service.
Access to labour TERMINAL	Low	Low	Low	There will be a requirement that labour be employed in order to operate machinery at the terminal, and this will therefore depend on ensuring that appropriate personnel can be hired and retained.

7.2 Mitigation Options for Identified Risks

For each of the risks which have been identified above, a series of risk mitigation action could be undertaken to reduce the identified risks. These are identified as below.

Risk	Risk mitigation options
Cost management and control	• Capital construction overruns. Consideration has to be given whether the construction of the terminal will be outsourced or if performed directly by the Village. An outsourced fixed price contract could be obtained to ensure that the cost is capped. • Labour cost variability. The control of labour costs will rely on ensuring that operator at the terminal hires and employs an appropriate level of staffing to ensure costs are kept to a minimum. • Charter costs. Charter costs will be best controlled by the negotiation of a charter rate on a longer term basis in order to achieve the maximum discount from the standard charter rate.
Economic risks impacting forestry sector	There is limited ability to mitigate the risks associated with the macro-economic conditions in Canada, the US or China which will ultimately drive prices in the forestry sector. As prices cannot be controlled, the ability to manage the downside risk on costs is important. Therefore, consideration should be given to means by which the initial capital outlay may be reduced and committed costs can remain flexible. In order to mitigate this risk, consideration should be given to leasing a barge, as opposed to buying, which provides flexibility for cancellation.
Competition from local barge operations	The key actions which can be taken in this regard are ensuring competitive costs and development of strong relations with stakeholders. Contracting for minimum volumes would bring certainty of costs to the forestry company and the barge and terminal facility.
External dependency with local industry	In order to ensure appropriate buy in to the business plan, inclusion of local parties into the planning process is critical to ensure that appropriate support for the project is obtained and communication of the economic benefits, both in the short and long term, are adequately communicated to ensure participation.
Governance and management	The use of an independent outside expert company to manage the terminal operations would be beneficial as this would bring in the required skill and experience. An outside independent third party may help maintain a sense of impartiality.
Barge availability where barge is not acquired	Market analysis would have to be conducted to ensure that, prior to the terminal construction, that sufficient barges do in fact exist that are capable of carrying containerised cargo. This risk could also be mitigated through exploring leasing, partnership or other ventures to secure long term commitment for utilisation of the capacity of the terminal.
Tug charter availability	A suitable tug charter service should be identified and it should be ensure that there is long term ability of the tug service to operate with the barge. This risk can be mitigated with adequate exploration of the available options.
Barge maintenance	This risk can be mitigated through ensuring regular upkeep and maintenance is performed on a timely basis or contracting this out to a third party
Access to terminal in Prince Rupert, Vancouver	This risk related to the ability of the barge itself to be able to unload its cargo at destination. The risk can only effectively be addressed by ensuring that agreements are made with the respect terminal authorities prior to construction.
Backhaul cargo	The risk with the backhaul cargo is due primarily to securing supply and ensuring competitiveness against other barge/shipping operations. The main mechanism of ensuring that there is sufficient backhaul cargo would have to ensuring that there are skilled personnel in place who can identify available opportunities and negotiation these through to successful contracts.
Access to labour	This risk can be mitigated by ensuring appropriate pay and benefits are offered for available positions.

7.3 Risk Assessment of Status Quo

This Section discusses the potential impacts of not proceeding with the project, in relation to the financial and economic impacts. Sections 7.1 and 7.2 discuss the risks associated with proceeding with the project; however inaction has its own risks. As noted in Section 3, Haida Gwaii has suffered from population decline in recent years, attributable in part to the limited economic opportunities on the island. The risks of not proceeding with the project are identified as follows:

Risk	Probability	x Impact	= Risk	Rationale
Inability to compete in logging market due to high transport costs	High	High	High	Due to the high cost of transportation on and off of Haida Gwaii, the maintenance of the current barge logging system may mean that that the full AAC on the island never reaches its potential cut, which restricts economic development on the island.
Access to foreign market opportunities	High	Moderate	High	Without the development of a containerised barge system, the ability of logging companies from Haida Gwaii to access additional foreign markets, in particular China will be lost.
Continued high import costs impacting local residents	High	Moderate	Moderate	The existing system of importation is expensive for local residents. This impacts the general quality of living for residents across the island.
Indirect impacts on other industries	Moderate	Moderate	Moderate	Without the development of the logging industry, the spin off benefits to the Haida Gwaii economy will be lost. The positive economic impact detailed in the economic impact analysis shows that a terminal and barge system will create a number of full time equivalent employment positions and an improved logging industry will have positive economic effects on other industries.
Development of other industries	Moderate	Moderate	Moderate	Without a barge system which can transport containers, it will be more difficult for local industry to develop given the high level of transportation costs.

8 Recommendations

The following recommendations are provided to proceed to project implementation:

1. Discussion, participation and planning are essential with local industry. The success of the terminal and barge system is dependent upon participation and support. It is recommended that a full and detailed consultation be made with local industry.

2. For the project to be competitive, control of costs will be critical as the barge will face competition from existing logging barges. Therefore cost uncertainties should be addressed including:

    a) The capital cost of the terminal should be more fully developed through detailed costing by a qualified quantity surveyor and/or engineer;

    b) Tug charter costs should be confirmed and negotiation of terms including potential costs should be secured. Tug costs will be the primary ongoing cost of the operation of the barge;

    c) The cost and risks of acquiring a barge should be reviewed and assessed again chartering and other options;

    d) Selection of a qualified barge and terminal operator will be important to ensure the operations are managed well and risks mitigated;

    e) Minimum transport volumes should be contracted with local forestry companies.

3. Grant or other funding for initial capital costs should be identified and the applicability process started.

4. Determining potential environmental impacts should be undertaken. Discussions should be initiated with the department of Fisheries and Oceans and modelling of the coastline impact of the proposed terminal facility as required. It should be ensured that such environmental impact assessment and cost of mitigation be taken into account in the analysis.

9 Project Management Strategy and Implementation

The purpose of this Section is to articulate the required implementation and project management aspects with respect to the project. This Section will review the options for project governance, including how the project will operate in relation to Village of Port Clements and in relation to the Misty Isles Economic Development Society, including risk management, budget and performance measurement relevant to the continued future operation of the project.

9.1 Governance

We understand that it is the desire that the facility be publicly controlled. An appropriate public governance structure is one where the safeguarding and appropriate use of financial and other resources are addressed; vesting of the ownership of assets and the degree of freedom available to modify or pledge the assets; the processes established for decision-making and for ratification of decisions; and limits established as to the scope of activities and operations to be undertaken.

In a ports setting, the governance structure influences several important factors:

a) Planning and approval processes: These processes need to be defined up-front and roles that each of the stakeholders group play in the planning and approval process. This process should address the types and number of stakeholders, levels of government significant milestones and timelines.

b) Representation on the Board of Directors: The membership of the Board should be carefully examined to ensure appropriate stakeholder representation. Membership may include representatives of one or more levels of government (federal, provincial/state, and local), port infrastructure operators, users of port facilities, and the general public.

c) Operations: The scope of permissible or desirable operations needs to be carefully defined. The range of scope varies depending on governance and jurisdiction, including the mix of marine versus non-marine activities and the balance sought between profitability and economic development; extent to which operations are privately controlled or available to multiple users

d) Transparency: As a public-owned asset, it is important that transparency is maintained throughout the process to demonstrate how decisions are being made and the rationale behind them. This includes ensuring sufficient and appropriate documentation is made available for public scrutiny and provides appropriate communication on decisions as they are made.

e) Allocation of risks and benefits: It will be important to articulate who will bear the risk of cash flow shortfalls and conversely how cash flow surpluses will be managed. This may include maintenance of reserve funds to protect against future uncertainties of accessing/providing subsidies from other public sources.

These considerations are explored further below.

Board Governance

The intent of the project is that the barge and terminal operation should be a publicly operated and owned facility in order to ensure that all residents of Haida Gwaii benefit from the facility. The ownership of the project can therefore either be held by the Village of Port Clements on behalf of Haida Gwaii, or by the non- profit society Misty Isles Economic Development Society (MIEDS). The Board Members of MIEDS are the Councils of Masset, Port Clements and Queen Charlotte, as well as the two Regional District Area D and E Directors. The use of MIEDS may be a more broadly accepted platform given the existing board constituents under which the project could be held and would also link in to future economic development plans. Under this platform, a sub-committee or Project Board could be created to act on behalf of MIEDS.

In order to ensure the effective functioning of the project, the Board should create clear job descriptions for Project Board/sub-committee members and Project Board Executive positions of the project in

addition to a clear charter and terms of reference for the project aims and goals. This charter will have to include details of the spending powers and authority of the Project Board; limits on its decision making powers; address details of the tariff and rates to be charged; address details of the financial goals, including distribution of funds and budget and capital expenditure approval, and specific direction on the remit in which the Project Board will operate.

An Annual Project Board Calendar should also be developed to ensure specific annual/quarterly/monthly accountability and reporting (as appropriate) to the whole Board of MIEDS/Village of Port Clements. Within this calendar, the annual budget and other performance metrics can be built in to the reporting cycle.

The project is dependent on the participation and continued commitment of the local forest industry and ultimately has to act in its best interests in order to continue to be economically viable. Therefore, it should be clear within the charter that the regular contact with that industry be included within the Calendar.

Legal title and legal structure

For a private port operation, the ultimate legal structure will be a legal contract which will acquire title to the land and hold legal title to the barge, any equipment and the terminal upgrades. It is recommended that legal advice be obtained on the precise nature of the legal structure which should be set up with regards to the project, to ensure 'rights of way' access to land and that the purpose of acquired lands is used for the purposes set out in the project.

9.2 Project and Performance Management Strategy

Phased implementation

The project will have three main implementation phases. Phase 1 of the project will be the pre-construction and design finalisation, securing funding, procurement and contract negotiation and consultation phase with local industry. At this stage, limited amount of funds will be required on the project; however, the project will be able to move from a preliminary plan to specific design involving more certain actual costs, volumes and tendering contracts. Phase 2 of the project will see the acquisition of the barge vessel and the construction of the terminal. Phase 3 will be the operation of the facility.

Upon the conclusion of the first phase of the project, the specifics of the costing information should be available in order that a decision can be taken prior to the commitment to the major capital expenditure on the program. If the costing at this stage of the project reveals that the project is not cost competitive and will not receive sufficient cargo volumes to ensure viability (i.e. that it will be to the detriment of the local economy) then the project will be halted.

Upon completion of the capital expenditures, the ongoing operations of the facility will commence. At this stage, as is outlined in Section 6.1 of this report, the majority of the costs post capital expenditure is variable and therefore, review of actual performance on an annual basis will inform the decision regarding the continuation of the project over coming years. Review will continue on a regular basis over succeeding years. As the cost of the terminal and barge will be a "sunk cost" at this stage, the view will be to examine the incremental future benefits and costs of continued operation.

Terminal facility day to day operations

There are two main options for the operation of the terminal on a go-forward basis. The first option is that the Village/MIEDS operate the terminal "in-house" – through the direct employment of suitable personnel to run the operation including facility operators and administrative personnel to maintaining the terminal itself.

The second option is that the management of the facility is delegated under the policies of the Project Board to a third party operator who is an expert in this area and would therefore be able to manage the

operations on a day to day basis. This option would not only bring in expertise but would also bring in the benefits of an impartial operator running the facility.

Performance measurement

Delivery of outcomes

The objectives of the project is to improve economic conditions on Haida Gwaii in order to reverse the decline in the economic situation, 'Outcome management' strategy is a concept involved in the measurement and assessment of outcomes, particularly relevant is public sector projects, where measures such as return on capital or financial performance are not necessarily the key metrics relevant to the success of a project. The assessment of a project can be undertaken as follows:

1. The cost savings of the project multiplied by the volumes transported would provide an estimation of the direct economic cost savings being generated by the barge and terminal.

2. The direct employment created as a result of the terminal and barge (refer also the economic analysis per Section 6.5).

3. Indirect measures which can be utilised. Such as:

    a. Increases in employment in affected industries

    b. Increases in the Allowable Annual Cut Harvested over preceding years.

    c. Increases in average earnings for Haida Gwaii.

    d. Decrease in the average price of goods on the island.

The results of the identified metrics will be communicated to the Project Board in accordance with the Annual Project Calendar.

Pricing and budgeting

The second aspect to performance measurement is the management of project costs. Project costs will have to be reviewed in accordance with a budget approved by the Project Board and will be subject to annual and quarterly review.

The budgets prepared will include both an operating budget and a cash flow forecast in order to manage working capital on the project, particularly during the early project phases. The pricing of the facility in accordance with the overall aims of the project will have to be cost competitive with the status quo on Haida Gwaii and therefore the pricing of tariffs will have to take account of the respective volumes and costs.

Achievement of cost reductions and improved volumes will be reflected in the costs savings by volume metric discussed above.

9.3 Project risk management

Risk management is the practice of identify, analyzing and assessing risks for the purpose of developing a strategy in order to be able to respond to and monitor those risks. Risk management is not about the elimination of risk to an organisation; instead, it is about setting the appropriate tolerances to risks which are assessed as being of sufficient exposure in terms of magnitude and probability.

Within the context of this report, there has been a preliminary identification of the key project risks and risk mitigation strategies (Sections 7.1 and 7.2).

On an ongoing basis, the development of a risk register to monitor and respond proactively to identify risks will be an importance aspect of delivering appropriate governance to the project.

The key stages involved in developing and continuing a risk management approach are:

1 Identifying Issues, Setting Context

2 Assessing Key Risk Areas

3 Measuring Likelihood and Impact

4 Ranking Risks

5 Setting Desired Results

6 Developing Options

7 Selecting a Strategy

8 Implementing the Strategy

9 Monitoring, Evaluating and Adjusting

The risk register will be developed and maintained by the Project Board and updated and reported to the Board on a periodic basis.

9.4 Change Management Strategy

In conjunction with a staged phased implementation approach, the stakeholders who will be principally impacted by the new service will be the local forest industry companies and competitive transportation services operating within the same service space. In order to therefore manage the transition to the new service, detailed consultation through industry group meetings should be held to ensure support of the proposal through a clear communication plan.

Within this communication plan, the concerns of industry and a response to these concerns will have to be addressed in order to ensure that all participants have appropriate participation with the proposed solutions to ensure its success.

Appendices

Appendix A – Assumptions within cost analysis

Fixed Capital Investments

The largest fixed capital investment is the barge terminal. Moffatt & Nichol examined three terminal options with costs ranging from $5 million to $9 million. Because the barge being proposed for the transport system has its own gear, the lowest cost option for a filled causeway to deep water ending with a bulkhead was judged to be sufficient. This option had a cost estimate of $5.3 million. Terminal capital investment and other fixed site capital investments were annualized on the basis of a capital recovery factor over a 20 years period at a cost of capital of 8%.

Terminal Mobile Equipment Capital Costs

Since equipment utilization will be relatively low, a capital recovery factor for 10 years and a cost of capital of 8% was applied to arrive at annualized costs.

Tug Charter Costs

By far, the largest single variable cost component is the cost of a chartered tug. When all costs are converted an annual basis, tug charter costs account for a substantial part of the total annual cost for all three routing options. The tug charter rate is provided by Seaspan as a "spot charter" rate. For a long term contract, it is reasonable to expect a lower charter rate. Accordingly, the transport cost estimate was based on a 30% reduction from the spot rate to reflect a long term contract.

Port Clements to Vancouver Option

This option has, by a wide margin, the highest transport cost of the three options. It is judged that there is little likelihood of finding substantial volumes of return cargos from Vancouver or from points between Port Clements and Vancouver. The main factors responsible for the high cost are distance and the lack of return cargoes.

Port Clements to Prince Rupert Option

This two port system has the advantage of simplicity, high capacity and the shortest service cycle for shippers. Unfortunately, its high capacity characteristic could be a disadvantage from a cost point of view. The option depends on a high percentage capture of the logs available for export. Since Taan Forest is the dominant potential shipper, the terminal and barge transport enterprise will be heavily dependent on one customer with this option. Another disadvantage of this option is the lack of return cargoes and little prospect of future developments that could increase the volume of return cargoes.

Port Clements to Prince Rupert to Stewart to Prince Rupert Option

This three port system has the advantage of the lowest costs, the most diverse shipper base, and the prospect of substantial return cargoes. There is also the potential for substantial increases in the estimated volume of return cargoes.

Appendix B – Barge Cycle Assumptions for Quantitative Analysis

1 Barge Cycle – Port Clement to and from Vancouver

a. **At Port Clements –** The tug and barge set will arrive and will be secured to mooring dophins at the barge terminal. An hour is allowed for this. The assumed load is 150 FEU's (forty foot equivalent unit container), a load factor of **79%** on the barge's maximum carrying capacity in containers. 145 empty FEU's and 5 full FEU's are unloaded at an assumed rate of 12 cycles per hour. 145 full FEU's of logs and, perhaps, some lumber as well as 5 empty FEU's are loaded on the barge, again at a rate of 12 cycles per hour. The time for unloading and loading is estimated at 25 hours. The loaded containers will probably be carrying their full cargo weight of 26.3 tonnes. A safety check plus cast off time of 0.5 hours is assumed.

b. **At Sea –** The 535 nautical mile distance from Port Clements to Centerm in Vancouver will be travelled at an average speed of 7 knots resulting in a travel time of 76.4 hours, one way.

c. **At Vancouver –** The tug and barge set will arrive and will be secured to the Fairview berth in an hour. The 145 FEU's of logs and the 5 FEU's of empties on the barge will be unloaded. 145 empty containers and 5 full containers will be loaded onto the barge. It is assumed that the Mauna Kea's cranes will handle the containers. In Vancouver, it is assumed that some return cargos for serve demand for goods on Haida Gwaii can be found. Hence, five of the containers on the return trip to Port Clements are full. To be conservative, it is assumed that Centerm's faster container cranes are not available and thus the total unloading and unloading time will be 25 hours. Again, a departure time of 0.5 hours is allowed.

d. **At Sea –** The 535 nautical mile distance from Centerm in Vancouver to Port Clements will be travelled at an average speed of 7 knots resulting in a one way travel time of 76.4 hours.

e. **Total Cycle Time –** The total cycle time is 205.86 hours. Based on 250 operating days per year, 29.15 trips per year can be made.

2 Barge Cycle – Port Clements to Prince Rupert

a. **At Port Clements –** The tug and barge set will arrive and will be secured to mooring dophins at the barge terminal in an hour. The assumed load is 150 FEU's, a load factor of 79% on the barge's maximum carrying capacity in containers. 145 empty FEU's and 5 full FEU's are unloaded at an assumed rate of 12 cycles per hour. 145 full FEU's of logs and, perhaps, some lumber as well as 5 empty FEU's are loaded on the barge, again at a rate of 15 cycles per hour. The time for unloading and loading is estimated at 25 hours. The loaded containers will probably be carrying their full cargo weight of 26.3 tonnes. A safety check plus cast off time of 0.5 hours is assumed.

b. **At Sea –** The 103 nautical mile distance from Port Clements to Fairview in Prince Rupert will be travelled at an average speed of 7 knots resulting in a one way travel time of 14.7 hours.

c. **At Prince Rupert –** The tug and barge set will arrive and will be secured to the Fairview berth. An hour is allowed for this. The 145 FEU's of logs and the 5 FEU's of empties on the barge will be unloaded. 145 empty containers and 5 full containers will be loaded onto the barge. It is assumed that the Mauna Kea's cranes will handle the containers. To be conservative, it is assumed that Fairview's faster container cranes are not available and thus the total unloading and unloading time will be 25 hours. Again, a departure time of 0.5 hours is allowed.

d. **At Sea –** The 103 nautical mile distance from Port Clements to Fairview in Prince Rupert will be travelled at an average speed of 7 knots resulting in a travel time of 14.7 hours.

e. **Total Cycle Time –** The total cycle time is 82.43 hours. Based on 250 operating days per year, 72.9 trips per year can be made.

3 Barge Cycle – Port Clements to Prince Rupert to Stewart

a. **At Port Clements –** The tug and barge set will arrive and will be secured to mooring dophins at the barge terminal in an hour. The assumed load is 150 FEU's, a load factor of 79% on the barge's maximum carrying capacity in containers. 145 empty FEU's and 5 full FEU's are unloaded at an assumed rate of 12 cycles per hour. 145 full FEU's of logs and, perhaps, some lumber as well as 5 empty FEU's are loaded on the barge, again at a rate of 12 cycles per hour. The time for unloading and loading is estimated at 25 hours. The loaded containers will probably be carrying their full cargo weight of 26.3 tonnes. A castoff time of 0.5 hours is assumed.

b. **At Sea –** The 103 nautical mile distance from Port Clements to Fairview in Prince Rupert will be travelled at an average speed of 7 knots resulting in a travel time of 14.7 hours.

c. **At Prince Rupert –** The tug and barge set will arrive and will be secured to the Fairview berth in an hour. The 145 FEU's of logs and the 5 FEU's of empties on the barge will be unloaded. 110 empty containers and 40 full containers bound for Stewart will be loaded onto the barge. It is assumed that the Mauna Kea's cranes will handle the containers. To be conservative, it is assumed that Fairview's faster container cranes are not available and thus the total unloading and unloading time will be 25 hours. Again, a departure time of 0.5 hours is allowed.

d. **At Sea –** The 117 nautical mile distance from Prince Rupert to Stewart will be travelled at an average speed of 7 knots resulting in a travel time of 16.7 hours.

e. **At Stewart –** The tug and barge set will arrive and will be secured to the coastal berth at Stewart Bulk Terminals in an hour. The 110 FEU's of empties and 40 FEU's of mine supplies on the barge will be unloaded. 110 full containers of logs and 40 empty containers bound for Prince Rupert will be loaded onto the barge. The Mauna Kea's cranes will handle the containers. The total unloading and unloading time will be 25 hours. Again, a departure time of 0.5 hours is allowed.

f. **At Sea –** The 117 nautical mile distance from Stewart to Prince Rupert will be travelled at an average speed of 7 knots resulting in a travel time of 16.7 hours.

g. **At Prince Rupert –** The tug and barge set will arrive and will be secured to the Fairview berth in an hour. The 110 FEU's of logs and the 40 FEU's of empties on the barge will be unloaded. 145 empty containers and 5 full containers bound for Port Clements will be loaded onto the barge. It is assumed that the Mauna Kea's cranes will handle the containers. To be conservative, it is assumed that Fairview's faster container cranes are not available and thus the total unloading and unloading time will be 20 hours. Again, a departure time of 0.5 hours is allowed.

h. **At Sea –** The 103 nautical mile distance from Prince Rupert to Port Clements will be travelled at an average speed of 7 knots resulting in a travel time of 14.7 hours.

i. **Total Cycle Time –** The total cycle time is 142.33 hours. Based on 250 operating days per year, 42.6 trips per year can be made.

Appendix C – Cost assumptions

Assumption A – Barge variable costs

The barge variable cost is the cost of chartering a tug. The amount of the cost is impacted by a) the tug charter rate b) the length of the trip for the route in question and the assumed sailing time and standby time estimated for that route and c) the assumed utilisation of the barge in question.

On the latter point, as the cost of hiring a tug must be determined on per trip basis, a further assumption has to be made regarding how much of the barge is utilised for that trip in order to determine the estimated costs per m^3. Though the barge cost is a variable cost, the nature of the cost is that it is a "stepped" cost, meaning that it will increase in increments depending on the number of trips where the barge is hired. The assumption made in the analysis is that the barge will be 80% before it is transported.

The additional assumptions are as follows:

a) Tug charter rates are estimated at $490 per hour sailing, $350 per hour standby;
b) For the routes, the following are the estimated sailing times:
   - To Prince Rupert - 73 trips per year, with 29 hours sailing time and 53 hours standby time (including loading/unloading)
   - To Vancouver - 29 trips per year, with 153 hours sailing time and 53 hours standby time (including loading/unloading)
   - To Prince Rupert/Stewart – 42 trips per year, with62 hours sailing time, 79 hours standby time (including loading/unloading)

Assumption B – Capital costs

The following are the assumed capital investment costs.

Project	Asset	Estimated useful life	Capital cost	Estimated annual depreciation
Barge	Barge vessel	10 years	$3,000,000, based on the estimated cost of acquiring the Mauna Kea.	$300,000
Terminal facility	Causeway and bulkhead	20 years	$5,300,000	$265,000
Terminal facility	Storage area	20 years	$1,500,000	$75,000
Terminal facility	Top pick container lift truck	10 years	$600,000	$60,000
Terminal facility	Hostlers and trailers	10 years	$300,000	$30,000
Terminal facility	Log loader	10 years	$650,000	$65,000
Total			**$11,350,000**	**$795,000**

Assumption C – Loading and unloading cost comparison

A comparison of the costs of the existing break bulk log barge transport system against the proposed container barge transport system is provided below.

Break Bulk Log Transport		Containerized Log Transport	
Description	Cost per m3	Cost per m3	Description
Loading: At Furgeson Point, sorted logs are bunked and wire wrapped into two bundles totalling 23 tonnes for ship loading in Prince Rupert. $1.00 per m3 is assumed; this figure requires confirmation.	$1.00	$1.00	Loading: At Furgeson Point, logs are loaded onto log trucks for the journey to Port Clements. $1.00 per m3 loading charge is assumed; this figure requires confirmation.
Transport: At Furgeson Point, log bundles are watered, boomed, and moved near the log barge.	$1.50	$7.00	Transport: Log trucks carrying 40 m3 each travel to Port Clements
Debarking: Not applicable because barked logs are being loaded.	$0.00	$0.00	Debarking: Logs are debarked in Port Clements. It is assumed that the wood waste electrical power plant in Port Clements pays for log debarking to obtain the fibre it needs.
Booming: At Prince Rupert, the log barge unloads the logs. Booming tugs gather the floating log bundles into a bag boom.	$2.00	$0.00	Booming: Not applicable
Shiploading: Logs are loaded onto the log ship. The loading operation takes 7 days for a typical 30,000 m3 Haida Gwaii shipment to China. Between Furgeson Point and Prince Rupert the typical 23 tonne log bundle absorbs another tonne of water. On a typical ship this adds about 4% or 1,000 tonnes of water to the cargo weight.	$10.00	$0.00	Shiploading: Containers are unloaded, grounded and loaded onto a deep sea container ship. This cost is included in the container line's shipping rate to China.
Total	$14.50	$8.00	Total

An important assumption noted in this table is the cost of debarking is assumed to be **$nil** for containerised log transport. This assumption is based on the premise that the cost of debarking would offset by the sale of waste wood.

There are additional cost considerations that are relevant but have not been quantified:

Shipment Sizes – Break bulk log barges are big in order maximize economies of scale. The 18,000 m^3 shipment sizes of current log barges can be assembled on a regular basis only by large forest companies. Smaller forest companies have difficulty assembling shipments on this scale. The container barge system offers more frequent and regular services for Haida Gwaii shippers. The minimum shipment size on a container barge for any individual shipper is much smaller than for the break bulk system. Idle inventory costs and the costs of inventory ageing and inventory deterioration are likely to be lower for the container feeder transport system. Using the container service, it may be possible for log shippers and value added producers to respond more quickly to customer orders. The ability to respond more quickly is likely to improve the marketability of Haida Gwaii products.

- **Logs Must Enter the Water** – In the break bulk system, logs are watered so that they can be loaded from the water onto the log barges and, again, in Prince Rupert the log barge dumps the logs into the water so that the log ship can load them. Logs in water create environmental damage. Logs in water absorb water and increase the deep sea log ship's cargo weight by about 4%. In the process of moving logs from Haida Gwaii to deep sea log ships in Prince Rupert, a typical log ship takes an

additional 1,000 tonnes of cargo weight in water. The added weight of water creates a kind of cost inefficiency. Water absorption is not an issue for the container barge system. The cost of watering and dewatering the logs is avoided. Because logs can be stuffed into containers as they arrive at the terminal, they do not have to be stored and retrieved again. Because the break bulk system requires time to build inventory between barge shipments, the logs must stored and then, later, retrieved and then watered to be available for shipping. The cost of these extra handlings of the logs is avoided by the container system.

- **Break Bulk Log Loading is a Lengthy Process** – Log ships and log barges are loaded by on-board cranes. Log barges have two cranes and log ships usually have four cranes. A log ship requires about seven days to load a typical cargo of 30,000 m^3. Log barges carrying about 18,000 m^3 will need a similar amount of time to load with their two cranes. The cost of labour and the idle cost of the vessels during the loading period are significant. In China, the process of unloading the break bulk ship is also lengthy and takes about the same time. In contrast, the applicable loading and unloading time of a container ship is very short, less than a day.

- **Container Shipping Rates** – Broadly, there is an imbalance of container movements across the Pacific. There are more full containers moving east than moving west. This creates opportunity for BC shippers because container lines offer lower rates to move containers west than to move containers east. In effect, BC shippers enjoy the benefits of backhaul rate setting policies by the container lines.

- **Supply of Containers** – Most containers on container ships are forty foot containers. This is because most cargoes moving east are space limited rather than weight limited. Hence, a forty foot container is the most efficient size for cargoes moving from Asia to North America. It's the opposite moving west. Much of the west bound cargo is dense cargo such as lumber and pulp that is weight limited. For weight limited cargoes, twenty foot containers are preferred because they offer the most efficient cargo weight in relation to container size. As a result, westbound, there is sometimes a shortage of twenty foot containers and usually an over abundance of empty forty foot containers. Hence, eastbound rates are usually higher than westbound rates. The proposed shipment of Haida Gwaii logs in forty foot containers is likely to be a welcome cargo for container lines trying to find suitable cargoes for their empty westbound forty foot containers. These broad trends in container supply and demand work in favour of the proposed log shipping system and may encourage more favourable westbound rates than would otherwise be possible. Incentive rates may be offered.

  In 2012, the Port of Prince Rupert handled 565,000 TEU's of containers of which about 265,000 TEU's were export containers. Among the export containers, there were about 61,000 forty foot containers that went west empty. The proposed feeder barge system will require about 15,000 forty foot containers to carry logs to China. Because of the high number of empty westbound forty foot containers, it is likely that the required number of export containers to supply the container feeder service will be available.

Appendix D – Interviewee list

Industry	Agency	Name	Position
Retail & Groceries	Delmas Co-op	Richard Clarmont	General Manager
Forestry & Logging	Abfam	Jim Abbott	Owner
Retail & Groceries	Bayview Markets	Dale Lore	Owner, past Mayor of Port Clements
Provincial Government	Ministry of Forest Lands and Natural Resources	Tyler Peet	
Forestry & Logging	Watchman Forest Products	Terry Husband	Owner
Forestry & Logging; Marine Transport	O'Brien and Feurst	Travis O'Brien	Owner
Fisheries	Seapak	Debbie, Ray	
Forestry & Logging, Provincial Government	Ministry of Forest Lands and Natural Resources	John Cooke	Provincial expert on wood export
Marine Transport	Wainwright	Doug, Chrystal Hillier	
Marine Transport	North Arm Transport	Gino Stradiotti	CEO
Retail & Groceries	Aaron Mark Services, City Center Stores	Linda Sharis	Owners
Forestry & Logging	Taan Forest	Bob Brash	President
Logistics; Marine Transport	Clearbrook Trucking	Rick Macdonald	Partner
Marine Transport	Teal-Jones Group	Dick Jones	Owner
Aquaculture	Gourmet Seafoods	Daniel Rabu	Owner
Public	Village of Port Clements	Wally Cheer, Kim Mushynsky, Ian Gould, Urs Thomas	Mayor, Chief Administrative Officer, Councillors
Public	Misty Isles Economic Development Society	Heather Adel	Economic Development Officer

ACTION ITEMS

#	Date	Description	Lead	Follow up
A1	05-12-2011	Motion to hold town hall mtgs. to engage public	Falconbridge	Consider as a part of the Barge Facility consultation process
A3	20-02-2012	Tree Removal at Sunset Park (committee??)	Falconbridge	Will hold a Town Hall Mtg to discuss
A16	15-10-2012	Bus Shelter	Cheer	Build shelter at corner of Dyson & Bayview
A17	04-03-2013	Barge Facility Public Meeting	Cheer	Present Business Study Report sometime in April