

# NORTH VANCOUVER ISLAND MARINE PLAN 2015



**Cite as:** Marine Planning Partnership Initiative. 2015. North Vancouver Island Marine Plan.

**ISBN:** 978-0-7726-6884-4

**Copyright © 2015**

**Photo Credits:** Scott Harris, Jillian Tamblyn, Matthew Justice

**Seaweed Motif:** Simon Davies - Jones, Davies & Davies

**Layout and Design:** Matthew Justice, Greg Johnson







Date: March 17, 2015

Dear Reader,

On behalf of the Nanwakolas Council and the Province of British Columbia, we are pleased to present the North Vancouver Island Marine Plan.

The North Vancouver Island Marine Plan is the result of three years of collaborative planning by the Nanwakolas Council, representing seven member First Nations, and the Ministry of Forests, Lands and Natural Resource Operations, representing the Province of British Columbia.

We extend our thanks to the North Vancouver Island Marine Plan Advisory Committee, which assisted in Plan development, as well as those members of the public who provided comments.

The North Vancouver Island Marine Plan reflects an ecosystem-based approach. It outlines a vision, objectives and strategies for coastal and marine area management, and includes recommendations for processing and evaluation of applications for tenures and other activities by Provincial agencies and First Nations members of the Nanwakolas Council.

Successful implementation of the Marine Plan will require regular progress reviews and adaptation. It will require the ongoing participation, support and commitment of those who contributed to its development. In the spirit of fully comprehensive integrated marine planning, we also commit to seeking a working relationship with the federal government on issues that are of interest to the Government of Canada. The successful development of the North Vancouver Island Marine Plan demonstrates that diverse interests can work effectively together to promote healthy marine ecosystems and long-term sustainable use in this unique and spectacular part of British Columbia. Our congratulations to everyone involved.

Sincerely,

Steve Thomson, Minister  
Ministry of Forests, Lands and Natural  
Resource Operations  
Province of British Columbia

Dallas W. Smith, President  
Nanwakolas Council

## ACKNOWLEDGEMENTS

The North Vancouver Island Marine Plan (the Plan) has been prepared under the leadership of a joint Technical Team. The Technical Team was co-led by the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) and the Nanwakolas Council. The Technical Team consisted of Matthew Justice (co-chair) and Bill Zinovich (MFLNRO); John Bones (co-chair), Scott Harris and Greg Johnson (Nanwakolas Council); and Jillian Tamblyn (Technical Planner) and Josie Byington (Administration).

The Plan also reflects the advice and input of a Marine Planning Advisory Committee (MPAC), which consists of members who represent individual sectors of marine interest or specific areas of expertise. The Technical Team wishes to thank all MPAC members for their time and contributions to the Plan document. The Technical Team also acknowledges the valuable input provided by members of the general public, who submitted comments through public open houses and the MaPP website.

The Plan is one of four sub-regional marine spatial plans and a regional action framework identified as products of the Marine Planning Partnership for the North Pacific Coast (MaPP). MaPP is a partnership between the Province of British Columbia, represented by the Ministry of Forests, Lands and Natural Resource Operations, and the Coastal First Nations, North Coast–Skeena First Nations Stewardship Society and Nanwakolas Council, which collectively represent 18 member First Nations. The advice of MaPP planning staff and contractors from other sub-regions, including Jo Smith (Science Coordinator), Fiona Kilburn (Administration), and Charles Short and Steve Diggon (Marine Coordination Team), is also appreciated.

The Nanwakolas Council and the Province of British Columbia wish to acknowledge the financial support of the Gordon and Betty Moore Foundation through the MaPP Support Project at Tides Canada.





# TABLE OF CONTENTS

Letter of Support – BC/Nanwakolas.....	i
Acknowledgements .....	ii
List of Figures.....	vi
List of Tables.....	vii
<b>Chapter 1: Background and Context .....</b>	<b>1</b>
1.1 Introduction and Purpose.....	1
1.2 Plan Area Overview .....	1
1.3 Marine Planning Partnership for the North Pacific Coast.....	4
1.4 Related Planning Initiatives.....	5
1.5 Plan Scope and Jurisdictional Context.....	7
<b>Chapter 2: The Plan Area .....</b>	<b>9</b>
2.1 Physical and Oceanographic Features.....	9
2.1.1 Climate, Landscape and Hydrology .....	9
2.1.2 Water Temperature, Oxygen and Salinity .....	10
2.1.3 Tides and Currents .....	10
2.2 Marine Habitat and Biological Features .....	11
2.2.1 Habitat.....	11
2.2.2 Marine Biological Features .....	11
2.2.3 Climate Change .....	16
2.2.4 Pollution .....	17
2.3 Socioeconomic Conditions.....	19
2.3.1 Population and Communities.....	19
2.3.2 Education, Training and Research.....	20
2.3.3 Economy and Infrastructure .....	20
2.3.4 First Nations Social and Economic Transition .....	23
2.4 Governance and Enforcement .....	24
2.5 Marine Use Patterns.....	26
2.5.1 Conservation, Protection, Cultural Resources and Heritage Resources .....	26
2.5.2 Economic Uses and Activities.....	29
<b>Chapter 3: Plan Development Process .....</b>	<b>34</b>
3.1 Planning Process .....	34
3.2 Marine Plan Advisory Committee .....	35
3.3 Engagement with Public and Nonparticipating Groups.....	36
3.4 Planning Information.....	37
3.5 Planning Tools.....	38
3.6 Planning Steps for Marine Zones and Zone Recommendations.....	38
<b>Chapter 4: Plan Area Management Direction .....</b>	<b>41</b>

4.1 Vision for the Plan Area .....	41
4.2 Ecosystem-Based Management .....	42
4.2.1 Definition of Ecosystem-based Management .....	42
4.2.2 Elements of Ecosystem-based Management .....	42
4.2.3 Application of EBM in MaPP .....	42
4.3 Use and Application of Plan Area Management Direction .....	43
4.3.1 Community and Economy .....	43
4.3.2 Infrastructure .....	45
4.3.3 Pollution .....	47
4.3.4 Conservation and Protection .....	52
4.3.5 Cultural and Heritage Resources .....	57
4.3.6 Recreation and Tourism .....	60
4.3.7 Forestry Operations .....	63
4.3.8 Aquaculture .....	65
4.3.9 Energy .....	69
4.3.10 Fishery Economy and Associated Values .....	71
4.3.11 Governance and Collaborative Management .....	73
4.3.12 Regulatory Compliance and Enforcement .....	76
4.3.13 Research, Education and Training .....	77
<b>Chapter 5: Area-Specific Management Direction .....</b>	<b>82</b>
5.1 Purpose of Area-Specific Management Direction .....	82
5.2 Marine Zoning System .....	82
5.2.1 Framework and Approach .....	82
5.2.2 Plan Zones .....	83
5.3 Uses and Activities Approach .....	86
5.4. General Management Zone .....	88
5.5 Special Management Zone .....	91
5.6 Protection Management Zone .....	100
<b>Chapter 6: Plan Implementation .....</b>	<b>109</b>
6.1 Plan Review, Amendment and Updating .....	109
6.2 EBM Implementation Indicators .....	110
6.3 Implementation Agreements .....	110
6.4 Plan Variance Requests .....	111
6.5 Implementation Priorities and Schedule .....	111
<b>References .....</b>	<b>115</b>
<b>Glossary .....</b>	<b>116</b>
<b>Appendix A1: Species at Risk .....</b>	<b>121</b>
<b>Appendix A2: Northern Resident Killer Whale Critical Habitat .....</b>	<b>124</b>
<b>Appendix A3: Fisheries and Oceans Canada Fish-Health Zone 3-2 .....</b>	<b>125</b>



<b>Appendix B1: Support Letters .....</b>	<b>126</b>
<b>Appendix B2: Marine Plan Advisory Committee .....</b>	<b>133</b>
<b>Appendix B3: Engagement With Non-Participating groups.....</b>	<b>141</b>
<b>Appendix B4: Science Advisory Committee .....</b>	<b>142</b>
<b>Appendix B5: Planning Support Tools.....</b>	<b>143</b>
<b>Appendix C1: Ecosystem-Based Management .....</b>	<b>144</b>
<b>Appendix D1: International Union for Conservation of Nature Categories .....</b>	<b>146</b>
<b>Appendix E1: EBM Indicators.....</b>	<b>147</b>

# LIST OF FIGURES

Figure 1. Plan Area. .... 2

Figure 2. Marine Planning Partnership for the North Pacific Coast (MaPP) study area. .... 3

Figure 3. Marine Planning Partnership for the North Pacific Coast organisational structure. .... 5

Figure 4. British Columbia marine ecosections in the Plan Area. .... 14

Figure 5. Existing and proposed protection areas in marine or adjacent upland areas in the North  
Vancouver Island Marine Plan Area ..... 28

Figure 6. Selected Land Act tenured uses and activities in the Plan Area. .... 33

Figure 7. Plan Area zoning designations. .... 85

Figure 8. Special Management Zone Emphasis Areas. .... 94

Figure 9. Protection Management Zone areas in the Plan Area ..... 103



## LIST OF TABLES

Table 1: Description of British Columbia marine ecosections in the Plan Area. ....	13
Table 2: Percent of the shoreline that is sensitive to climate change, by ecosection.....	17
Table 3: Observed climate changes in the Plan Area. ....	18
Table 4: Infrastructure in the Plan Area. ....	23
Table 5: Federal and provincial agencies with marine management responsibilities.....	25
Table 6: Provincial marine conservation and protection areas in the Plan Area.....	27
Table 7: Number of operating waste disposal facilities in the Plan Area. ....	48
Table 8: Definitions of marine uses and activities addressed in the Plan. ....	86
Table 9: General provisions in the General Management Zone. ....	89
Table 10: Recommended Uses and Activities for the General Management Zone. ....	90
Table 11: Area-based conditions for conditional marine uses and activities in the General Management Zone. ....	90
Table 12: Special Management Zone Emphasis Areas identified in Figure 8. ....	92
Table 13: General provisions for the Special Management Zone. ....	95
Table 14: Recommended Uses and Activities for Special Management Zone Emphasis Areas.....	96
Table 15: Area-based conditions for conditional uses and activities in the Special Management Zone. ..	97
Table 16: Protection Management Zone areas identified in Figure 9.....	101
Table 17: General provisions for Protection Management Zone areas. ....	104
Table 18: Recommended Uses and Activities for Protection Management Zone areas. ....	104
Table 19: Area-based conditions for conditional uses and activities for Protection Management Zone areas.....	107
Table 20: Plan implementation schedule and resource requirements. ....	112



## CHAPTER 1: BACKGROUND AND CONTEXT

### 1.1 Introduction and Purpose

The purpose of the North Vancouver Island (NVI) Marine Plan (the Plan) is to provide spatial and nonspatial recommendations for achieving ecosystem-based marine management that maintains social and cultural wellbeing and economic development based on healthy ecosystems within the Plan Area over the long term. The Plan includes recommendations for developing and maintaining resilient marine ecosystems and sustainable economies for NVI communities. It focuses on providing direction for managing marine areas, uses and activities within provincial government jurisdiction.

### 1.2 Plan Area Overview

The Plan covers an 8,003 km<sup>2</sup> marine area of the North Pacific coast of Canada. The Plan Area follows the natural boundary of the coast and includes all submerged lands within the black boundary shown in Figure 1. The Plan Area is approximately 300 km northwest of Vancouver, British Columbia (BC) and is the most southerly of four sub-regional planning areas delineated by the Marine Planning Partnership for the North Pacific Coast (MaPP). The Plan Area encompasses marine and foreshore areas between Vancouver Island and the BC mainland coast, including several major inlets, Queen Charlotte Strait, Johnstone Strait and portions of Queen Charlotte Sound and Discovery Passage. The northern extent of the Plan Area is bounded by the Cape Scott Islands to the west and Smith Sound/Cape Caution to the east. The southern boundary is in the Quadra Island/Bute Inlet area. Incorporated communities in the Plan Area are located mainly on Vancouver Island, from Port Hardy in the north to Campbell River in the south. The Plan Area is based primarily on the marine territories and areas of interest of the seven participating Nanwakolas member First Nations, and consequently excludes an area on the northwest side of Vancouver Island that is part of the broader MaPP study area (Figure 2).



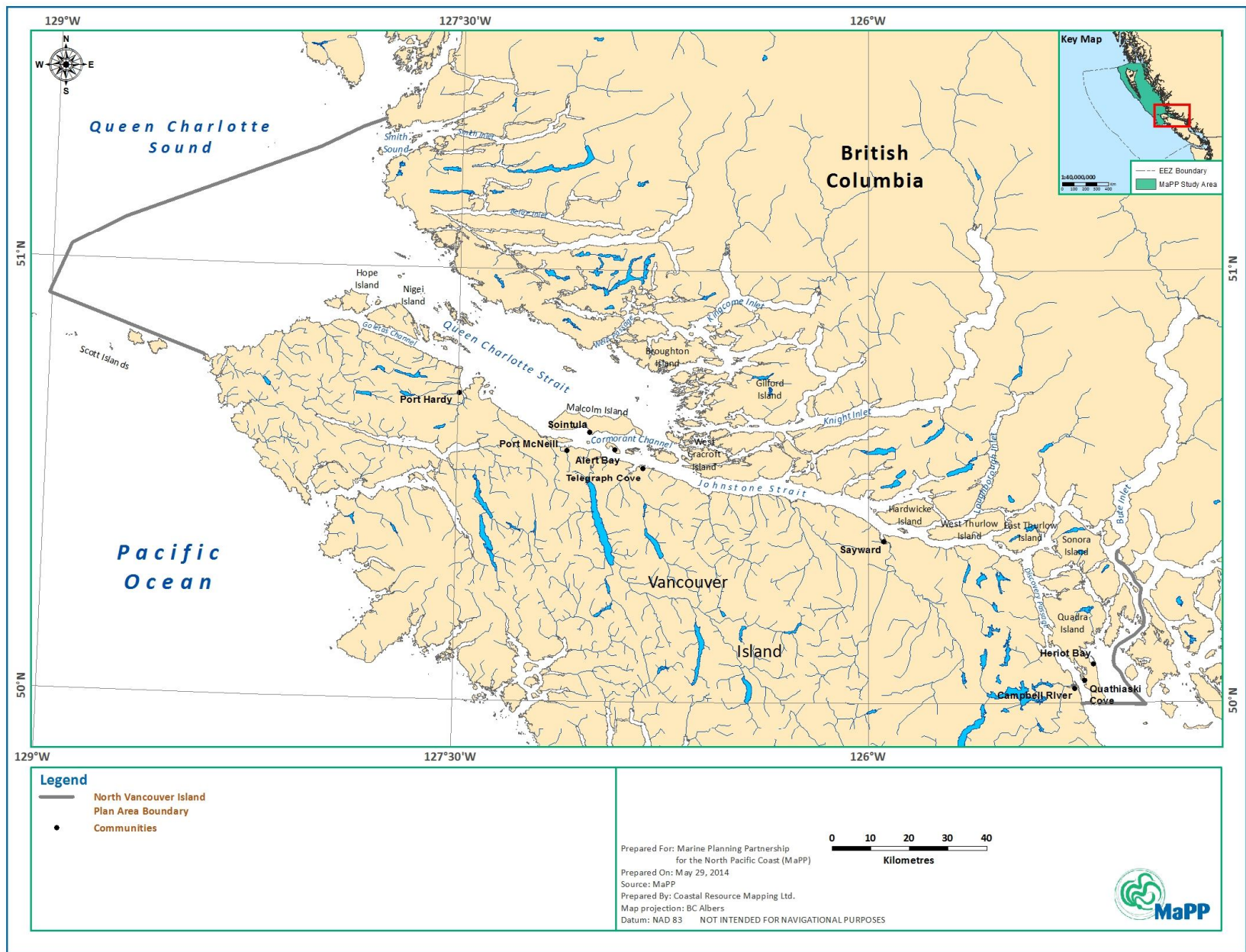


Figure 1. Plan Area.

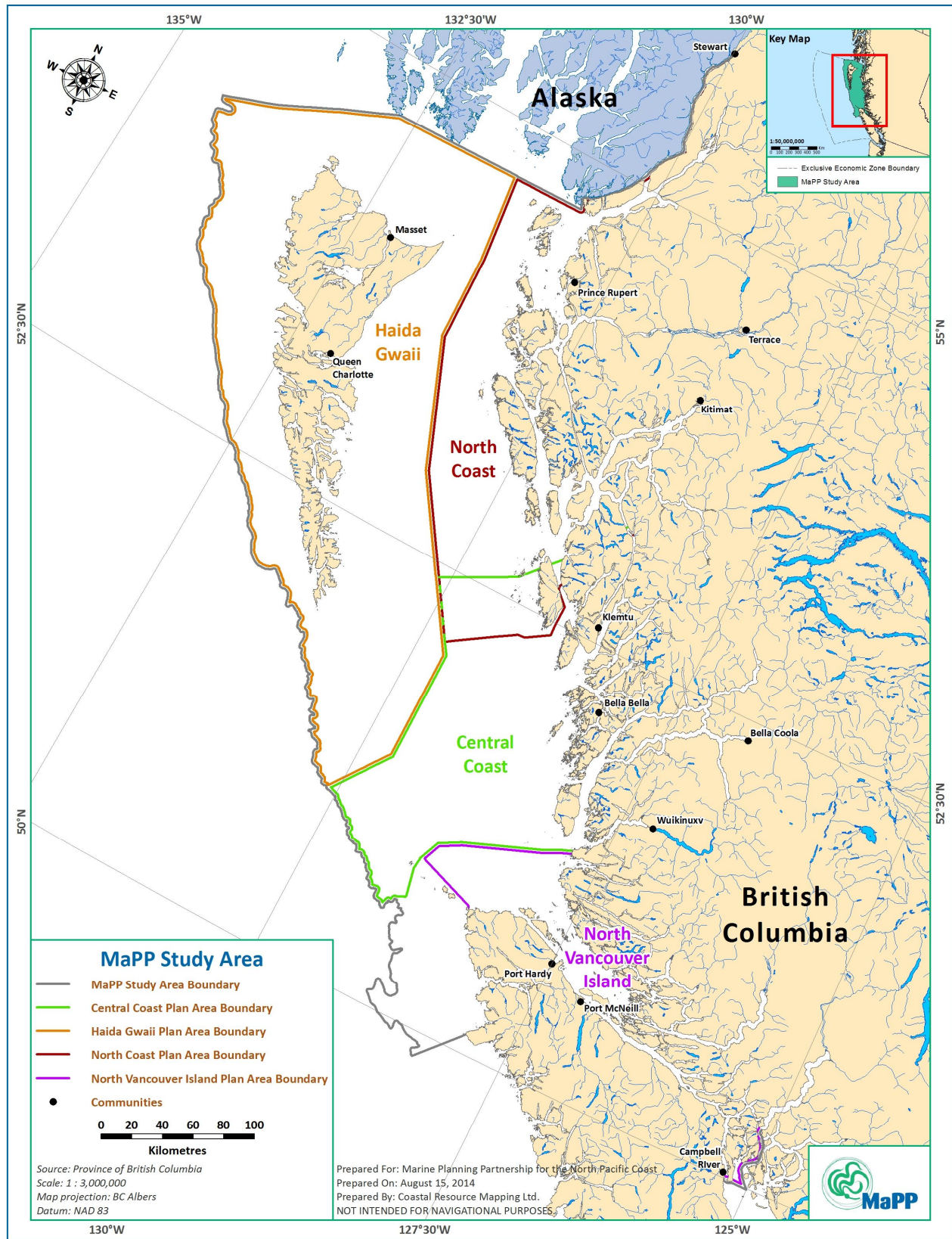


Figure 2. Marine Planning Partnership for the North Pacific Coast (MaPP) study area.



### 1.3 Marine Planning Partnership for the North Pacific Coast

The Plan is a collaboration between the provincial government and the Nanwakolas Council, which represents seven participating member First Nations in marine planning: the Mamalilikulla-Qwe'Owa'Sot'Em, Tlowitsis, Da'naxda'xw Awaetlatla, Gwa'sala-'Nakwaxda'xw, Wei Wai Kum, Kwiakah and K'omoks. The Plan brings together science, technical information, traditional and local knowledge and input from public and stakeholder engagement. The latter was an important component in the collaborative refinement and completion of the Plan. It provides a framework for moving forward in managing marine areas in a way that is transparent and accountable.

The Plan has been prepared as part of the MaPP initiative, whose partners are the provincial government and 18 member First Nations, represented by three First Nations organisations: the Coastal First Nations Great Bear Initiative, the North Coast–Skeena First Nations Stewardship Society and the Nanwakolas Council. The MaPP initiative was formalised in November 2011 through a Letter of Intent between the provincial government and First Nations organisations, which established the approach to regional frameworks and sub-regional planning, confirmed the nature of collaboration between the parties, and outlined joint management structures and anticipated outputs for the planning process. The MaPP initiative has developed marine spatial plans at sub-regional levels, which include zones, and objectives and strategies for specific marine uses and activities. The four sub-regions for which plans are being prepared under MaPP are North Vancouver Island, Haida Gwaii, North Coast and Central Coast. Figure 3 outlines the MaPP organisational structure.

The foundation of the MaPP initiative is a marine ecosystem-based management (EBM) approach. The MaPP EBM framework is built on principles of ecological integrity, human wellbeing, and governance and collaborative management. EBM recognises the magnitude of interactions within an ecosystem and considers human activities and impacts in the EBM framework. EBM is consistent with First Nations traditional resource management approaches and with provincial government direction on resource management. Integrated marine planning is an effective delivery tool for EBM due to its ability to formulate multiple objectives, integrate species management strategies and incorporate strategies for dealing with uncertainty (Section 4.2).

The Plan was prepared in the context of a MaPP Regional Action Framework that will include a regional protection management network, EBM monitoring, a cumulative effects assessment framework, a regional marine pollution framework, regional governance and collaboration models, regional compliance and enforcement, regional economic strategies, and regional

implementation, monitoring and research. NVI Plan strategies may therefore be influenced by (and influence) the Regional Action Framework.

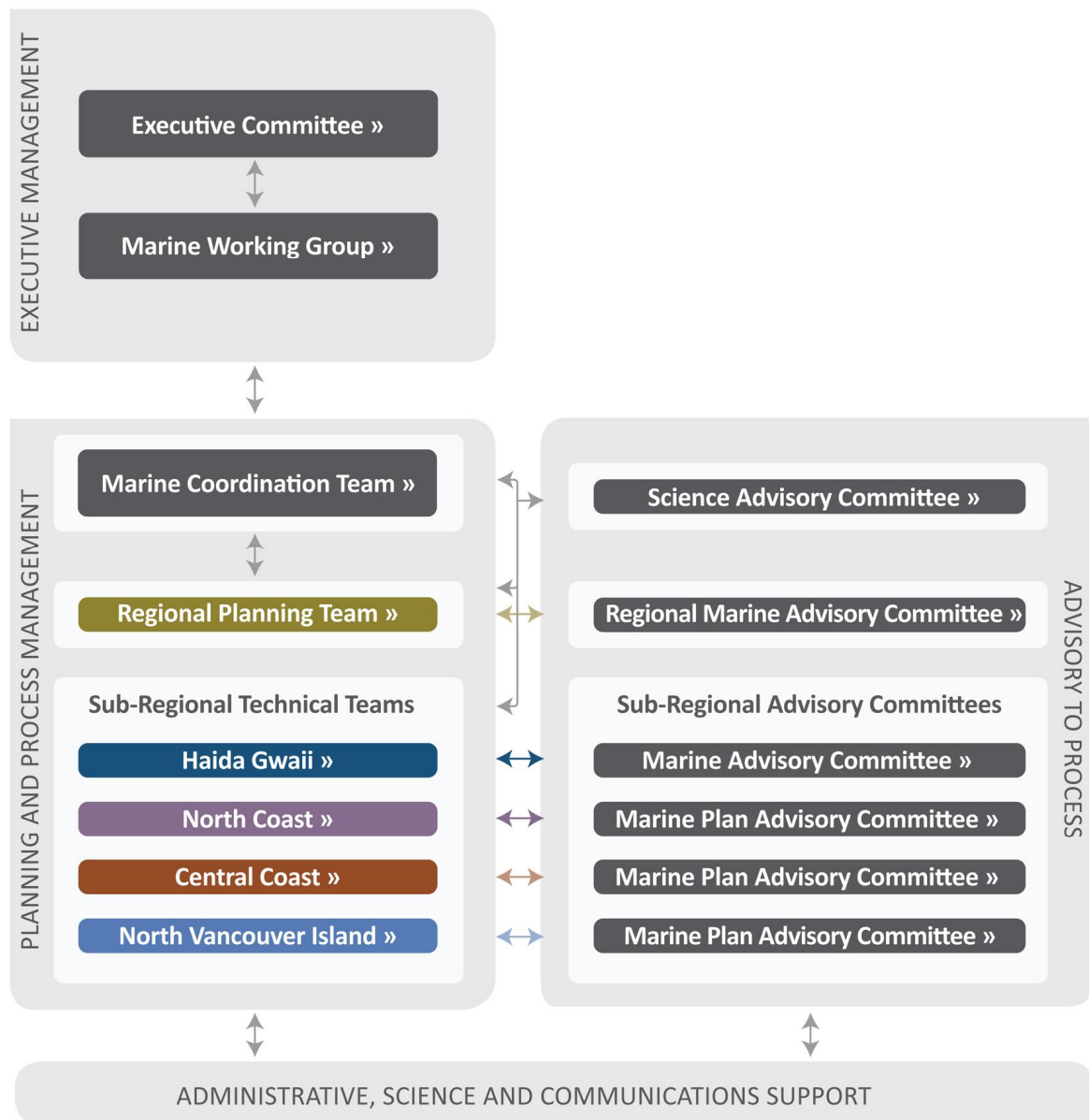


Figure 3. Marine Planning Partnership for the North Pacific Coast organisational structure.

## 1.4 Related Planning Initiatives

The Plan Area has also been addressed in the Pacific North Coast Integrated Management Area (PNCIMA) planning process, which is co-led by Fisheries and Oceans Canada under its *Oceans Act* mandate, the provincial government and First Nations organisations. The Nanwakolas Council was initially involved in the process but withdrew in late 2012. The PNCIMA Plan

contains broad, high level strategies and objectives for advancing an EBM approach to marine resource management. Relevant components of the PNCIMA Plan are reflected in the Plan.

A number of provincial government plans have been developed for parts of the Plan Area. At the strategic level, the Vancouver Island Land Use Plan (1994) and the Central Coast Land and Resource Management Plan (2009) focused primarily on land use planning. At the sub-regional scale, the North Island Straits and Johnstone–Bute Coastal Plans, approved in 2002 and 2004, respectively, provide direction to provincial marine tenure programs. The Central Coast Land and Resource Management Plan led to a number of implementation agreements, including conservancy agreements, with several First Nations. Many of these First Nations are now members of the Nanwakolas Council.

The provincial government revised its planning policy in 2006 to ensure that planning processes and outcomes are jointly developed by BC and interested First Nations governments. A number of Nanwakolas member First Nations are currently participating in the collaborative management of provincially legislated conservancies.

In 2011, federal, provincial and territorial governments released the National Framework for Canada’s Network of Marine Protected Areas. The Framework provides strategic direction for the design of a national network of marine protected areas (MPAs) that will be composed of a number of bioregional networks. The MaPP study area is located within the Northern Shelf Bioregion, one of 13 ecologically defined aquatic bioregions in Canada.

In 2014, the Canada-British Columbia Marine Protected Area Network Strategy (the Network Strategy) was released. Consistent with the national framework, the Network Strategy outlines a vision and goals that will guide collaborative efforts to conserve a range of important marine values. Network planning will begin in the Northern Shelf Bioregion and will include formal engagement with MaPP partner First Nations.

First Nations marine plans are an important and underlying component of the Plan. The seven Nanwakolas member First Nations have completed draft marine plans that contain important background information, protocols, and key policies and strategies for marine resource management and marine uses, including spatial zoning designations. The locations of the First Nations marine plans are shown on the Nanwakolas Council website ([www.nanwakolas.com](http://www.nanwakolas.com)). These plans have been aggregated into the sub-regional Ha-ma-yas Marine Plan, which was endorsed by the Nanwakolas Chief’s Board in October 2012 as the basis for joint technical planning with the provincial government. The Ha-ma-yas Plan summarises important background information and identifies common policy, protocol, strategies and management direction in the individual First Nations marine plans.



The Plan also considers local government plans and zoning bylaws, specifically those of the Regional District of Mount Waddington (RDMW) and Strathcona Regional District (SRD). These generally relate to public access, protection, aquaculture, and commercial and industrial uses (including logging facilities) on and adjacent to the foreshore.

## 1.5 Plan Scope and Jurisdictional Context

The Plan outlines objectives, strategies and zones for managing marine uses and activities for a stated future vision for the Plan Area. The Plan does not propose specific management objectives for private, or Crown lands above the natural high tide boundary, but does consider the impacts of land uses, plans, zones, tenures and legal designations in these areas.

With reference to federal and provincial Crown jurisdiction, the *Constitution Act* (1867) defines the federal-provincial distribution of legislative powers in Canada (also known as the division of powers), including the scope of the power of the federal parliament of Canada and the powers of each individual provincial legislature or assembly. Without formal federal government involvement in the MaPP planning process, this division of power limits the Province from endorsing outcomes that it considers to be the jurisdiction and mandate of the federal government under the *Constitution Act*. However, the Province is able to support and implement components of the Plan where, as between BC and Canada, the Province has some jurisdiction.

Furthermore, a Supreme Court of Canada decision in 1984 (the Strait of Georgia Reference) held that, when British Columbia entered Confederation in 1871, the Province consisted of all British territories, including dry land, coastal straits and submerged lands. Thus as between British Columbia and Canada, British Columbia owns the waters and submerged lands of the Strait of Juan de Fuca, the Strait of Georgia, Johnstone Strait and Queen Charlotte Strait and the waters and submerged lands between major headlands (i.e., bays, estuaries, and fjords).

This Plan focuses on the Crown marine areas and uses where legal jurisdiction and regulatory authority is provincial as opposed to federal, namely the foreshore, coastal “inland waters” and the lands covered by these waters.

Although the federal government has legislative authority over management of many activities that occur within the water column, it chose not to participate in the development of this Plan. Fisheries and Oceans Canada provided general feedback on the MaPP sub-regional plans.

The Plan does not provide, imply or make the recommendations of matters that the provincial government believes are solely within federal jurisdiction. However, where there is significant

overlapping or shared jurisdiction, and where these topics are related to EBM and marine spatial planning, they are discussed.

Section 35 (1) of the *Constitution Act, 1982* recognizes and affirms treaty and Aboriginal rights, including Aboriginal title. The participation of Nanwakolas member First Nations in the MaPP initiative is without prejudice to their assertion of rights (including title) to the lands, waters, air and resources within their traditional marine territories. The Nanwakolas member First Nations also acknowledge that they may share Aboriginal rights and title to certain areas within their traditional territories with neighbouring First Nations, and in such circumstances, they do not intend this Plan to speak for the view of the neighbouring First Nations.

The Plan, and any action in connection with it, does not therefore create, recognise, define, deny, limit, abrogate or derogate from, or amend Aboriginal rights and title, and does not define or limit the jurisdiction of the Nanwakolas member First Nations or the provincial government. Nothing in this Plan constitutes an admission of fact or liability. This Plan does not limit or prejudice the positions British Columbia or the First Nations may take in any negotiations or legal or administrative proceedings (i.e. the Parties are free to make any arguments they wish in court). Nothing in this plan alters, defines, fetters or limits or shall be deemed to alter, define, fetter or limit the jurisdiction, authority, obligations or responsibilities of the provincial government and the Nanwakolas member First Nations.

The Plan is not legally binding and does not create legally enforceable rights between Nanwakolas member First Nations and the provincial government. This Plan, and any action, in connection with it, does not relieve the Crown of any legal obligation to consult under section 35 (1) of the *Constitution Act, 1982* with respect to the granting of specific authorisation under federal or provincial legislation to any resource development proponents to use or dispose of land or resources. The Plan does not limit the scope or nature of treaty negotiations.

The provincial government and various Nanwakolas Member First Nations have entered into a number of previous agreements, including the *Enabling Process* (2001), *Land Use Planning Agreement in Principle* (2006), the *Clearinghouse Pilot Agreement* (2007), the *Nanwakolas /British Columbia Framework Agreement* (2009), and the *Nanwakolas Reconciliation Protocol* (2011).

The Plan is consistent with efforts between the Nanwakolas member First Nations and the provincial government to advance reconciliation and relationships, and to advance collaborative relationships with stakeholders.



## CHAPTER 2: THE PLAN AREA

This chapter provides an overview of features of the Plan Area. More information on individual sections is provided in the *Current Conditions and Trends for North Vancouver Island* report (In prep.) ([www.mappocean.org](http://www.mappocean.org)).

### 2.1 Physical and Oceanographic Features

#### 2.1.1 Climate, Landscape and Hydrology

The Plan Area has mild temperatures and plentiful rainfall year-round. Summers are cool and wet, while winters are relatively mild, due to the regulating influence of the ocean. January temperatures average about 3°C, and July temperatures average 13–15°C.

The western portion of the Plan Area is partly within the rain shadow of the Vancouver Island Mountain Range and receives less rain than the eastern mainland portion. Annual precipitation ranges from approximately 2,200 mm per year in the north to approximately 1,450 mm at Campbell River in the south. A small proportion of the annual precipitation falls as snow. Fog is relatively common during the warmer months.

Winds are strongest during the winter. In the major straits, they tend to blow parallel to the shore, and from the northwest in summer and from the southeast in winter. Queen Charlotte Sound is generally exposed to the full impact of wind and wave action from the open Pacific, whereas the straits and inlets are more protected. Strong outflow winds blow down the many large inlets.

The coastline is highly indented and has many islands and islets within its major passages. Shorelines are mostly rocky but have small pockets of gravel or sand beaches. In most areas, the seabed is comprised of hard surface bedrock, boulders, cobble and gravel. Sediment beaches and estuaries are located in protected inlets, coves and bays that are fed by sediment-laden streams, and in areas with shallow slopes where eroded glacial sediments have been deposited.

The depth of the seabed varies from more than 200 m in the deep fjords of major inlets to less than 20 m in the shallower bays and inlets. Most passageways are 50–200 m deep. The slope of seabed is generally 5–20 percent.

Streams on Vancouver Island tend to flow year-round; peak flows normally occur during the winter and decrease steadily through the spring and summer. Runoff in mainland streams is highest throughout the summer and peaks slightly in August.

### **2.1.2 Water Temperature, Oxygen and Salinity**

Ocean temperature is controlled primarily by the Pacific Ocean. Deeper water bodies, such as Queen Charlotte Strait and Georgia Strait, have a relatively consistent temperature year-round ( $< 9^{\circ}\text{C}$ ), while the shallower and more sheltered waters surrounding various islands and islets tend to be warmer ( $9\text{--}15^{\circ}\text{C}$ ) and heat up in the summer. In the Plan Area and the broader northeast Pacific, multi-decade patterns of warm or cold sea surface temperatures occur. The temperature periods are correlated with increased or decreased ocean productivity. For example, salmon returns are high during cool periods and low during warm periods.

Oxygenation is at optimal levels for biological productivity where tidal mixing occurs, such as throughout Queen Charlotte Strait and its entrance, and in the lower reaches of channels and inlets. Waters tend to be more stratified in the southern half of Johnstone Strait, in estuaries and in the upper reaches of major inlets due to a combination of factors, including depth, bottom slopes and freshwater runoff. Near-surface waters are always high in dissolved oxygen due to atmospheric exchange, which extends into mid-water depths wherever wind or tidal mixing is significant. Deep-water oxygen is generally a result of oxygen levels in source waters.

Salinity varies by location, and seasonal fluctuations occur in inlets due to variations in runoff from freshwater streams. This can result in stratification due to the layering of freshwater over saltwater. Outflows from major streams can have strong effects on seawater salinity in associated estuaries. Within the Plan Area the Broughton Archipelago has a more estuarine-type circulation due to many freshwater inflows. Queen Charlotte Strait has more stable salinity levels due to its proximity to the open ocean and its associated higher currents and mixing, although a slight increase in salinity occurs toward the northern entrance of the strait. Organisms are adapted to salinity levels and variations.

### **2.1.3 Tides and Currents**

Currents in the Plan Area are controlled primarily by tidal action, although the North Pacific Gyre causes additional flushing in Queen Charlotte Sound. Mean tidal range is approximately

2.8 m, although the average range of large tides is 4.8 m. The maximum value can be higher in areas where narrow channels enhance tidal height. Tidal speeds vary throughout the Plan Area.

The flood current moves around the northern tip of Vancouver Island, enters Queen Charlotte Strait from the northwest, and moves southeast. Flood currents in Johnstone Strait flow toward the east, while ebb currents move westward. In Discovery Passage, this pattern differs: flood currents flow toward the south and ebb currents flow toward the north. Winds can also influence surface currents.

## **2.2 Marine Habitat and Biological Features**

### **2.2.1 Habitat**

According to the BC Marine Ecological Classification system, there are six BC marine ecosections in the Plan Area (Table 1, Figure 4). Most of the Plan Area is in three ecosections: Queen Charlotte Sound (40 percent), Queen Charlotte Strait (28 percent) and Johnstone Strait (25 percent). The Queen Charlotte Strait and Johnstone Strait ecosections are highly variable, transitional environments that are located completely within the Plan Area and are not found anywhere else. The North Coast Fjords, Queen Charlotte Sound, Strait of Georgia and Vancouver Island Shelf ecosections are considered to be more homogenous.

### **2.2.2 Marine Biological Features**

#### **2.2.2.1 Salmon and Other Fish**

All five Pacific salmon species (Chum, Pink, Chinook, Coho and Sockeye) occur in the Plan Area; Pink and Sockeye are the most abundant species in BC. As anadromous species, salmon are important to both freshwater and marine ecosystems within and beyond the Plan Area. Each stream hosts unique populations of salmon, which results in high biodiversity. Queen Charlotte and Johnstone Straits are moderately important salmon areas because they are important migration routes.

Forage fish prey primarily on plankton, and thus form an essential link in marine and coastal food webs by converting energy from plankton to larger species. The Plan Area provides migratory, spawning and rearing habitat for herring stocks. Herring is an important food source for marine mammals and fish, and much of Queen Charlotte and Johnstone Straits have been identified as “important areas” for herring. Knight, Kingcome, and Loughborough Inlets are “important areas” for Eulachon. Smith and Bute Inlets also have runs of Eulachon but are not identified as important areas. Eulachon is a significant food source for other fish, and mammals and birds.



Key groundfish species include halibut, lingcod and rockfish. Declining rockfish stocks prompted the creation of several federal Rockfish Conservation Areas (RCAs), which prohibit fishing for rockfish, except for First Nations food, social and ceremonial (FSC) purposes.

Table 1: Description of British Columbia marine ecosections in the Plan Area.

Marine Ecosection	Percent of Area	Physiographic Features	Oceanographic Features	Biological Features
Vancouver Island Shelf	1	Narrow, gently sloping shelf	Open coast with oceanic wave exposures; northward, coast-hugging buoyancy current due to freshwater influence; seasonal upwelling at outer margin	Highly productive, with coastal shelf plankton community; northern limit for hake, sardine, Northern Anchovy and Pacific Mackerel; productive benthic community; rich fishing grounds for benthic fish and invertebrates
Queen Charlotte Sound	40	Wide, deep shelf characterised by several large banks and inter-bank channels	Ocean wave exposures with depths mostly >200 m and dominated by oceanic water intrusions	Mixture of coastal shelf and oceanic plankton communities; northern limit for many temperate fish species; lower benthic production
North Coast Fjords	5	Deep, narrow fjords cutting into high coastal relief	Very protected waters with restricted circulation and often strongly stratified	Low species diversity and productivity due to poor water exchange and nutrient depletion; unique species assemblages in benthic and plankton communities
Queen Charlotte Strait	28	Predominantly shallow (< 200 m), high relief area with deeper fjord areas	Moderately protected, high current and high relief area; very well mixed; moderate to high salinities with some freshwater inputs in the inlets and fjords	Very important for marine mammals; migratory corridor for anadromous fish; moderate shellfish habitat
Johnstone Strait	25	Narrow, constricted channels	Very protected coastal waters with strong currents; well-mixed, poorly stratified	Very important migratory corridor for marine mammals (e.g., whales), anadromous fish; rich sessile, hard substrate invertebrate community; diverse assemblage of benthic fish species
Strait of Georgia	1	Broad, shallow basin surrounded by coastal lowlands (Georgia Depression)	Protected coastal waters with significant freshwater input, high turbidity and seasonal stratification; very warm in summer	Nursery area for salmon, herring; abundant shellfish habitat; neritic plankton community

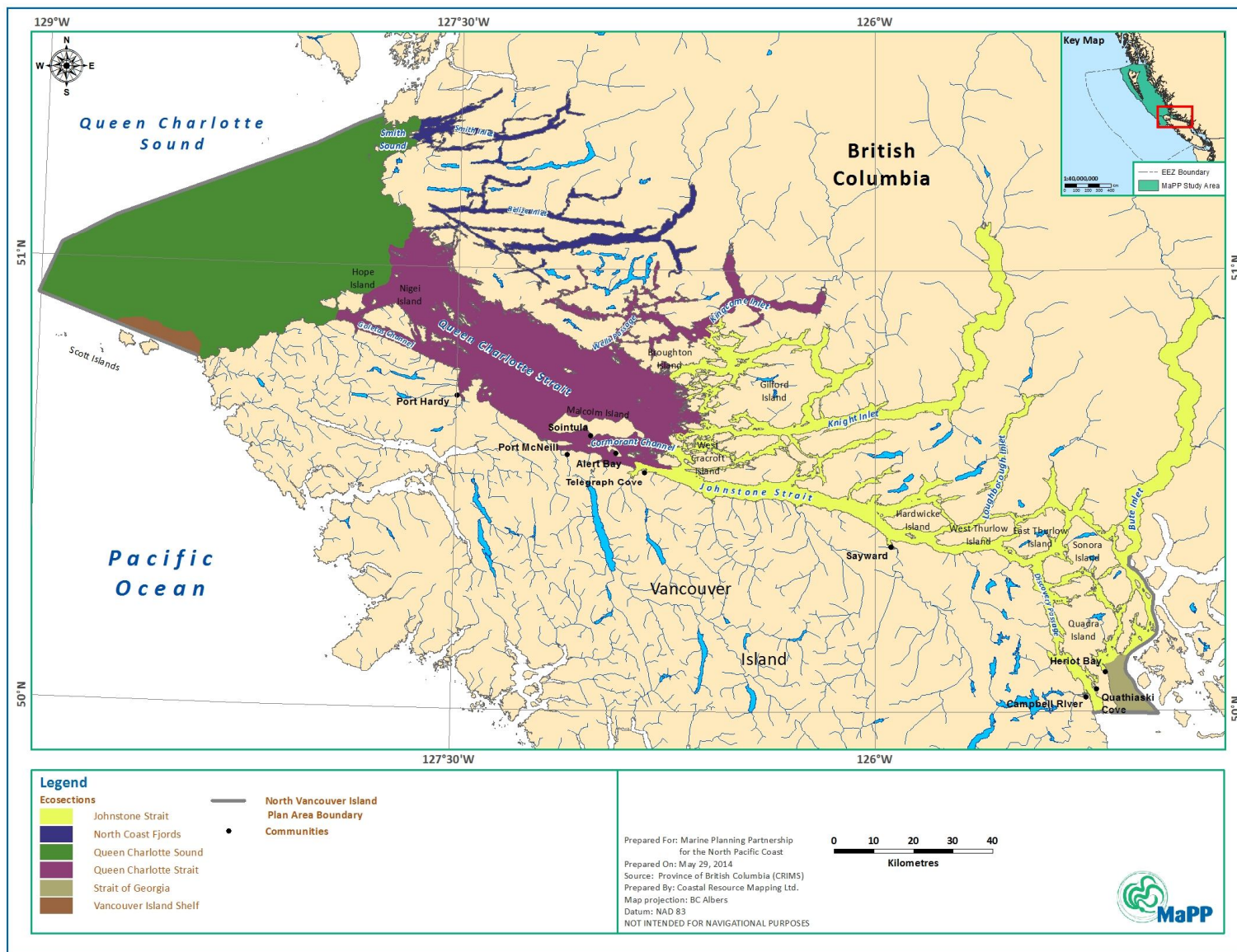


Figure 4. British Columbia marine ecosections in the Plan Area.

Eight species of fish are on the provincial endangered list or the federal species at risk list: Basking, Bluntnose Sixgill and Soupfin Sharks; Cutthroat Trout; Eulachon; Green Sturgeon; Longspine Thornyhead; and Rougheye Rockfish. Nimpkish Sockeye in Queen Charlotte Strait are categorised as a stock of concern. Appendix A1 provides additional information on provincial and federal listings for species of conservation concern.

#### **2.2.2.2 Shellfish and Other Invertebrates**

The Plan Area contains a wide range of invertebrate species, which are considered to have an important role in food webs. They include sponges, sea stars, molluscs, urchins and sea mussels, and have key roles in the structure and composition of natural communities. Corals and sponges are often referred to as foundation species because they form diverse complex three-dimensional structures that support high levels of biodiversity in areas with relatively low structural diversity. There is one known glass sponge reef near Malcolm Island, and several known coral reefs, including one at Hoeya Sill in Knight Inlet. Northern Abalone and Olympia Oysters are species of conservation concern, both provincially and federally (Appendix A1).

#### **2.2.2.3 Mammals**

The Plan Area supports habitat for migrating and resident marine mammals. Humpback Whales travel through, and feed in, the Plan Area from spring to fall before migrating south, although a few are seen in the winter in the area. Minke, Grey and Fin Whales are also observed in the area. Resident and transient Killer Whales occur throughout the Plan Area, which includes critical habitat for northern resident Killer Whales (Appendix A2).

Other marine mammals that occur in the Plan Area include Pacific White-sided Dolphins, Dall's Porpoises, Harbour Porpoises, Sea Otters, Harbour Seals, Elephant Seals and Steller Sea Lions. Many of the mammal species that occur in the Plan Area are of conservation concern, both provincially and federally (Appendix A1). See the *Current Conditions and Trends for North Vancouver Island* report for more information (In prep.).

#### **2.2.2.4 Plants**

Plants include floating algae (or phytoplankton), seagrasses (or vascular plants) and seaweeds (or attached algae).

Phytoplankton (the basis of the ocean food web) are eaten by zooplankton, which are food for fish and invertebrates, such as clams and sea anemones. Phytoplankton occur in all the marine and estuarine waters of the Plan Area, and their abundance varies seasonally with the availability of light and nutrients.

Eelgrass is the main vascular plant in the Plan Area. It is an ecologically important plant. It grows in underwater beds, rooted in fine sandy materials and occasionally in areas with rock. These beds occur most commonly in protected waters in the lower intertidal and shallow sub-tidal zones, and are common in estuaries at the heads of many inlets where mixing of fresh water and seawater occurs resulting in high productivity. Eelgrass beds provide key habitat for ducks, crab, herring and juvenile salmon.

The predominantly rocky shorelines of the Plan Area also support a variety of seaweeds, which absorb nutrients. The three main groups of seaweeds—browns, greens and reds—have different abilities to absorb light, which influences where they grow. Green seaweeds typically occupy upper intertidal areas, browns occur in lower intertidal areas, and reds are found in lower intertidal to sub-tidal waters. Kelp are a form of brown seaweed. They occur in the lower intertidal zone, and can form extensive beds with canopies that provide important habitat for fish, invertebrates, mammals and seabirds. Bull Kelp and Giant Kelp are the primary species in the Plan Area, and form kelp “forest” communities that are habitat for many species.

#### **2.2.2.5 Birds**

The Plan Area is rich in bird life. Estuaries, marshes, tidal flats and other sheltered waterways provide key resting and feeding habitat for migratory birds. They also provide important breeding and rearing habitat for resident marine and shoreline bird species, including gulls, cormorants, herons, storm-petrels, auklets, guillemots and oystercatchers. Bald Eagles typically nest in large coniferous trees near the shoreline of islands, estuaries and streams. Seabirds spend most of their time on open water and come to land only to breed; they depend on the marine environment for activities such as foraging, wintering and migrating. Seabirds include tubenoses, such as albatrosses, fulmars, shearwaters and storm-petrels; cormorants; jaegers; skuas; gulls and terns; alcids, such as murres, guillemots, auklets and puffins; and phalaropes, which could also be categorised as shorebirds. In the Plan Area, 25 bird species are of conservation concern, both provincially and federally (Appendix A1). Several existing and proposed provincial and federal protected areas in the Plan Area include bird habitat.

#### **2.2.3 Climate Change**

Global climate change is having observable effects on the world’s oceans. They include changes in ocean temperatures, chemistry, sea level and storminess, streamflow runoff, current mixing and upwelling. The Plan Area has very complex climate and ocean conditions, and there are few region-specific data on historic or current climate and oceanography.

In BC, shoreline sensitivity to climate change has been estimated by ecosection (Table 2). Kelp, seagrass and shallow rocky reef habitats have also been assessed as having high vulnerability to



climate change. Benthic habitats in the strait and fjord ecosections also have higher sensitivity to climate change than do surface and pelagic water areas. Observed changes are described in Table 3.

*Table 2: Percent of the shoreline that is sensitive to climate change, by ecosection.*

	<b>Vancouver Island Shelf</b>	<b>North Coast Fjords</b>	<b>Queen Charlotte Sound</b>	<b>Queen Charlotte Strait</b>	<b>Johnstone Strait</b>	<b>Strait of Georgia</b>
High sensitivity	28.5	21.3	35.2	31.0	25.5	40.4
Very high sensitivity	26.5	21.2	17.9	14.7	10.9	15.0
<b>Total</b>	55.0	42.5	53.1	45.7	36.4	55.4
<b>Percent of the Plan Area in the ecosection</b>	1.0	5.0	40.0	28.0	25.0	1.0

#### 2.2.4 Pollution

Marine habitat, species populations and health, human health and safety, and the availability and/or harvest of food sources are all potentially affected by water, air, light and noise pollution.

In comparison to other locations in BC, and the world, the Plan Area is relatively pristine with respect to chemical contamination, in part due to its remoteness and limited human population; however, high vessel traffic density occurs in Johnstone and Queen Charlotte Straits, which can be a chronic dispersed source of pollution. The more urbanised coastal areas tend to have concentrated (and sometimes seasonal) sources of pollution, such as wastewater outflows, increased boat traffic, and marinas. In Canada, it is estimated that 80 percent of marine pollution results from terrestrial activities. The transport of contaminants by winds and ocean currents is also significant but difficult to manage at a regional level. Marine spills represent an ongoing pollution risk. Oil spill response equipment caches are located in Port Hardy and Campbell River.

*Table 3: Observed climate changes in the Plan Area.*

<b>Climate Factor</b>	<b>Observed Changes</b>
Ocean temperature	<ul style="list-style-type: none"> <li>• Average temperatures of both surface and deeper waters between the mainland and Vancouver Island have increased by up to one degree over the past century.</li> <li>• Ocean temperature can increase by 0.4–0.7°C during El Niño years.</li> <li>• Because of complex oceanography, the Plan Area can have both unusually warm and unusually cool areas during the same period (e.g., 2007–2008)</li> </ul>
Sea level	<ul style="list-style-type: none"> <li>• Overall, the sea level has risen by as much as 12 cm along the BC coast, but declines have occurred in certain areas (e.g., down by 13 cm in Tofino).</li> <li>• The sea level can rise or decline by 0.5 m or more during strong El Niños (e.g., 1997/98). There is uncertainty about how, if at all, climate change will affect El Niños.</li> </ul>
Runoff	<ul style="list-style-type: none"> <li>• Winter streamflow has increased; late summer flow has decreased. This trend is stronger in the southern part of the plan area.</li> <li>• High flows associated with spring snowmelt are happening earlier in many rivers.</li> </ul>
Currents, mixing and upwelling	<ul style="list-style-type: none"> <li>• There are relatively few data for the region. Data exist for the entire MaPP area, but each MaPP sub-region is different in terms of currents, mixing and upwelling.</li> </ul>
Salinity	<ul style="list-style-type: none"> <li>• Surface salinity in the North Pacific has decreased by about 0.1 units over the past 50 years, likely due to increased rainfall and decreased mixing.</li> <li>• Globally, salinity trends are variable and poorly understood.</li> </ul>
pH	<ul style="list-style-type: none"> <li>• There are relatively few data for BC.</li> <li>• Multi-year data from intertidal habitats in the Strait of Juan de Fuca indicate that pH changes significantly over the course of the year, and from year to year.</li> </ul>
Oxygen	<ul style="list-style-type: none"> <li>• Oxygen levels in shallower water (125–300 m) have decreased by roughly 25 percent over the past 50 years.</li> <li>• The top of the "oxygen minimum zone," a layer of water with very low oxygen levels that normally occurs at intermediate depths off the coast of BC, has moved up about 100 m over the past 50 years.</li> </ul>
Storminess	<ul style="list-style-type: none"> <li>• There has been no trend toward increased storminess in the region over the past century, although data sets suggest there has been an increase over the past 30-40 years.</li> <li>• Storminess and wave height have increased significantly in other parts of the North Pacific.</li> </ul>

## 2.3 Socioeconomic Conditions

### 2.3.1 Population and Communities

Most of the population in the Plan Area is on the east coast of Vancouver Island, and all communities are located along coastlines. NVI communities are closely tied to the marine environment. Marine resources support many economic, cultural and social activities, including fishing, tourism and traditional food gathering activities. The larger communities, according to 2011 population estimates, are the City of Campbell River (31,186), the Municipality of Port Hardy (4,008), the Town of Port McNeill (2,505), Malcolm Island/Sointula (733), the Village of Alert Bay (445) and the Village of Sayward (317). Nānwakolas member First Nations are located primarily on Indian Reserves in or near these communities. Other First Nations communities are on Cormorant Island and other more remote Indian Reserves at Hopetown, Kingcome Inlet, Harbledown Island, Hope Island and Gilford Island. Just less than half of the Nānwakolas member First Nations population resides on reserves in or adjacent to the major urban settlements; slightly more than half of the population lives off-reserve.

Statistics are not collected based on the Plan Area boundary, so statistics are presented for areas that overlap the Plan Area. In 2011, the Plan Area population numbered more than 40,000 full-time residents, with most of the population concentrated in the south at Campbell River. The population is growing, but population trends are not consistent across the Plan Area. The population is growing in the south, around Campbell River, but is slowly declining in the north and in isolated and rural areas.

First Nations constitute a substantial component of the population (approximately 24 percent in the north and 10 percent in the south in 2006), and their populations are increasing. The total registered population of the seven Nānwakolas member First Nations (both on- and off-reserve) was estimated at 3,066 in 2014. Many First Nations members are relocating to their reserves, which is resulting in significant growth in local populations and birth rates. For example, the Gwa'sala Nakwaxda'xw community at T'sulquate has a consistent annual population growth rate of 11 percent.

The median age of the population in the Plan Area has increased by about 14 years since 1986 and was about 42 years in 2011, which is slightly older than the BC population, as a whole. First Nations communities have relatively youthful populations. For example, in 2006, approximately 49 percent of the First Nations population was under the age of 24, compared to 28 percent for the provincial population overall.

In terms of general population, from 1986 to 2011 there was overall net in-migration to the Plan Area and this is projected to continue. The north part of the Plan Area had negative growth

between 1986 and 2006. The growth leveled out to 2006 to 2011 and is projected to slightly decrease. The southern portion of the Plan Area had positive growth from 1986 to 2011 and this is projected to continue.

### **2.3.2 Education, Training and Research**

In 2006 about two-thirds of the adult population in the Plan Area has a formal high school or equivalent education level, which is below the provincial average of about three-quarters. In 2006, about 9.5 percent of the Plan Area population had a university education, compared to 17.3 percent across the province. However, the data indicate a slow rate of long-term improvement in education levels in the Plan Area.

High school students in the Plan Area have access to courses in the classroom, online and through open learning, and to training opportunities through apprenticeship, cooperative education, career preparation and work experience programs, which vary by school.

Post-secondary education, including transfer programs, is available at the North Island College and Discovery Community College campuses. Marine related technical training includes nautical, marine emergency, tourism and guiding, and Guardian Watchmen programs. A variety of education programs are also available online and through open learning.

Research is conducted throughout the Plan Area by universities and colleges, government, industries and nonprofit societies. Some of these organisations also provide education, interpretation and stewardship opportunities.

Traditional and local knowledge are now being incorporated into research, education and natural resource decision-making, beyond the more restricted past use solely among families and local communities. Similarly Aboriginal and community knowledge is required to be used in the formal assessment of species at risk under the Canadian *Species at Risk Act*.

### **2.3.3 Economy and Infrastructure**

#### **2.3.3.1 Employment, Income and Wellbeing**

The marine-related economy is characterised by resource- and nature-based activities of forestry operations (log storage, handling and transport), fishing, aquaculture, transportation, recreation and tourism. Renewable energy generation is an emerging economic activity. Unless otherwise stated, the Plan focuses on the marine portion of economic sectors.

Income dependency data, which indicate the source of monies entering the Plan Area economy, ignore economic activities like retail that involve circulating money that has already

entered the region. BC Stats income dependency data for 2006 indicated that the public sector (i.e., government services) was a growing and very important economic driver in the Plan Area. In the Campbell River and Port Hardy areas, forest operations were the primary economic sector. Fishing, trapping and processing were key economic drivers throughout the Plan Area, especially in Bute Inlet and Alert Bay. Tourism was also very important, especially in the Bute Inlet area.

The working age population in 2011 (ages 20 through 64 years) was about 59 percent of the Plan Area population and was growing in the Plan Area and the province as a whole from 2001 to 2011. However, the working age population in the north part of the Plan Area has been declining.

After a peak in 1991, median household incomes in BC declined and then rebounded somewhat by 2006 (\$59,798). In the Plan Area, the decline in median household income over the same period was much more consistent and stronger. Statistics for the former Comox Strathcona Regional District (CSRD) suggest that median household income in the SRD had a slight increase over that period to \$55,052 in 2006, whereas the RDMW median household income followed steep downward trend from 1991 through 2006 (\$56,446) but was still slightly higher than that in the CSRD in 2006. The median income earned by females in the Plan Area in 2006 was 55–64 percent of that earned by males, and was below the median for females in BC.

Overall, unemployment rates in NVI communities are high (7.4–11.0 percent in 2006) relative to the provincial average (6.0 percent in 2006). A rate of roughly 6–7 percent is considered to be where an economy is at full employment. A much higher proportion of the population in the Plan Area is on income assistance relative to the province as a whole. The data indicate a rise in income assistance between 2009 and early 2010, consistent with the provincial trend.

In 2009, 30 percent of the labour force in the RDMW was working in the marine sector and finfish aquaculture was the largest of the marine sectors. This did not include the accommodation and food services that supported some of these sectors.

A survey conducted in late 2011 for the Ha-ma-yas Plan showed that the Nanwakolas member First Nations level of participation in the marine sector was low. The marine sector provided 383 jobs, of which only 39 percent were full-time. Less than 20 percent of each member nation's workforce was employed full-time in the marine sector, although the proportion varied widely among communities. Most jobs were in commercial seafood processing, commercial fishing and aquaculture.

First Nations marine resource use within the RDMW, including for Food, Social, and ceremonial (FSC) purposes, is not included in the employment numbers but is an important part of First



Nations household and community incomes and wellbeing. For example, if considered at a wholesale food value, the FSC harvest of salmon, groundfish and shellfish was worth \$405,000 and \$1,753,000 in 2009 and 2010, respectively. These values are similar to the retail cost of purchasing these foods. There are also other community benefits of FSC, which are not assigned an economic value.

Socioeconomic issues overall indicate that there are some challenges to wellbeing in the Plan Area. BC Stats index of socioeconomic indicators includes indicators related to economic hardship, crime, health problems, educational concerns, children at risk, and youth at risk. In 2012, the Vancouver Island North Local Health Area (LHA) was the 11th lowest ranked of 78 LHAs in BC. The main contributing factors to the low ranking were low health and economic hardship indices. Campbell River LHA combined with Vancouver Island West LHA ranked 34th and had low rankings for children and youth at risk indices.

### **2.3.3.2 Infrastructure**

Infrastructure maintenance and improvement supports access to marine resources for communities and sectors and helps to enhance global competitiveness of the Plan Area economic activities. The Plan Area has a high concentration of infrastructure, although some structures have been closed recently (Table 4).

The largest concentrations of assets are at Quadra Island and Campbell River in the south, and Alert Bay and Port Hardy in the north. Most small craft harbours are in good physical condition and do not structural needs, although there are some areas lacking in fuel and recreational fishing services. Some Nānwakolas member First Nations have identified needs for basic dock provisions and upgrades for community use and economic expansion.

There are 14 commercial marine product processing facilities and 7 cold storage facilities in the Plan Area. Campbell River and Port Hardy have the largest concentrations of these facilities. Additional commercial services included off-loading, weighing and ice-making.

*Table 4: Infrastructure in the Plan Area.*

<b>Infrastructure Type</b>	<b>Assets</b>	<b>Number of Structures</b>
Major ports	Ferry terminals	7
	Cruise ship ports	1 (not operating)
Fisheries	Commercial (cold storage, off-loading, processing, weighing, ice-making)	18 (4 not operating)
	Sport (processing only)	3
Public assets	Small craft harbours	14
	Resorts and marinas (including yacht clubs, eco-lodges and fishing resorts)	74 (17 not operating)
	Public wharves	20 (2 not operating)
	Canadian Coast Guard lifeboat stations	2
	Royal Canadian Search and Rescue Society auxiliary stations	3
	Canadian Coast Guard lighthouses (staffed)	7
	Mooring buoys	36

#### **2.3.4 First Nations Social and Economic Transition**

The First Nations cultures and traditional marine-based economic systems have undergone a major transition since the time of European contact. First Nations cultures and economies have always been based on use of marine resources, and have been reflected in many ways including governance systems, traditional laws and management regimes. Marine resources were a source of wealth and the basis of trade. Initial trade and contact led to drastic reductions in First Nations populations. In the late 1800s, the federal government established Indian Reserves, and allocated the presumed “unoccupied” lands to settlers and businesses. Generally speaking, the areas identified as Indian Reserves were relatively small and did not reflect the integral connection of First Nations to their territories and resources.

Early federal government policy was to assimilate and relocate First Nations into the dominant culture. This led to difficulties for First Nations in managing and maintaining their association with traditional territories, and made them overly dependent on economic and social assistance programs. The relocation of the separate Gwa’sala and ‘Nakwaxda’xw nations in 1964 to Port Hardy is a prime example in the Plan Area.

Government policies also acted to limit First Nations participation in the economy of the day, and restricted resource-dependent social practices. These included policies that restricted First Nations participation in the commercial fishery, which was a traditional foundation of coastal First Nations, and other policies that regulated resource use. The overall effect was to limit First Nations from access to resources and to cause a gradual marginalisation of First Nations from

economic participation. This also weakened the resource-dependent social and cultural system and overall health of First Nations communities. Such factors are important in understanding why this plan focuses on improving economic and social conditions of First Nations communities in the Plan Area and increasing participation in the regional economy. An opportunity exists for the province and the Nanwakolas member First Nations to work together in assisting First Nations to build vibrant and healthy economies and patterns of economic participation.

## 2.4 Governance and Enforcement

With reference to federal and provincial Crown jurisdiction, marine areas are subject to a range of governance regimes, which adds to the complexity of planning (Table 5). Generally, the provincial government has jurisdiction over the foreshore area (i.e., the intertidal zone), coastal “inland waters,” or waters “within the jaws of the land” on the outer coast, and the lands covered by these waters (i.e., public Crown lands). Inland waters are waters within an indented coastline, such as harbours, bays and estuaries, and include areas between headlands along the outer coast. The provincial government also has clear jurisdiction over the waters and lands, and minerals and other natural resources of the seabed and subsoil in Johnstone and Queen Charlotte Straits.

The federal government has legislative authority over many activities and resources that occur within the water column (e.g., fisheries, aquaculture operations, marine mammals) and over the water’s surface (e.g., transportation, navigation). Both the provincial and federal governments have many roles and responsibilities, which benefit from harmonised effort.

In addition the Nanwakolas member First Nations assert Aboriginal rights including title, as well as jurisdiction, governance and stewardship rights, roles and responsibilities throughout the Plan Area.

A number of plans have informed the planning process for the NVI Marine Plan Area. Two provincial strategic land use plans apply to the Plan Area, although they focus on upland areas. The Vancouver Island Land Use Plan applies to the western portion of the Plan Area; the Coastal Land Use Plan applies to the eastern portion. Two provincial coastal plans, the North Islands Straits and Johnstone–Bute, apply to the northern and the southern portions of the Plan Area, respectively. Additionally, due to their connection to their traditional territories the Nanwakolas member First Nations have developed community marine plans. The plans have been integrated into the broader Ha-ma-yas Marine Plan, which applies to an area similar to that of the Plan.

In addition, local governments have Official Community Plans and zoning bylaws that address a variety of foreshore and marine uses ranging from industry to conservation.

*Table 5: Federal and provincial agencies with marine management responsibilities.*

<b>Use or Activity</b>	<b>Federal Agencies</b>	<b>Provincial Agencies</b>
<b>Sport fishing</b>	Fisheries and Oceans Canada	Ministry of Environment Ministry of Agriculture Ministry of Forests, Lands and Natural Resource Operations Ministry of Jobs, Tourism and Skills Training
<b>Commercial fisheries</b>	Fisheries and Oceans Canada Department of Foreign Affairs and Trade Transport Canada	Ministry of Agriculture BC Centre for Disease Control Ministry of Jobs, Tourism and Skills Training (potentially)
<b>Recreation</b>	Department of Canadian Heritage Parks Canada Fisheries and Oceans Canada	Ministry of Environment Ministry of Forests, Lands and Natural Resource Operations Ministry of Jobs, Tourism and Skills Training
<b>Transportation</b>	Canadian Environmental Assessment Agency Environment Canada Fisheries and Oceans Canada Transport Canada	Ministry of Environment Ministry of Jobs, Tourism and Skills Training Ministry of Forests, Lands and Natural Resource Operations Ministry of Transportation and Infrastructure
<b>Aquaculture</b>	Environment Canada Fisheries and Oceans Canada Transport Canada Department of Foreign Affairs, Trade and Development Canadian Food Inspection Agency	Ministry of Forests, Lands and Natural Resource Operations Ministry of Agriculture BC Centre for Disease Control Ministry of Jobs, Tourism and Skills Training Ministry of Environment
<b>Seafood processing</b>	Canadian Food Inspection Agency	Ministry of Agriculture BC Centre for Disease Control
<b>Energy and mining</b>	Canadian Environmental Assessment Agency Environment Canada National Energy Board Natural Resources Canada	Ministry of Energy and Mines Ministry of Forests, Lands and Natural Resource Operations BC Environmental Assessment Office
<b>Tenure on foreshore, nearshore and marine lands</b>	Industry Canada	Ministry of Forests, Lands and Natural Resource Operations
<b>Disposal</b>	Canadian Environmental Assessment Agency Environment Canada	Ministry of Environment

<b>National defence and public safety</b>	Environment Canada	Ministry of Environment
	Fisheries and Oceans Canada	Ministry of Justice
	Department of Foreign Affairs and Trade	
	Department of National Defence and the Canadian Forces	
	Transport Canada	
	Royal Canadian Mounted Police	
<b>Research, monitoring and enforcement activities</b>	Fisheries and Oceans Canada	Ministry of Environment
	Environment Canada	Ministry of Forests, Lands and Natural Resource Operations
	Parks Canada	Ministry of Agriculture
	Natural Resources Canada	Ministry of Energy and Mines
	Transport Canada	Ministry of Jobs, Tourism and Skills Training
	Department of National Defence	
	Royal Canadian Mounted Police	
<b>Protection and conservation</b>	Agriculture and Agri-Food Canada	
	Environment Canada	Ministry of Environment
	Parks Canada	Ministry of Forests, Lands and Natural Resource Operations
	Fisheries and Oceans Canada	
	Canadian Environmental Assessment Agency	
	Canadian Heritage	

## 2.5 Marine Use Patterns

### 2.5.1 Conservation, Protection, Cultural Resources and Heritage Resources

Various provincial designations are used to protect and manage important ecosystems, species at risk, and valuable cultural, heritage, tourism and natural features in the Plan Area (Figure 5). These designations cover areas ranging from 0.01 km<sup>2</sup> to 99.70 km<sup>2</sup> and totalling 230 km<sup>2</sup> (Table 6). The provincial government is also in the process of legally designating several conservancies in the Plan Area. A number of protection measures are also in the *Land Act* (e.g., s. 15, s.16 and s. 17 map reserves, designated use areas, and s. 106 transfer of administration/control). A small number of areas are also zoned by local government for conservation, recreation, and heritage purposes.



*Table 6: Provincial marine conservation and protection areas in the Plan Area.*

Type of Provincial Protected Area	Number	Total Marine Area (km <sup>2</sup> )	Percent of Marine Plan Area (km <sup>2</sup> )	Percent of Marine Plan Shoreline (km)
Ecological Reserve	2	16.9	0.2	0.5
Park	17	172.1	2.2	7.2
Conservancy	19	16.8	0.2	6.2
Wildlife Management Area	1	0.9	<0.1	<0.1
<b>TOTAL</b>	<b>39</b>	<b>206.7</b>	<b>2.6</b>	<b>14</b>

The Plan Area does not include any federally designated Marine Protected Areas (MPAs) or sponge reef closures. However, it does include 47 federal RCAs, which are fisheries management areas, and the soon-to-be-established Scott Islands Marine National Wildlife Area (Figure 5).

Cultural and heritage resources occur throughout the Plan Area. Many heritage sites have been recorded provincially, but others are unknown and unregistered. Many cultural resource locations are kept confidential by First Nations. There are approximately 1,833 archaeological sites in the Plan Area. They are a combination of historic, pre-contact, post-contact and traditional use areas and include both cultural and heritage resources. Most of the sites (more than 1,469) have a pre-contact component. The highest concentrations of sites are in the Broughton Archipelago and Wells Passage. Motor Vessel BCP 45 (a wooden seiner) is a national historic site at Campbell River at the Maritime Heritage Centre, and six staffed lighthouses have been nominated for federal heritage lighthouse designation.

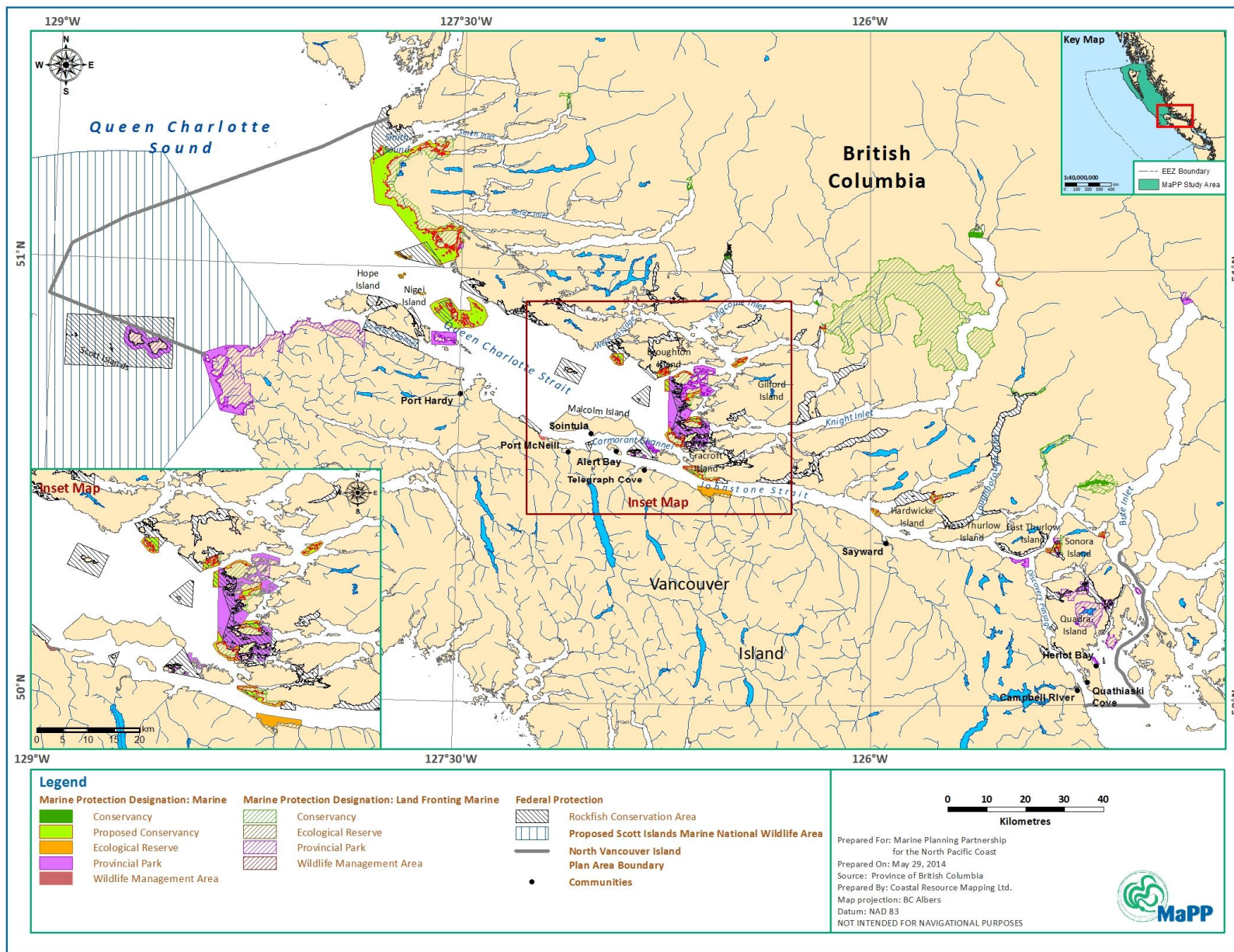


Figure 5. Existing and proposed protection areas in marine or adjacent upland areas in the North Vancouver Island Marine Plan Area

## 2.5.2 Economic Uses and Activities

Various marine-related economic uses and activities occur throughout the Plan Area.

**Recreation and tourism** encompasses a variety of self-guided activities and guided activities provided by commercial service operators. High value areas for recreation and tourism include God's Pocket, Broughton Archipelago and Malcolm Island, the Discovery Islands, Johnstone Strait and the estuaries and channels of several large inlets, including Bute Inlet and Knight Inlet. Commercial recreation sites and activities are permitted or licensed by a number of means including crown land leases and licenses of occupation, BC Parks permits, and agreements with First Nations. Figure 6 identifies important recreation and tourism *Land Act* tenures. It does not show all high use sites including some in the Discovery Islands, Johnstone Strait, Hanson Island and the Broughton Archipelago. Nor does the map show numerous park permits in the Plan Area.

**Forestry operations**, including log handling, storage and transport, are fundamental to the coastal industry. As of August 2013, there were 356 log handling and storage tenures covering 2,090 ha (less than 0.1 percent) of the Plan Area (Figure 6). They are a mix of tenured active and inactive sites. Activation occurs as needed with each harvesting pass through a forested watershed. Due to changes in the areas that can be harvested, harvesting is expected to occur more frequently (e.g., about every five years) in areas that are available for harvesting. The Allowable Annual Cut has been reduced throughout the Plan Area, and is expected to continue to decrease on the mainland and smaller islands but stabilise on Vancouver Island. However, the need for marine access to future harvestable areas continues to be important to the sector.

**Aquaculture activities** include bottom and off-bottom shellfish and other invertebrate, plant, invertebrate and fish production. The primary species farmed in finfish aquaculture is Atlantic Salmon. As of August 2013, there were 32 finfish tenures in the Plan Area, covering about 9.3 km<sup>2</sup>. There were also 31 applications for tenures although some tenures and applications were amendments to existing farms. Most of the finfish tenures are located throughout the straits and inlets between Vancouver Island and the mainland, primarily in the Broughton Archipelago area, and between Sayward and Campbell River. On March 22, 2013, the provincial government stated in a news release responding to the Cohen Commission that it does not intend to issue "any new tenure agreements for net-pen salmon farms in the Discovery Islands until September 30, 2020" (Appendix A3). For the purposes of this plan, it is assumed that this direction will remain in place until 2020 unless there is a provincial policy change.

Presently, there is limited shellfish aquaculture in the north end of the Plan Area. Most shellfish operations are located in the Discovery Island area and south. Many species of shellfish can be used in aquaculture, including oysters, clams, scallops, mussels, Geoduck, abalone and cockles.

As of August 2013, there were 54 shellfish tenures, encompassing 6.3 km<sup>2</sup> in the Plan Area. Most sites are under licences of occupation, but some are under designated use areas or standard leases. The designated areas for potential use by First Nations are established “for so long as required” but are recommended for review every 10 years.

Loxiwe are historic shellfish aquaculture areas. They are a unique feature found throughout the First Nations territories, and are concentrated in the Broughton Archipelago. They are not currently under aquaculture tenure but are often harvested as part of commercial fishing licences.

Research and demonstration projects on plant aquaculture and integrated multi-trophic aquaculture are being conducted in BC. Several applications for wild plant harvest licences are made each year.

**Mining operations** are not being recommended in this plan. Provincially tenured mining activity is restricted in the marine environment through the existence of a No Registration Reserve. This reserve was established through an agreement between federal and provincial government, and is of indefinite term. The reserve covers all of the waters contained in the Plan Area. Dredging activities are not considered under mining activities, and are a federally regulated activity.

**Energy-related activities** refer to renewable energy generation (offshore wind, wave, tidal) and nonrenewable energy (oil and gas).

Defacto provincial and federal moratoria on offshore oil and gas exploration currently exist, and some First Nations have passed resolutions opposing offshore oil and gas development. There are existing tenures and potential nonrenewable resources in the Plan Area. Offshore exploration tenures were issued mainly in the early 1960s. There is one provincially issued offshore tenure between Port McNeill and Port Hardy. There are also portions of federally issued tenures in the very northern portion of the Plan Area, but the rights under these permits were suspended in 1972. Nonrenewable energy is not a focus of the Plan but is mentioned here as part of background context.

To date, no marine renewable energy projects have been constructed in the Plan Area. There is high potential for developing tidal energy generation, and industry has identified the Sayward and Campbell River areas as areas of interest. There are several investigative permit applications for tidal energy, and the most developed tidal energy project is at Canoe Pass between Quadra and Maude Island.

Wave energy generation is also at the research and demonstration stage in BC, although it has lower potential in the Plan Area compared to the overall MaPP study area. A coarse mapping



exercise based on expert knowledge has shown only one small area has high annual mean wave energy resources. It is located near the Scott Islands.

Offshore wind energy generation has some potential in the open water areas of Queen Charlotte Sound and Queen Charlotte Strait in the northern end of the Plan Area. The area with the highest potential is near the Scott Islands. As of August 2013, there were 15 tenures for wind energy investigation and monitoring with a foreshore or offshore component.

**Fisheries activities** are an important component of the economy, subsistence and culture of the Plan Area. The fisheries economy creates complex networks between fishers, their families, marine ecosystems, and the community at large. It can be viewed as a lifestyle that connects people to each other, to their communities, and to the surrounding environment.

First Nations fishing occurs throughout the Plan Area. N<sup>an</sup>wak<sup>o</sup>las member First Nations are included in Aboriginal Fisheries Strategy agreements related to FSC, communal fishing licences and co-management. Harvest varies from year to year depending on the availability of each species.

The commercial fishery occurs throughout the Plan Area and includes finfish, shellfish and other invertebrates. Overall, the commercial fishery has been declining in size and value but diversifying in species harvested. The number of fishing licences and fisher registration cards in the Plan Area has also been declining, due partly to the restructuring of some fisheries. Salmon fishery efforts, based on boat days by salmon catch areas, are moderate to high throughout the Plan Area. Between 1996 and 2012, the Plan Area provided more than 20 percent of the BC salmon catch in 9 of the 17 years in that period. Time and area closures are seasonally implemented in several areas to minimise fisheries impacts on salmon and other species.

Generally, groundfish fisheries occur from Telegraph Cove to the north of the Plan Area, although some hook and line fishing of rockfish occurs in the Discovery Islands area in the south. The MaPP study area accounted for well over 20% of the provincial landed value of groundfish and small pelagic fisheries between 1996 and 2006. More than 70 species are targeted in the groundfish fisheries, although more than 200 species are caught. Port Hardy is a major landing point for commercially caught fish, especially trawl-caught groundfish.

Invertebrate fisheries vary in location, and are more common in Queen Charlotte and Johnstone Straits. The prawn fishery is the dominant invertebrate fishery in the Plan Area inlets. The south end of the Plan Area is part of the Strait of Georgia major prawn stock area. Four main invertebrate species are harvested coast-wide by the commercial dive fishery: Geoduck, Horse Clam, Sea Cucumber and Red Sea Urchin. Nearly one-quarter of commercial fishing licences in the RDMW in 2009 were for hand harvesting of clams.

The recreational fishery draws provincial residents and visitors from within Canada and from other countries. In the RDMW alone, the number of angler days per year has been estimated at 175,000. Salmon has been the primary species of interest for the recreational fishery, followed by halibut. Chinook and Coho Salmon, in particular, have been recognised as priority recreational salmon fisheries, in years of low abundance. Other species such as lingcod, rockfish, crab and prawns are also popular but are taken in smaller quantities.

Guided recreational fishing activities are centred around fishing lodges, resorts and fishing charters. Fourteen lodges, including one floating lodge, offer recreational fishing in the Plan Area. Many are located in the sheltered inlets of the mainland coast. An additional 17 marinas, wharfs and harbour authorities offer recreational fishing facilities. Three processing facilities, one in Port Hardy and two in Campbell River, handle recreational fishing products. The Plan Area is a popular region for angling: fishing was the third ranked activity for visitor participation in 2002. In the NVI Plan Area, fisheries related activities operate in a regulated environment and seafood products are marketed in a highly competitive local and global seafood marketplace. The ability to serve high-quality, high-value seafood to market requires proper orientation and cooperation by all the elements in the value chain, from fisheries managers and regulators to harvesters and growers to processors and distributors and service providers. Additional investments in infrastructure, equipment, product development and human resources (i.e., training) can help to ensure long-term viability of the seafood sector.

**Transportation activities** occur throughout the Plan Area. Vessel traffic from north to south generally travels down the east side of Calvert Island, then diverges: most of the traffic then follows the west coast of the mainland and down the north-east sides of Malcolm and Hanson Islands to Johnstone Strait; the rest passes on the north-east side of Hurst and Nigei Islands and the south-west side of Malcolm Island and south by Hanson Island.

Oil tanker traffic occurs infrequently in the Plan Area, primarily at the north end, due to the voluntary Tanker Exclusion Zone that was established in 1998. Most tanker traffic involves the barging of refined petroleum products to communities. Cruise ships generally transit through the Plan Area. The highest concentration of cruise ships occurs at the north end of the Plan Area where traffic from Hecate Strait, the west and east sides of Vancouver Island, and the Inside Passage intersects. A concentration of smaller “pocket” cruise ships occurs around Port McNeill and Alert Bay. The highest concentration of ferry traffic occurs around Campbell River and Port McNeill, where regular service is provided to nearby islands. Fishing traffic occurs throughout the region but is concentrated on the east coast of Vancouver Island. In addition, barges and smaller supply boats distribute goods and products to local communities, and Orca Sand and Gravel Ltd. ships sand and gravel to international markets from its wharf north of Port McNeill.



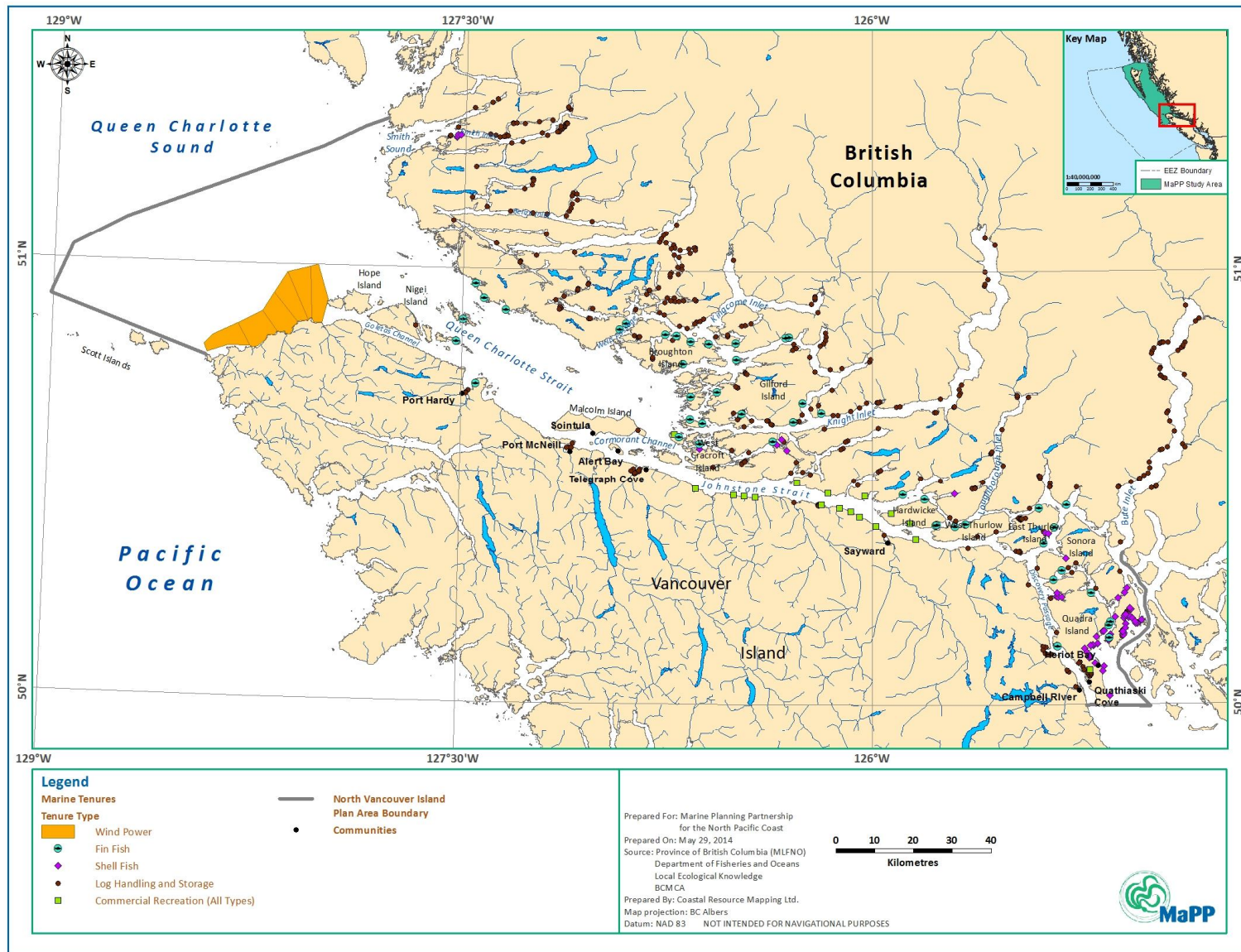


Figure 6. Selected Land Act tenured uses and activities in the Plan Area.



## HA-MA-YAS MARINE PLAN

A Collaborative Marine Plan by Member First Nations of the  
Nanwakolas Council



## Johnstone - Butte



# CHAPTER 3: PLAN DEVELOPMENT PROCESS

## 3.1 Planning Process

The planning process covered a period of nearly 2.5 years from initiation of the Technical Team in March 2012 to the completion of the Plan in June 2014. The general planning process steps were as follows:

**Step 1: Develop and Approve Work Plan.** This included confirmation of specific sub-regional plan outputs and a general timeline for the completion of work developed by the MaPP Marine Coordination Team.

**Step 2: Establish a Sub-regional Marine Plan Advisory Committee (MPAC).** This involved soliciting requests for nominations to MPAC, screening nominations and appointing members and alternates.

**Step 3: Assemble Information for Plan Topics.** The Technical Team and MaPP contract staff initiated the collection and preparation of information that was applicable to Plan development.

**Step 4: Hold Information Open Houses in Local Communities.** Open houses on the MaPP initiative and the Plan development process were held in Campbell River, Port McNeill and Port Hardy.

**Step 5: Prepare and Present Draft Plan Components to MPAC.** The Technical Team presented a variety of draft Plan components over four MPAC meetings. Verbal advice was documented in an Advice Log, along with subsequent written input.

**Step 6: Assemble and Present Draft 1 Preliminary Plan to MPAC.** The Technical Team reviewed MPAC advice and assembled revised Plan components into a preliminary draft plan (Draft 1). The draft plan was presented at a June 2013 MPAC meeting.

**Step 7: Assemble and Present Draft 2 Preliminary Plan to MPAC.** The Technical Team addressed incomplete components of Draft 1 and incorporated MPAC advice into a Draft 2 preliminary plan, which was presented at the September 2013 MPAC meeting.

**Step 8: Revise Preliminary Plan Draft 2 and Present to MPAC.** MPAC advice on Draft 2 was used, along with additional information from MaPP studies, to prepare a revised draft (Draft 3).

**Step 9: Conduct Internal Review of Preliminary Plan Draft 3.** Internal reviews of the Draft 3 plan were completed by provincial government ministries and Nanwakolas member First Nations. These reviews resulted in the documentation and resolution of issues by senior officials, which provided direction for the preparation of the final preliminary draft (Draft 4).

**Step 10: Present Final Preliminary Draft 4 to MPAC and Facilitate Support.** The Technical Team presented the Draft 4 to MPAC to identify changes made and document outstanding issues that required resolution for MPAC member support. This meeting was followed by discussions with specific parties to address Plan support issues.

**Step 11: Revise Public Draft and Solicit Broad Feedback.** This consisted of public open houses/meetings and a 45-day public review period to receive comments on the final plan. During this period, discussions were held with nonparticipating First Nations and stakeholder groups.

**Step 12: Multiple Accounts Analysis.** An assessment of the potential environmental, socio-economic and cultural implications of the plan was completed using a multiple accounts analysis approach that considered both spatial and aspatial planning objectives, strategies and associated recommendations.

**Step 13: Confirm and Approve Final Plan.** This included determining the level of support by MPAC participants and obtaining Plan approval from the Nanwakolas Council and provincial government. Support letters are provided in Appendix B1.

### 3.2 Marine Plan Advisory Committee

Consistent with the MaPP Letter of Intent, the NVI Technical Team established a stakeholder advisory group, the Marine Plan Advisory Committee (MPAC), to provide ongoing advice on plan documents and information. Invitations were sent to stakeholder groups and Regional Districts, along with nomination forms and the MPAC Terms of Reference (Appendix B2). MPAC members and alternate members were screened and selected, and participant funding opportunities were provided to all members. All members agreed to comply with the Terms of Reference, which included a Code of Conduct, general work plan and MPAC meeting schedule.

Interests represented by MPAC were forestry operations, commercial recreation and tourism, conservation, finfish and shellfish aquaculture, municipal or regional government, public recreation, recreational fishing service providers, commercial fisheries and renewable energy generation. Representatives from the public recreational fishing sector attended two meetings. Attempts to include representation from local marine carriers proved unsuccessful. Some MPAC members represented aggregations or associations of organisations with similar interests, while other members provided specialised expertise only.

The MPAC met approximately every two months between July 2012 and June 2014, for a total of 11 meetings. A list of MPAC members, meeting dates and topics is provided in Appendix B2. Meetings were co-chaired by the joint Technical Team leads, and key meetings were facilitated by an independent facilitator. All advice received, including verbal feedback at meetings and written comments on distributed material, was recorded in an Advice Log, which was maintained by the Technical Team and made available to MPAC for comparison with changes made to material in the final plan.

Throughout the plan development process, MPAC members were encouraged to share draft plan products with constituents in their sectors and communities (when applicable), and to provide information and feedback to the process from those exchanges. Throughout the process, a standing offer to meet with stakeholder groups, as requested, was maintained. A record of those meetings is provided in Appendix B2.

All MPAC meetings were advertised to the public on the MaPP website, and both the agenda and a general summary of each meeting were posted on the website.

### **3.3 Engagement with Public and Nonparticipating Groups**

Information open houses were held in Campbell River, Port Hardy and Port McNeill in September and October 2012 to introduce the general public to the MaPP initiative and the NVI planning process. The open houses were advertised through the MaPP website, e-newsletter, media and posters, and by members of MPAC.

A final round of engagement with the public was provided through open houses held in April 2014 in Campbell River, Port Hardy and Port McNeill, as part of a public comment period. The purpose of this engagement was to outline the final draft plan and solicit feedback on it. The final draft plan was advertised in local communities and posted on the MaPP website in advance of the open houses and during the public comment period.

Attempts were made throughout the process to engage First Nations who did not participate in MaPP but who are potentially affected by the NVI Plan recommendations. These efforts were



made formally by the provincial government through letters and invitations to meet, and by the Nanwakolas Council, which offered technical meetings with these First Nations. Appendix B3 summarizes contact with nonparticipating First Nations that were identified by the provincial government as potentially having shared interests within the Plan Area. Appendix B3 also identifies efforts made to discuss planning progress and final plan recommendations with nonparticipating stakeholder groups including invitations to meet and discuss draft plan products.

### 3.4 Planning Information

The Plan is based on multiple data sources that were compiled and analysed by the joint Technical Team and contract support. Key information and direction was obtained from three existing plans for the Plan Area: the Johnstone–Bute Coastal Plan, the North Island Straits Coastal Plan and the draft Ha-Ma-Yas Marine Plan. Traditional knowledge was provided primarily by the Ha-Ma-Yas Plan, which included the personal and traditional knowledge of First Nations members, including Chiefs and Councils and elders, as well as maps of traditional uses that were developed as part of the Gilgalis Project.

Regional-level work was undertaken by the MaPP initiative in order to provide important information for the MaPP marine plans. This included the development of a number of background studies and reports, such as the *Current Conditions and Trends for North Vancouver Island* report, a regional pollution assessment, a regional infrastructure inventory and gaps assessment, a governance assessment and a list of potential EBM indicators for plan effectiveness monitoring. Relevant background scientific reports and technical documents from the PNCIMA process were also used in developing the marine plans. Additional information was derived from government reports and publications, academic literature, industry or sector publications, discussions with experts, and local and traditional knowledge provided by individuals.

The Plan was also informed by approximately 190 data sets that were made available through the BC Marine Conservation Analysis. Plan participants provided supplementary information on forestry operations, recent scuba diving site inventories, high value commercial recreation and tourism areas, and local government zoning. Key reports and data sources used in the Plan are listed in the References section.

Information and product reviews were also conducted by the MaPP Science Coordinator, as well as by a Science Advisory Committee. A list of the Science Advisory Committee members is provided in Appendix B4. A pool of science and technical experts was also established to provide advice and review products related to their expertise, when required.

### 3.5 Planning Tools

The Plan was guided and strengthened by common processes, products and guidelines that were developed through regular meetings of MaPP sub-regional technical teams and the Marine Coordination Team. The Plan benefitted from, and is generally consistent with, other MaPP sub-regional marine plans. The MaPP sub-regional marine plans have a common Regional Zoning Framework, Recommended Uses and Activities Table (and definitions), Compatibility Matrix for marine uses and activities, Ecosystem Vulnerability Matrix, and spatial planning support tool (SeaSketch) that was provided to technical staff and MPAC members for review and testing of zones, and for analysis. Appendix B5 provides a detailed list of planning support tools.

### 3.6 Planning Steps for Marine Zones and Zone Recommendations

A sequence of steps was followed to develop recommended zones and emphasis areas, and recommended uses/activities for the proposed zones:

#### **Step 1: Develop and Sign Letter of Intent**

- This involved developing an agreement that identified process structures and outcomes for collaborative marine planning. The agreement was made between the provincial government and the three partner First Nations organizations.

#### **Step 2: Confirm Zone and Emphasis Categories and Designation Approach**

- Appropriate zones and emphasis categories were determined.
- A list of Recommended Uses/Activities and recommendation categories was confirmed.
- An approach for dealing with geographically specific management requirements within any specific zone or emphasis area was confirmed.

#### **Step 3: Reconcile Provincial Coastal Plans and Ha-ma-yas Planning Units**

- Areas with common “emphasis” for conservation/protection, general/integrated management and special management (e.g., community, recreation/tourism, shellfish aquaculture, cultural/economic) were assigned to the major zones determined in Step 2.
- Areas that differed in emphasis were assigned to zones according to the priority of conservation over other emphases and special management over general/integrated emphasis.



- Existing protected areas (legislated or imminent) were assigned to a separate zone that required no further action.

#### **Step 4: Determine Uses/Activities Recommendations in Preliminary Zones**

- Recommendations for uses and activities were initially determined through review of the acceptable uses/activities in the relevant planning units of provincial coastal and Ha-ma-yas plans, and interpreting them for the confirmed list of Recommended Uses/Activities.
- Management provisions and conditions were created on the basis of those in the provincial coastal and Ha-ma-yas plans.
- The compatibility matrix in Appendix B5 was used to refine preliminary uses/activities.

#### **Step 5: Test and Refine Preliminary Zones and Uses/Activities Recommendations**

- Data layers that were considered of primary importance in the determination of zones and special management zone emphasis areas were identified and systematically applied to test the reliability of preliminary zone types and boundaries.
- New data layers provided by stakeholders were applied, along with recommendations from MPAC members based on MaPP Planning Portal work and other information.
- Changes were made to the uses/activities recommendations and management provisions/conditions in zones on the basis of information provided in the data layer overlay process.

#### **Step 6: Review and Finalisation of Recommended Zones and Uses/Activities**

- The Technical Team assessed the effects of zones and zone-specific management provisions/conditions for consistency with the plan vision, goals, objectives and strategies.
- Zones and zone-specific management provisions/conditions were provided to internal MaPP partners and nonparticipating First Nations as part of plan review and comment.
- Zones and zone-specific management provisions/conditions were provided to the public as part of the plan public review and comment.
- MPAC reviewed the final plan revisions and recommended appropriate adjustments to zones and management recommendations.

## **Step 7: Complete Zones and Uses/Activities Recommendations**

- Final zone boundaries, uses/activities recommendations and management provisions/conditions were reviewed by MPAC for suitability or social licence.
- Final recommendations were determined, using MPAC advice where appropriate.



## CHAPTER 4: PLAN AREA MANAGEMENT DIRECTION

### 4.1 Vision for the Plan Area

The vision statement is an expression of how the Plan Area would be described 20 years after its approval, assuming the plan recommendations are successfully implemented. The vision statement was developed with the advice of MPAC, and expresses the common views of all participants regarding the desired, long-term future state of the North Vancouver Island area, including its ecological, economic, social, cultural, and community condition. It is a high level benchmark that could be revisited during plan review to determine the extent to which this desired future state is being achieved by the plan recommendations and if interventions are necessary. The vision statement is as follows:

---

The Plan Area has healthy, diverse and resilient marine ecosystems that support social and cultural opportunities and a thriving economy. The goods and services provided from the Plan Area are world renowned and a major source of economic, community, cultural and social prosperity. Implementation of the Plan has reinforced the unique cultural connection of area First Nations to their traditional lands, waters and resources. Uses and activities are innovative, adaptable to changing technologies and environments, respect traditional values, and support the long-term sustainability of the supporting ecosystems. The management and decision-making processes for uses and activities are efficient, transparent and accountable, involve effective cooperation between jurisdictions, authorities and business, and consider future generations. The vision has been achieved through decisions that are guided by traditional and modern values, teachings and principles of Ecosystem-based Management. Community members, including First Nations members, are actively engaged in the stewardship, monitoring and management of the resources upon which their livelihoods depend.

---

## 4.2 Ecosystem-Based Management

Ecosystem-based management (EBM) is widely considered to be a crucial approach for effective resource management of coastal and marine ecosystems. EBM differs from sector-based resource management in that it defines management strategies for entire systems, not individual components of the system, with humans as an explicit part of the ecosystem.

### 4.2.1 Definition of Ecosystem-based Management

For the purposes of this Plan, EBM is defined as an adaptive approach to managing human activities that seeks to ensure the coexistence of healthy, fully functioning ecosystems and human communities. The intent is to maintain those spatial and temporal characteristics of ecosystems such that component species and ecological processes can be sustained, and human wellbeing supported and improved.

### 4.2.2 Elements of Ecosystem-based Management

There are three equally important elements within the MaPP marine ecosystem-based management planning framework:

- Ecological integrity - describes ecosystem connectivity (the extent to which marine habitats are linked and populations are linked by the movement) as well as habitat and species diversity and is focused on ecosystem structure, function and resilience;
- Human well-being - is the combination of social, economic and cultural aspects of human communities, including spiritual and cultural connections to the marine environment; and
- Governance (and collaborative management) - focuses on a collaborative, effective, transparent and integrated governance and management, as well as public engagement.

More information on EBM goals, principles and assumptions is provided in Appendix C1.

### 4.2.3 Application of EBM in MaPP

The MaPP initiative uses science and traditional ecological knowledge to advance EBM for healthy ecosystems, sustainable uses and delivery of ecosystem services to human communities in the Plan Area and in the North Pacific Coast region of BC. The MaPP initiative uses an established and peer-reviewed marine EBM framework to address a set of issues and challenges identified by First Nations, the provincial government and stakeholders. The EBM

approach to marine management accounts for interactions among resource sectors, and the cumulative effects of ocean uses and activities.

### **4.3 Use and Application of Plan Area Management Direction**

Plan Area management direction is comprised of objectives and related strategies for 13 topics of importance to the development of an EBM approach to marine management. These objectives and strategies are applicable to the zoning designations in the Plan (Chapter 5) unless they are superseded by additional strategies and recommendations in the zoned areas. The implementation of most Plan Area management direction objectives and strategies will be pursued through actions that are likely to be separate from those required to implement and administer zoning provisions. The priority for implementation of each strategy is included directly below the relevant strategy. Where there is a reference to a specific area in a strategy, area-specific management direction can be found in Chapter 5.

#### **4.3.1 Community and Economy**

The ongoing economic health and wellbeing of communities and their residents is an overarching component of the EBM approach. This topic encompasses such issues as labour force participation rates, capital assets, capacity for local economic opportunities, sector stability, sustainability and integration, and local and First Nations community participation in the economy.

The Plan Area economy and communities are generally dependent on resource-based activities, which include commercial and recreational fishing, aquaculture, forestry activities and tourism. The level of support and public acceptability for these activities varies within and between communities (including First Nations communities). All existing and future economic activities would likely benefit from a stronger commitment to, or demonstration of, practices and standards that are ecosystem-based and reflect a commitment to sustainability. The Plan Area economy and communities are also generally dependent on basic transportation services, such as those provided by BC Ferries.

Many economic strategies are in place in the sub-region, including those from provincial, federal, municipal, regional and First Nations governments, as well as economic sectors and other nongovernmental organisations. However, there is a need for better integration, strengthening and (for some sectors) creation of new strategies.

Lack of participation, capital assets and capacity to develop economic opportunities is an issue in the Plan Area. Collaboration within and between sectors has the potential to improve project development. For example, the 2010 North Island Coordinated Workforce Strategy supports



cooperation in building a workforce that can support economic and employment growth. Employment and training studies from the RDMW show that management, business, finance and administration jobs are difficult to fill. These jobs require a skilled workforce to advance economic development projects. Surveys of local First Nations show that they have weak overall participation in the marine economy and hold few managerial and ownership positions.

Climate change may have positive and negative impacts on resource-based economies. Some sectors may be more vulnerable to climate change than others. New opportunities may arise for some sectors due to changes in species availability and a warmer climate.

#### 4.3.1 - Issue 1. Support, integration, and creation of more stable and sustainable local marine-based economies

Objective	Strategy
O.1.1 Increase the support for existing marine economic activities.	S.1.1.1 Increase government and industry efforts to establish and implement EBM practices for existing marine economic sectors, through such steps as the review of regulations, policies, standards and guidelines. <i>Ongoing activity, new funding or resources required, governance structure required</i>
	S.1.1.2 Encourage transportation operators to identify opportunities to supplement basic existing marine transportation services, such as those provided by BC Ferries. <i>Ongoing activity, new funding or resources required</i>
O.1.2 Integrate and create more stable and sustainable local marine-based economies.	S.1.2.1 Identify and prioritise marine economic development opportunities and constraints for local communities, including social and ecological constraints. <i>Start within 6 months, new funding or resources required, governance structure required</i>
	S.1.2.2 Encourage the application of new technology by existing businesses and agencies to create efficiencies where consistent with EBM. <i>Start within 12 months, no new funding or resources required</i>
4.3.1 - Issue 2. Local participation, capital assets and capacity for marine-related economic opportunities	
O.2.1 Increase local participation, asset acquisition and strengthening of local community human resource capacity.	S.2.1.1 Continue local community collaboration in identifying infrastructure needs, capital and financing requirements and options for successful project development. <i>Ongoing activity, no new funding or resources required</i>
	S.2.1.2 Secure resources and institutional partners to strengthen local community management capacity to initiate and lead marine-based economic development projects, including training provisions in partnership agreements with proponents. <i>Ongoing activity, new funding or resources required, governance structure required</i>

<b>4.3.1 - Issue 3. First Nations participation in the marine economy</b>	
O.3.1 Increase First Nations participation rates in the marine economy.	<p>S.3.1.1 Encourage industry discussions with First Nations on partnerships, joint ventures opportunities and revenue sharing/impact benefit agreements for marine economic activities. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.1 - Issue 4. Sector business strategy integration, relationships and conflict reduction</b>	
O.4.1 Improve sector strategy integration, relationships and conflict reduction.	<p>S.4.1.1 Encourage economic sectors to develop and/or update long-term business and sector strategies through such activities as sector economic surveys. <i>Start within 12 months, no new funding or resources required</i></p> <p>S.4.1.2 Facilitate the sharing of strategies between sectors through existing associations. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.1 - Issue 5. Long-term viability of marine industries and local communities due to climate change impacts</b>	
O.5.1 Anticipate and respond to potential climate-induced changes in the viability of marine industries.	<p>S.5.1.1 Work with communities, industry, stakeholders and relevant government agencies to identify and assess the vulnerability of existing marine uses and activities to climate change, and the risks of climate change on the viability of those activities. <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.5.1.2 Identify the level of adaptability of existing marine industries, including the use of potential monitoring indicators, and develop strategies for adaptation or alternative practices. <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.5.1.3 Evaluate the potential and constraints of new sustainable marine industry opportunities that result from climate changes. <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.5.1.4 Encourage marine industries to address and respond to potential climate change effects. <i>Ongoing activity, no new funding or resources required</i></p> <p>S.5.1.5 Encourage marine industries to reduce their carbon footprint. <i>Ongoing activity, no new funding or resources required</i></p>

### 4.3.2 Infrastructure

Infrastructure objectives and strategies focus on improving coastal infrastructure to enable and enhance economic development opportunities while retaining competitiveness with other areas on the BC coast. First Nations involvement in the development and operation of infrastructure also needs to be increased. Finally, existing and new infrastructure projects need to take into account possible consequences of climate change effects.

Marinas, harbours and associated coastal facilities will continue to be important to coastal communities for a variety of uses. Resources for infrastructure maintenance and upgrades will

reflect changing economic and community needs, such as the relatively recent focus on tourism and aquaculture. Harbour authority managed facilities are generally well maintained and meet community and industry needs, although there is a lack of cooperation between different management organisations and potential duplication of planning processes.

Overall, recreation and tourism use of harbours is increasing. Access to fuel is a potential limiting factor for some commercial and public recreation uses, including barge and taxi operations. Public recreational fisheries infrastructure is lacking northeast of Port Hardy and between Sayward and Telegraph Cove, although both areas have moderate recreational vessel traffic. Only one marina was identified as participating in voluntary “green” management programs; no harbours were found to be participating.

Nanwakolas member First Nations have identified a need for First Nations to coordinate their individual infrastructure planning and funding requests with local governments and industry. There are opportunities to establish partnerships regarding communications and navigation aids, and emergency response services. The Nanwakolas member First Nations have identified the need for new or upgraded facilities at Compton Island, Village Island, Turnour Island, Hiladi/Adam River, Phillips Arm, Vancouver Bay, Thurston Bay and Kelsey Bay.

Climate change is predicted to cause an increase in sea levels and more frequent and intense storms. Infrastructure will need to be able to withstand these changes. Since some commercial fish species are expected to move farther north, fishing vessel and processing infrastructure will need to be readily adaptable to changing species. Some vessels and facilities are already adept at working with a variety of species and products, but others will need to keep abreast of the predicted changes.

4.3.2 - Issue 1. Coastal infrastructure use and improvements	
Objective	Strategy
O.1.1 Improve the infrastructure required for public, community and economic uses and activities in the marine environment.	S.1.1.1 Review the current inventory of marine infrastructure with appropriate government agencies, industries and stakeholders, and develop an action plan for addressing priority infrastructure upgrades and gaps, including those related to recreation and tourism, fueling and emergency response. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.2 Coordinate infrastructure planning and funding requests among governments, communities and industry to support existing and new uses and activities. <i>Ongoing activity, new funding or resources required, governance structure required</i>

	<p>S.1.1.3 Coordinate, or support the coordination of, a network of strategically located and maintained infrastructure that is related but not limited to the following sectors: fisheries, aquaculture, recreation and tourism, forestry, transportation and energy. <i>Ongoing activity, new funding or resources required, governance structure required</i></p> <p>S.1.1.4 Encourage adoption of voluntary sustainability or green infrastructure programs and design, and where possible, tie participation to applicable funding. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.2 - Issue 2. First Nations involvement in coastal infrastructure</b>	
O.2.1 Increase First Nations involvement in coastal infrastructure selection, development and operation.	<p>S.2.1.1 Encourage partnerships among First Nations and industries regarding the selection, construction, management, operation and maintenance of new infrastructure developments. <i>Ongoing activity, no new funding or resources required</i></p> <p>S.2.1.2 Encourage First Nations participation in employment opportunities in construction, management and operation of new infrastructure. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.2 - Issue 3. Potential climate change threats to community coastal infrastructure</b>	
O.3.1 Minimise potential climate change threats to community coastal infrastructure.	<p>S.3.1.1 Encourage local communities to undertake new or revise to existing, community plans and coastal infrastructure design to incorporate climate change implications. <i>Ongoing activity, no new funding or resources required</i></p> <p>S.3.1.2 Conduct a climate change infrastructure vulnerability assessment and develop action plans, for responding to the potential effects of climate change on infrastructure and emergency services. <i>Start within 12 months, new funding or resources required</i></p>

### 4.3.3 Pollution

Sources of pollution include point and nonpoint source discharges from vessels, marinas and other structures, and contaminant and sediment runoff from upland activities. There are also concerns about waste and pollution from ocean disposal sites, and the ecological impacts from residential, industrial and commercial structures and activities such as sewage outfalls, salmon aquaculture and forestry operations.

The cumulative effects of individual sector or site-focused management decisions on ecosystem health are an area of ongoing research. Cumulative effects have varying levels of understanding, documentation or monitoring, and there is a general lack of clear, measurable and concise indicators. Cumulative effects of pollution including additive and synergistic effects, climate change and ocean acidification are not well understood.

Pollution can also impact other human uses. For example, poorly located outfall discharges, marinas, wharves, finfish net-pens, and septic systems can impact wild and aquaculture

shellfish harvest. Contamination is often linked to increased population growth or concentrations, and future population increases have potential to increase pollution levels. While populations are not projected to change dramatically (exception for Campbell River), an increase in transient workers and tourists may increase contamination levels above those projected for the base population. Outside of the Georgia Basin, areas under sewage contamination closure tripled from 1989 to 2004; however, some closures are likely due to the lack of monitoring that is needed to determine if a site can be reopened. There are shellfish sanitation contamination closures of varying duration, occurring at different locations throughout the Plan Area, resulting from bacterial contamination caused by vessel and land-based fecal waste. These closures are not to be confused with paralytic shellfish poisoning (PSP or red tide) closures caused by bivalves that have eaten and accumulated PSP toxins from some algae species.

Local governments have identified capacity challenges in accepting and handling marine waste, including sewage, garbage and recycling, because ship and vessel waste has to be transferred to appropriate upland facilities. Table 7 provides an overview of the types of waste facilities in the Plan Area. These services are provided to resident and nonresident users and have associated infrastructure costs. There is a risk of illegal dumping if facilities are limited or have high fees.

*Table 7: Number of operating waste disposal facilities in the Plan Area.*

<b>Facility Type</b>	<b>Number</b>	<b>Pump Out Stations</b>	<b>Garbage</b>	<b>Recycling</b>
Small craft harbour	14	6	13	9
Public wharves	18	0	5	0
Resorts and marinas	57	3	14	0

Approved materials, such as dredged gravel, sand and mud, can be disposed of at sea in specific locations that are regulated by Environment Canada. Within the Plan Area, there are five inactive disposal-at-sea sites. One active site exists at Cape Mudge at the south end of the Plan Area. The closed site at Malcolm Island also supports a glass sponge reef.

Another important issue is the presence of abandoned and derelict vessels. There are an estimated 120 vessels currently abandoned in the Plan Area, the majority being abandoned for up to 10 years. These vessels may create navigation hazards, leak oil and toxic chemicals, and create aesthetic problems. It is a challenge for regulatory authorities to find and link the current owner to an abandoned or derelict vessel. A number of regulatory authorities are responsible for their removal, primarily Transport Canada. There is potential for an increasing number of abandoned vessels as the overall age of the vessel fleet increases and vessels reach the end of their life span.



There is a concern that current monitoring capacity, regulations, and tools such as best management practices, bonds and letters of credit may not be sufficient to limit potential degradation of the marine environment from diverse factors such as abandoned structures and noise pollution.

Marine debris can impact birds, fish and mammals through entanglement and ingestion. Areas of highest potential for debris interactions with mammals are the north end of Vancouver Island and adjacent mainland, and in Johnstone Strait. The 2011 Japanese tsunami has resulted in an increasing amount of debris pollution on BC shorelines. This and other waste is negatively impacting the ability of the human communities to use the shorelines for recreational food gathering and enjoyment, and may present safety issues on the ocean.

Marine spills represent another issue of interest. Greater clarity is required on existing spill response capacity and requirements of governments, communities and industry. While the provincial government has a number of valuable spill response tools and programs, such as a Marine Oil Spill Response Information System for prioritization of areas for shoreline protection, and a Spill Prevention and Preparedness Strategy, there appears to be a lack of locally specific Geographic Response Plans. Proposed oil and gas pipeline projects and associated shipping north and south of the Plan Area could increase the potential for adverse marine environmental quality impacts.

A pollution risk assessment for the entire MaPP study area considered a variety of pollution sources and identified areas of high risk that can be used as a basis for restoration planning. Areas of moderate to high risk occur throughout Queen Charlotte and Johnstone Straits. The assessment also showed that the marine resources that are most at risk due to marine pollution are cloud sponge, seagrass, estuaries and kelp.

Other issues include restoration of deteriorated coastal areas deteriorated by pollution and other factors, and uncertainty about how climate change may exacerbate pollution problems and methods of mitigating these and other climate change effects on habitats and species. Recent reports have assessed potential climate change impacts and vulnerability for the coast of BC.

#### 4.3.3 - Issue 1. Impacts of uses and activities, point and nonpoint source pollution on marine habitat, species, human health and availability/harvest of marine food sources

Objective	Strategy
O.1.1 Minimise the impacts of uses and activities, point and nonpoint pollution on marine ecosystems.	S.1.1.1 Prepare a cumulative effects assessment of marine uses and activities in the Plan Area, and use the results to assist with future tenure decisions and restoration planning. <i>Start within 6 months, new funding or resources required, governance structure required</i>

	<p>S.1.1.2 Assess the vulnerability of existing and potential marine uses and activities that are sensitive to pollution from marine and adjacent upland sources. Priorities are sewage outfall impacts on shellfish areas in Hardy Bay (SMZ 8), loxiwe in the Broughton (PMZ 7), and existing and new conservation and protection areas – see Chapter 5. <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
	<p>S.1.1.3 Work with appropriate government agencies to improve cumulative effects assessments for development proposals and application of the findings. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p>
	<p>S.1.1.4 Coordinate with appropriate agencies a review and improvement of regulations and best management practices for marine pollution to comply with identified thresholds and establish thresholds where none exist. <i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.1.1.5 Assess community infrastructure that is available to accept and manage marine waste, and establish fee-for-service or other financial mechanisms for developing and maintaining the required infrastructure. A priority area is Echo Bay (SMZ 16) – see Chapter 5. <i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.1.1.6 Work with First Nations, local governments and industry to reduce pollution, limit degradation of sensitive areas and develop or improve action plans for the restoration of marine and adjacent upland uses using new technology, best management practices and other mechanisms. A priority area is Hardy Bay (SMZ 8) – see Chapter 5. <i>Start within 12 months, new funding or resources required</i></p>
	<p>S.1.1.7 Work with local, relevant government agencies and industry to mitigate and, where necessary, restrict activities that may have adverse impacts on sensitive marine habitats, including estuaries. <i>Ongoing activity, new funding or resources required, governance structure required</i></p>
<b>4.3.3 - Issue 2. Impacts of waste and pollution from ocean disposal sites, derelict vessels and human-based debris.</b>	
<p>O.2.1 Reduce impacts associated with ocean disposal sites, derelict vessels and vessel movements and human based debris.</p>	<p>S.2.1.1 Work with appropriate government agencies to determine restoration requirements and processes, as required, for closed disposal-at-sea sites, and the means of addressing ongoing forest industry interest in ocean disposal. Priority restoration areas are Malcolm North (PMZ 1) and McNeill/Cormorant/Sointula (SMZ 12) – see Chapter 5. <i>Start within 12 months, new funding or resources required, governance structure required</i></p>

	<p>S.2.1.2 Work with relevant government agencies to confirm the locations of abandoned and derelict vessels, and establish a working group with local government, First Nations and relevant government agencies to identify the owners and potential funding sources, and to develop a risk-based action plan for phased vessel removal. <i>Start within 12 months, no new funding or resources required, governance structure required</i></p>
	<p>S.2.1.3 Evaluate existing tools for limiting potential degradation from human based debris and develop new, or strengthen existing tools as required, including clean up bonds, letters of credit, education programs, additional tenure conditions and best management practices. <i>Ongoing activity, no new funding or resources required</i></p>
	<p>S.2.1.4 Develop a plan that identifies priority areas, such as important recreational anchorages, for clean-up of human-based debris (including tsunami debris, plastics, styrofoam etc.). <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
<b>4.3.3 - Issue 3. Marine spill prevention, preparedness and Geographic Response Plans</b>	
O.3.1 Improve marine spill prevention, preparedness and response.	<p>S.3.1.1. Assess spill preparedness and response management capacity from appropriate government agencies, industry and community perspectives. <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
	<p>S.3.1.2 Work with appropriate government agencies to reduce the risk of occurrence of marine spills and associated impacts on Plan Area communities (including First Nations communities), economic activities and ecosystem health. <i>Ongoing activity, new funding or resources required, governance structure required</i></p>
	<p>S.3.1.3 Work with appropriate government agencies, industry and local communities to establish locally specific Geographic Response Plans and response centres, including training, preparation and equipment for effective response to both local and regional marine spills. <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
	<p>S.3.1.4 Establish a working group that includes appropriate government agencies and First Nations to address marine spill challenges, including financing, industry response times and capacity, spill management techniques, cleanup levels and standards, improved training and preparedness and response mapping systems. <i>Start within 6 months, no new funding or resources required, governance structure required</i></p>

4.3.3 - Issue 4. Restoration of deteriorated coastal areas	
O.4.1 Improve and enhance the restoration of deteriorated coastal areas.	S.4.1.1 Investigate the identified high risk pollution areas in Queen Charlotte and Johnstone Straits for priority restoration sites, including estuaries and Plan Protection Management Zone areas. <i>Start within 12 months, new funding or resources required</i>
	S.4.1.2 Identify opportunities and funding for local and First Nations community participation in the restoration of priority sites, including sites with degraded habitat from past tenured activities. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.4.1.3 Identify and confirm funding sources for local participation in restoration/adaptation programs for species and habitat. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.4.1.4 In collaboration with affected stakeholders, prepare and/or review management plans for major estuaries to assist in restoration activities. Such estuaries include but are not limited to the Kingcome River, Franklin River, Salmon River, Ahta River and Kakweiken River. <i>Ongoing activity, new funding or resources required, governance structure required</i>
4.3.3 - Issue 5. Methods of mitigating potential adverse impacts of climate change on habitats and species	
O.5.1 Identify methods to mitigate the adverse impacts of climate change on habitats and species.	S.5.1.1 Develop action plans from preliminary climate change vulnerability assessments such as for responding to potential effects of climate change. <i>Start within 12 months, new funding or resources required</i>
	S.5.1.2 Ensure any network of marine conservation and protection areas includes areas that increase ecosystem resilience to climate change effects. <i>Ongoing activity, no new funding or resources required</i>
	S.5.1.3 Develop plans to address potential changes in toxicity concentration and occurrences of marine debris and pollution due to flooding of pollution sources, changes in water movement, storminess, runoff and sea level rise. <i>Start within 12 months, new funding or resources required</i>
	S.5.1.4 Determine and monitor climate indicators (both biological and physical) for information on the status and trends of climate impacts in the Plan Area. Priority is the loxiwe in Broughton (PMZ 7) – see Chapter 5. <i>Ongoing activity, new funding or resources required</i>

#### 4.3.4 Conservation and Protection

The plan area management direction for marine conservation and protection complements ongoing efforts to design a marine protected area network in the Northern Shelf Bioregion, as described in section 1.4. A variety of tools and mechanisms can be used to enable protection for ecological and human activities, including legislated local, provincial and federal

government protected areas and closures. Current protection tools may not always effectively address the range of values warranting protection; therefore, alternative means, such as Indigenous Peoples' and Community Conserved Territories and Areas, need to be investigated. In addition, there are very few interim protection tools that can be used while formal protection processes are underway.

The provincial government uses a Conservation Framework to guide conservation actions for species and ecosystems in BC, but it has not yet been applied to any marine ecosystems other than estuaries. Similarly, some but not all, marine species have been ranked in the Conservation Framework. Furthermore, there may be species, habitats or ecosystems that are not represented in current management areas, or the current management tools being used are not always fully implemented or adequate.

Despite the existence of many provincial government marine parks and conservancies, nearly all are open to some type of harvesting, which may have implications on the achievement of full ecological objectives for some areas. The ability to develop and update management plans, gain First Nations support and enforce management requirements is also a challenge due to limited funding and resourcing. Individually, and in combination, these issues can result in areas of protection not being managed as intended. Considerable work has been done to establish collaborative management plans for a number of proposed provincial conservancies, however, designation has been delayed for some of the proposals.

Acoustic protection is of concern in areas that may be considered for the protection of mobile marine species. The evaluation of potential restrictions on vessel noise will require the cooperation of appropriate government agencies.

Nanwakolas member First Nations are concerned about consultation regarding previously established protected areas, and the nature and extent of their involvement in new protected area selection, management and monitoring. The provincial government's conservancy initiative has improved government-to-government relationships through the use of collaborative management, but Nanwakolas member First Nations believe that existing government designation tools require review to address First Nations values and objectives.

The current Canada – British Columbia Marine Protected Area Network Strategy (Network Strategy) does not include First Nations and other local communities. Their participation would improve the decision-making process and increase the likelihood of local support and benefits. Additionally, it would address concerns about the potential impacts of future marine conservation and protection areas on fishing and other sector opportunities.



The adequacy of surveillance of marine conservation and protected areas to ensure they effectively protect designated values and/or their intended purpose is an ongoing concern. For instance, monitoring includes ensuring adaptive and effective management is being used to achieve proper protection.

Climate change and other unpredictable phenomena may impact the ability of some marine protection areas to deliver intended biodiversity and resource conservation outcomes due to natural susceptibility and changes in the distribution of species and ecosystems over space and time. Furthermore, protected marine habitats that are more resilient, and/or those that capture and store carbon (i.e. blue carbon) such as sea grasses and kelp forests, may help mitigate climate change.

4.3.4 - Issue 1. Adequacy of existing marine conservation and protection areas	
Objective	Strategy
O.1.1 Identify and support new marine conservation and protection areas for a range of requirements and values.	S.1.1.1 Through applicable processes identify and propose new conservation and protection areas for ecosystem and species representation and resilience, special or unique marine areas or features, and protection of First Nations cultural resources. <i>Ongoing activity, no new funding or resources required</i>
	S.1.1.2 Support the formal designation of provincial conservancies identified prior to the initiation of this Plan. <i>Ongoing activity, no new funding or resources required</i>
	S.1.1.3 Undertake protection management planning for Protection Management Zone areas approved as part of this Plan. <i>Start within 12 months, new funding or resources required, governance structure required</i>
4.3.4 - Issue 2. Adequacy of existing marine conservation and protection tools	
O.2.1 Improve available tools for marine conservation and protection.	S.2.1.1 Use interim protection measures (such as temporary Notations of Interest and/or map reserves) as a tool for managing proposed marine conservation and protection areas until a formal determination is made. <i>Start within 6 months, no new funding or resources required</i>
	S.2.1.2 Review the adequacy of existing protection tools to accommodate a broader range of marine values. <i>Start within 12 months, new funding or resources required</i>
	S.2.1.3 Through application processes develop and apply, where appropriate, new tools for achieving marine protection and conservation objectives, such as the Indigenous Peoples' and Community Conserved Areas and Territories designation. <i>Start within 12 months, new funding or resources required</i>
	S.2.1.4 Enhance the provincial government's Conservation Framework by incorporating marine ecosystems and species. <i>Ongoing activity, no new funding or resources required</i>

	<p>S.2.1.5 Through applicable processes undertake an assessment of the need for fisheries management measures in provincial marine parks and conservancies where considered necessary to achieve conservation objectives with appropriate government agencies, First Nations and user groups. <i>Ongoing activity, no new funding or resources required</i></p> <p>S.2.1.6 Work with appropriate government agencies to ensure that critical habitat spatial information for species at risk is accessible in different formats. <i>Ongoing activity, no new funding or resources required</i></p>
O.2.2 Improve management of existing conservation and protection areas.	<p>S.2.2.1 Foster maintenance of ecological health and integrity through such measures as ecological studies, research, monitoring, management provisions and habitat protection for key marine species (including species of conservation concern). <i>Ongoing activity, new funding or resources required</i></p> <p>S.2.2.2 Through applicable processes review the boundaries and adequacy of management regimes for existing provincial marine parks and conservancies and ensure that any proposed changes are communicated to relevant agencies. <i>Start within 6 months, new funding or resources required, governance structure required</i></p> <p>S.2.2.3 Incorporate noise protection in the development of management plans for areas allocated to the Plan's proposed Protection Management Zone areas. <i>Start within 24 months, no new funding or resources required</i></p>
<b>4.3.4 - Issue 3. Potential impacts and benefits of marine conservation and protection designations on marine uses and activities</b>	
O.3.1 Identify and address potential impacts of marine conservation and protection areas on marine uses and activities.	<p>S.3.1.1 Through the Network Strategy process work with appropriate government agencies and potentially affected user groups to conduct social and economic impact assessments of all potential legal designations of conservation and protection areas on user groups. <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.3.1.2 Encourage the Canada –British Columbia Marine Protected Areas Implementation Team to designate marine protected areas through the Network Strategy in a staged manner to minimise impacts on marine uses and activities. <i>Start within 12 months, no new funding or resources required, governance structure required</i></p>
O.3.2 Increase economic benefits from marine conservation and protection areas to First Nations and local communities.	<p>S.3.2.1 Encourage First Nations and local community employment opportunities associated with new conservation and protection areas. <i>Start within 12 months, new funding or resources required</i></p> <p>S.3.2.2 Increase and improve marketing and promotion of appropriate uses and activities that are suitable to conservation and protection areas. <i>Ongoing activity, new funding or resources required</i></p>

<b>4.3.4 - Issue 4. First Nations and local involvement in existing and new conservation and protection areas</b>	
O.4.1 Increase and/or include protection of First Nations values in existing conservation and protection areas.	<p>S.4.1.1 Review existing marine conservation and protection areas to confirm the adequacy of cultural and heritage resource protection and management, and implement additional protection through relevant processes, where considered necessary. <i>Start within 12 months, new funding or resources required, governance structure required</i></p>
O.4.2 Increase First Nations role and influence over the identification, selection, planning and management of new marine conservation and protection areas.	<p>S.4.2.1 Include First Nations in the Network Strategy review and selection of candidates put forward by First Nations, stakeholders, the public and the scientific community in their marine territories. <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
	<p>S.4.2.2 Through the appropriate processes, collaboratively develop management plans with First Nations for proposed legislated marine conservation and protection areas. <i>Start within 24 months, new funding or resources required, governance structure required</i></p>
	<p>S.4.2.3 Encourage greater involvement of local First Nations in marine conservation and protection area operations and management. <i>Ongoing activity, no new funding or resources required</i></p>
	<p>S.4.2.4 Include First Nations interests in the selection criteria for the Network Strategy candidate areas. <i>Start within 6 months, no new funding or resources required</i></p>
O.4.3 Increase local governments' role in new marine conservation and protection areas.	<p>S.4.3.1 Through the Network Strategy establish mechanisms to include local governments in the nomination, review and selection of candidate marine protection areas. <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
<b>4.3.4 - Issue 5. Adequacy of surveillance of conservation and protection areas</b>	
O.5.1 Enhance surveillance of activities within marine conservation and protection areas.	<p>S.5.1.1 Collaborate with other organisations to enhance surveillance, management and enforcement capabilities within all marine conservation and protection areas, using techniques such as working with industry, increasing local involvement, conducting research on, and monitoring of, management plan effectiveness, and using existing facilities (e.g., staffed lighthouses). <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
<b>4.3.4 - Issue 6. Adequacy of conservation and protection areas to address climate change implications</b>	
O.6.1 Incorporate climate change considerations in the establishment of new conservation and protection areas.	<p>S.6.1.1 Establish a network of conservation and protection areas for habitats and shorelines, including areas that are most vulnerable or resilient to climate change, as identified by MaPP and other relevant studies. <i>Start within 6 months, no new funding or resources required</i></p>

---

S.6.1.2 Reduce or remove activities in new conservation and protection areas that, when combined with climate change, increase stress on marine ecosystems and species.

*Start within 24 months, no new funding or resources required*

---

S.6.1.3 Initiate studies to evaluate the potential of climate-induced changes to species ranges and timing of seasonal migration, and shifts in ecological systems.

*Start within 24 months, new funding or resources required*

---

S.6.1.4 Maintain and restore estuaries and other natural “blue carbon sinks.”

*Ongoing activity, new funding or resources required*

---

#### 4.3.5 Cultural and Heritage Resources

There is a significant number of cultural and heritage resources in the Plan Area. This Plan has separate and specific definitions of “cultural resources” and “heritage resources” in the glossary. Issues associated with these resources include the adequacy of inventories or site knowledge, potential effects of climate change, and lost potential in promoting increased tourism opportunities. Nanwakolas member First Nations have also raised concerns about the potential destruction and loss of sites due to human disturbance. They are actively working towards a more significant role in managing cultural, spiritual and archaeological sites and databases, and in designating and retaining personal, community and place names.

Many cultural resources have not yet been identified; others are known within communities, but there are specific protocols for sharing this information. Some sites and objects are identified under the *Heritage Conservation Act*. Although these sites and features are often not publicized, several local facilities offer related information, tourism and education resources, including the U’mista Cultural Centre, Tsa-Kwa-Luten Lodge and Nuyumbalees Cultural Centre.

Similarly, not all heritage resources have been identified. Some sites are protected under provincial or federal legislation, and local museums offer access to related resources.

Under the *Heritage Conservation Act*, heritage “sites” and “objects” on public and private land are protected through (1) their designation as “Provincial heritage sites” or “Provincial heritage objects,” and (2) through blanket statutory protections for undesignated heritage sites and heritage objects as identified in section 13 of the Act. Heritage sites and heritage objects that are protected through designation or under section 13, may not be altered, excavated or destroyed without a permit issued under section 12. As well, investigation or research of heritage sites and heritage objects requires a permit issued under section 14. In the Act, heritage sites and heritage objects include sites and objects that have value to Aboriginal people (e.g., petroglyphs). The Act does not have the separate definitions of cultural resources

and heritage resources used in the Plan. In spite of these available tools, many cultural resources and heritage resources lack an appropriate level of management or protection.

First Nations continue to access and use cultural resources, and to document previously unrecorded or undesignated resources and their cultural importance. Some sites may be different from those typically identified by non-Aboriginal archaeologists and anthropologists. Sites with spiritual, sacred and traditional use typically lack the physical and archaeological evidence required by the provincial Archaeology Branch under the *Heritage Conservation Act*. Under this Act there are also some limitations in registration or designation of sites, as well as authorizing use of sites that are problematic from a First Nations perspective.

Cultural and heritage resources have increasing economic value in terms of recreation and tourism, as more visitors are seeking a broader experience that incorporates aspects of cultural tourism. This provides employment and income opportunities for both First Nations and non-First Nations communities, and can contribute to cross-cultural education. Nanwakolas member First Nations are also interested in developing some of their sites for other economic benefits, including Aboriginal tourism and aquaculture.

Marine-based activities will likely continue to inadvertently or intentionally disturb or destroy important cultural and heritage resources. The intentional vandalising or removal of cultural resources for profit or personal collections is an ongoing challenge. Conflicts are likely to increase if activities and numbers of visitors expand in the absence of improved monitoring and site management, and with a lack of public awareness of protection regulations. The large area and isolated nature of the coast, and limited government resources for enforcement, make it difficult for government staff to patrol the Plan Area frequently and ensure that rules and regulations pertaining to cultural resources are being followed. Nanwakolas member First Nations are working to develop the capacity to fill management gaps in monitoring and enforcement regarding cultural resources.

Climate change is also a potential threat to cultural and heritage resources, including food sources, due to sea level rise, storms, and runoff as many features are located in foreshore or nearshore areas that are vulnerable to flooding and erosion. Changes in water temperature, salinity, oxygen, currents and stratification may also affect the availability of food resources.

#### 4.3.5 - Issue 1. Adequacy of cultural and heritage resources inventories and site knowledge

Objective	Strategy
O.1.1 Improve inventories and site knowledge for cultural and heritage resources.	S.1.1.1 Encourage proponents to provide existing and new information regarding cultural and heritage resources to Nanwakolas member First Nations and local communities. <i>Start within 6 months, no new funding or resources required</i>



	<p>S.1.1.2 Undertake additional cultural and archaeological surveys and ongoing research and field verification for culture and heritage resources.</p> <p><i>Ongoing activity, new funding or resources required</i></p>
<b>4.3.5 - Issue 2. Potential for cultural and heritage resource-based tourism opportunities</b>	
O.2.1 Increase cultural and heritage resource-based tourism opportunities.	<p>S.2.1.1 Review existing cultural and heritage tourism studies and develop an action plan for increasing tourism opportunities.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
<b>4.3.5 - Issue 3. Human disturbance impacts on cultural and heritage resources</b>	
O.3.1 Prevent human disturbance and loss of cultural and heritage resources.	<p>S.3.1.1 Prepare a joint provincial government/Nanwakolas member First Nations vulnerability assessment to identify marine cultural and heritage resources that have been or could be impacted by human disturbance.</p> <p><i>Start within 6 months, new funding or resources required, governance structure required</i></p>
	<p>S.3.1.2 Develop a joint action plan based on the vulnerability assessment of human impacts (Strategy 3.1.1) that includes a description of legislative tools and how they apply, restrictions on access and/or visitation guidelines, an efficient process for managing development where cultural or heritage resources may be or are being impacted, and appropriate communications tools.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.3.1.3 Support the inclusion of mitigation measures, where appropriate, for potential impacts on cultural and heritage resources, for smaller project proposals that are not considered under provincial or federal environmental assessment processes.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.5 - Issue 4. Level of First Nations involvement in cultural resources management for the Plan Area</b>	
O.4.1 Increase Nanwakolas member First Nations role in cultural resources management.	<p>S.4.1.1 Establish a provincial government/Nanwakolas member First Nations agreement to address such topics as surveillance and enforcement of cultural resources in Guardian Watchmen programs.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.4.1.2 Support the development of Nanwakolas member First Nations guidelines for sharing information about cultural resources and the intended use of this information.</p> <p><i>Start within 12 months, new funding or resources required</i></p>
	<p>S.4.1.3 Develop a provincial government/Nanwakolas member First Nations pilot project on the conservation and protection of cultural resources.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>

	<p>S.4.1.4 Support the development of guidelines between Nanwakolas member First Nations and recreation and tourism service providers regarding the use and interpretation of cultural resources. <i>Start within 6 months, no new funding or resources required, governance structure required</i></p>
	<p>S.4.1.5 Where appropriate, use the Nanwakolas Clearinghouse as the first point of contact to pursue discussions about the development of policies and procedures related to cultural resources. <i>Ongoing activity, no new funding or resources required</i></p>
	<p>S.4.1.6 Support the collaborative development of an educational strategy between Nanwakolas member First Nations and stakeholders on member First Nations culture, traditional ecological knowledge, relationship to the marine environment and procedures for working with First Nations. Include cross-cultural workshops and culturally appropriate information (such as magazines, websites and signage) for broad access by user groups and recipients of provincial tenures. <i>Start within 12 months, new funding or resources required</i></p>
<b>4.3.5 - Issue 5. Climate change impacts on cultural and heritage resources and food sources</b>	
O.5.1. Address potential climate change impacts on cultural and heritage resources, and on food sources.	<p>S.5.1.1 Develop action plans, based on climate change vulnerability assessments, for responding to the potential effects of climate change, such as inundation, erosion, and access limitations, on cultural and heritage resources, including food sources. <i>Start within 12 months, new funding or resources required</i></p>

#### 4.3.6 Recreation and Tourism

Public recreation and commercial tourism is one of several key industries that support the local economy, and has potential for growth. The Plan Area provides a variety of recreation and tourism resources and products, which attract local residents, as well as regional and international visitors, who participate in self-guided and guided activities. Interest in nature-based, adventure and eco- tourism continues to be strong, but there is an emphasis on the less physical activities. A growing interest in experience-based travel and the environment supports products that include local cultural and heritage resources, and the natural environment. Small cruise ships, such as pocket cruises, can use existing infrastructure, and some communities are interested in developing this sector further. While the potential for ecosystem-based tourism in the Plan Area is high, work is needed to identify and enable local participation in creating viable, sustainable businesses.

Infrastructure studies indicate that the lack of fueling, recreational fishing infrastructure and access to base camps are limitations in the Plan Area. In a 2005 study of the commercial nature-based tourism industry, the extent of industry regulation and the lack of long-term tenure, were identified as the most serious constraints to long-term growth in the industry. Members of this sector confirm that these issues still exist.

Competition among multiple industries for natural resources is also a major constraint, as is the seasonality of employment opportunities. Recreation and tourism issues generally include a lack of opportunities and resources to increase economic activity and benefits to local communities. Previous studies have proposed a local tourism strategy be developed.

Nanwakolas member First Nations are seeking adequate and appropriate participation in the planning, management and coordination of commercial recreation and tourism activities in the Plan Area. Knowledge about Aboriginal tourism opportunities in BC is low amongst residents, and a higher proportion (29 percent) of visitors to Aboriginal tourism sites are from overseas.

Recreation and tourism can have effects on marine species, ecosystems and cultural and heritage resources due to disturbance, pollution and spatial conflicts with other activities. Although various legislation and voluntary best practices, guidelines and codes of ethics address different recreation and tourism activities, concerns about the impacts of these activities remain, particularly in terms of the management of cultural and heritage resources.

Potential changes in recreation and tourism activities due to climate change are difficult to predict. However, increased air and water temperatures may attract more visitors for a longer season. Climate change is impacting species distributions and habitat. This may cause changes in wildlife viewing opportunities. Sea level rise may lead to reduced access to, or loss of, infrastructure, cultural and heritage resources and natural recreation and tourism assets such as beaches and wetlands.

#### 4.3.6 - Issue 1. Opportunities and resources to increase economic activity and benefits to local communities

Objective	Strategy
O.1.1 Maintain and increase economic opportunities and benefits from recreation and tourism for local communities.	S.1.1.1 Undertake a review of infrastructure, transportation, market entry and other barriers/challenges to participation in recreation and tourism opportunities. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.2 Identify and assess local and sustainable marine recreation and tourism expansion and development opportunities. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.3 Work with industry and local communities to develop a strategy for attracting pocket cruise ships to improve the use of existing infrastructure. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.4 Strengthen First Nations and local community capacity to participate in commercial recreation and tourism opportunities. <i>Ongoing activity, new funding or resources required</i>

	<p>S.1.1.5 Review mechanisms for tourism sectors and agencies to improve the collection of industry data on revenue and employment. <i>Start within 12 months, new funding or resources required</i></p> <p>S.1.1.6 Continue managing shoreline ecosystems and viewsapes to maintain the high quality of commercial recreation and tourism experiences. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.6 - Issue 2. Local and First Nations participation in the commercial marine recreation and tourism industry</b>	
O.2.1 Increase local and First Nations participation in marine recreation and tourism.	<p>S.2.1.1 Work with the recreation and tourism sector to identify value-added opportunities for marine recreation and tourism partnerships and joint venture opportunities, and encourage conditions favourable to supporting these businesses. <i>Ongoing activity, new funding or resources required, governance structure required</i></p> <p>S.2.1.2 Encourage collaboration between local and First Nations interests and existing organisations to consolidate various recreational and tourism products and experiences in the Plan Area. <i>Ongoing activity, new funding or resources required, governance structure required</i></p> <p>S.2.1.3 Identify the benefits of local participation in a variety of marine recreation and tourism packages and services, incorporating First Nations cultural components where appropriate. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p> <p>S.2.1.4 Facilitate First Nations and local government involvement in the planning and development of a marine trails network that includes sites that are accessible to marine public recreation users. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p> <p>S.2.1.5 Facilitate the establishment of new, viable and sustainable First Nations-owned marine recreation and tourism businesses. Priority areas include Knight Inlet North (SMZ 21), Viner Sound/Shoal Bay (SMZ 17), Kalgowis (SMZ 22), Knight Inlet South (SMZ 20), Tribune/Bond (SMZ 18), Thompson Sound (SMZ 19) and Broughton (PMZ 7) – see Chapter 5. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.6 - Issue 3. Potential impacts on marine species, ecosystems, cultural and heritage resources</b>	
O.3.1 Minimise the adverse impacts of recreation and tourism on marine species, ecosystems, and cultural and heritage resources.	<p>S.3.1.1 Minimise the adverse impacts of recreation and tourism on species, ecosystems and cultural and heritage resources through best management practices, standards and marine viewing regulations and guidelines. <i>Ongoing activity, no new funding or resources required</i></p> <p>S.3.1.2 Support the development and implementation of an action plan based on the vulnerability assessment of human impacts on cultural and heritage resources (Strategy 3.1.1, Section 4.3.5). <i>Ongoing activity, no new funding or resources required</i></p>

	<p>S.3.1.3 Prepare First Nations “sensitivity maps” that show areas and times of limited/restricted access to known culturally sensitive resources, and distribute them to, and meet with, area organisations and businesses.</p> <p><i>Start within 24 months, new funding or resources required, governance structure required</i></p>
	<p>S.3.1.4 Investigate the establishment of a seasonal mooring buoy program based on the assessment of appropriate locations for recreational use.</p> <p><i>Start within 12 months, new funding or resources required</i></p>
<p>4.3.6 - Issue 4. Potential impacts of climate change on recreation and tourism uses and activities</p>	
<p>O.4.1 Increase the adaptability of recreation and tourism uses and activities to climate change.</p>	<p>S.4.1.1 Determine which tourism activities are vulnerable to climate change, and assess new business and tourism impacts and opportunities due to climate change.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>

### 4.3.7 Forestry Operations

The forest industry is one of several key industries that support the local economy. Access to water for log handling, storage and transportation is integral to, and critical for, coastal forestry operations. The Plan Area has numerous foreshore sites that are used for handling timber harvested from adjacent watersheds. Although the Plan does not address transportation, it recognises the importance of log towing through waterways as an important marine activity.

Although stringent government and industry practices are in place, there is a potential for conflicts with other user groups and for ecosystem impacts due to cumulative environmental effects and site-specific activities. For example, some recreation and tourism users and First Nations have concerns about the timing and location of log handling sites and their impact on the natural environment and cultural and heritage resources. The remediation, restoration and alternative use of sites is an issue in some areas. First Nations are also concerned about their role and influence in the approval and management of new log handling and storage sites.

The provincial government has conducted a log handling site review in the Campbell River Forest District for long-term log handling needs. It identified critical sites that need to be retained for future industry activities, in accordance with approved forest tenures and management plans. The entire Plan Area would benefit from such a review to establish a strategic network of log handling sites, and could be expanded to address concerns about incompatible uses, alternate uses, cumulative effects and restoration of sites and surrounding areas.

Potential climate change impacts on forestry operations in the marine area are only now being identified and should be investigated given the importance of these sites to the forest industry.



4.3.7 - Issue 1. Support for marine log handling and storage operations.	
Objective	Strategy
O.1.1 Maintain support for existing and future ecosystem-based marine log handling and storage operations.	S.1.1.1 Provide forest industry access to key log handling and storage sites for continued use. <i>Ongoing activity, no new funding or resources required</i>
	S.1.1.2 Develop a strategic network of log handling and storage sites that accommodates future industry requirements. <i>Start within 6 months, new funding or resources required, governance structure required</i>
	S.1.1.3 Reinforce an EBM approach in the development and establishment of the strategic network of log handling and storage sites and operations. <i>Ongoing activity, no new funding or resources required</i>
	S.1.1.4 Consult with First Nations, local governments and key marine sectors to ensure that the strategic network of log handling and storage sites is established with consideration for areas of First Nations importance and value, such as loxiwe and areas of key marine sector importance. <i>Start within 6 months, new funding or resources required</i>
4.3.7 - Issue 2. Potential impacts of forestry operations	
O.2.1 Reduce potential impacts of forestry operations on marine ecosystems and cultural and heritage resources and other uses.	S.2.1.1 Ensure that the location of sites and their operations minimise site specific and cumulative adverse impacts on sensitive marine habitat, species, cultural and heritage resources and other uses. <i>Ongoing activity, no new funding or resources required</i>
	S.2.1.2 Review, with relevant agencies, and improve (if required) best management practices and level of compliance for debris management and develop a response plan where required. <i>Ongoing activity, new funding or resources required</i>
	S.2.1.3 Work with industry to investigate how to reduce log transportation transit time through SARA-designated critical habitat (Appendix A2). <i>Ongoing activity, no new funding or resources required</i>
4.3.7 - Issue 3. Alternative uses of inactive log handling and storage sites	
O.3.1 Identify opportunities for alternative uses of inactive log handling and storage sites.	S.3.1.1 Evaluate potential temporary alternative uses for log handling and storage sites during inactive periods. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.3.1.2 Work with industry and relevant government agencies to address liability concerns related to temporary uses of log handling sites for other purposes. <i>Start within 12 months, new funding or resources required, governance structure required</i>

	<p>S.3.1.3 Build on existing agreements to develop management provisions for resolving temporal conflicts between log handling and storage and other marine uses and activities, including recreation and tourism, and First Nations seasonal uses and activities.  <i>Start within 6 months, new funding or resources required, governance structure required</i></p>
<b>4.3.7 - Issue 4. Restoration of log handling and storage sites</b>	
O.4.1 Identify restoration opportunities for log handling and storage sites that are no longer required.	<p>S.4.1.1 Develop and implement a process for restoring log handling and storage sites and adjacent areas that are not included in the strategic network of log handling and storage sites (Strategy 1.1.2).  <i>Start within 24 months, new funding or resources required, governance structure required</i></p> <p>S.4.1.2 Investigate potential funding opportunities for log handling and storage sites that require restoration but which have no or insufficient cleanup bond and/or security in place or for which the former tenure holder cannot be held liable.  <i>Start within 24 months, no new funding or resources required</i></p> <p>S.4.1.3 Focus restoration on sites that have been identified as having significant cultural and ecological damage based on existing pollution risk assessments.  <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.7 - Issue 5. Potential impacts of climate change on forestry operations</b>	
O.5.1 Increase the adaptability of forestry operations and infrastructure to climate change.	<p>S.5.1.1 Work with industry and relevant government agencies to assess the potential impacts of climate change on forestry operations and infrastructure, and develop response plans where appropriate.  <i>Start within 12 months, no new funding or resources required, governance structure required</i></p>

### 4.3.8 Aquaculture

Aquaculture is an economically a significant industry in the Plan Area. Finfish aquaculture is a current economic driver in the Plan Area, and the North Vancouver Island sub-region is the most important production area of all MaPP sub-regions. However, levels of support for the industry vary among First Nations and within Plan Area communities. Considerable interest and potential exists in the Plan Area for the aquaculture of plants, shellfish and other invertebrates. In some locations, existing integrated multi-trophic aquaculture also has potential for increasing revenue generation by using sites, wastes and by-products efficiently.

Fisheries and Oceans Canada regulates finfish and shellfish aquaculture as fisheries; the provincial government regulates the cultivation of plants. For all types of aquaculture, the provincial government is responsible for site tenuring, industry development, business and labour regulation, and other matters under the Ministry of Environment. Local governments do not regulate or license aquaculture, but some have bylaws that address siting of aquaculture structures.

Existing aquaculture sites are subject to siting guidelines and consultation with First Nations. Some First Nations currently have siting and operational agreements with the industry. Finfish site operations may also require the reorientation of pens within the site tenure.

Economic efficiency of aquaculture is crucial to sustainable industry development. In the Plan Area, siting constraints (including the provincial Discovery Islands net-pen salmon aquaculture moratorium [Appendix A3]) are reducing industry certainty and the potential for expansion. Shellfish aquaculture is constrained by water temperature, a slow tenure process, the turnover of undeveloped tenures, a location-based marginal cost disadvantage, an economy of scale, and a lack of infrastructure, investors, product transportation, availability of seed, and marketing capacity. However, there is suitable habitat and a potential source of workers with transferable skills.

First Nations are seeking further involvement in aquaculture, including the use of loxiwe. Branding and marketing of local and First Nations products are considered to be currently lacking, but there are opportunities for niche products.

Issues related to commercial aquaculture include the potential impact of the industry on ecosystems, economic efficiency, branding and marketing, sector opportunities and climate change impacts. Climate change effects such as ocean acidification and water temperature increases will have both positive and negative impacts on aquaculture by changing the environmental conditions that support the growth of different species.

4.3.8 - Issue 1. Support for, and integration and rationalisation of, existing and future aquaculture activities	
Objective	Strategy
O.1.1 Increase support for existing and future ecosystem-based aquaculture activities.	S.1.1.1 Continue government and industry efforts to integrate ecosystem-based management practices in aquaculture. <i>Ongoing activity, new funding or resources required, governance structure required</i>
	S.1.1.2 Encourage research and/or pilot projects in marine plant and integrated multi-trophic aquaculture. <i>Ongoing activity, new funding or resources required</i>
4.3.8 - Issue 2. Opportunities for new aquaculture industry sectors	
O.2.1 Maintain local aquaculture opportunities in the Plan Area.	S.2.1.1 Work with industry and key marine sectors to identify areas with high capability for the aquaculture of shellfish and other invertebrates and plants for potential establishment of provincial government Notations of Interest. <i>Start within 6 months, new funding or resources required, governance structure required</i>

	<p>S.2.1.2 Work with industry to identify opportunities and incentives for entrepreneurial business for aquaculture operations. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p> <p>S.2.1.3 Work with relevant industries to identify marine species that offer viable, long-term, ecosystem-based aquaculture opportunities (including but not limited to Sablefish, kelp, Sea Cucumber and urchin production). <i>Start within 12 months, no new funding or resources required</i></p> <p>S.2.1.4 Support the termination of unused provincial shellfish tenures and their reallocation to new applicants, in accordance with the tenure provisions. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.8 - Issue 3. Level of First Nations participation in aquaculture industry sectors</b>	
O.3.1 Increase First Nations participation in new aquaculture industries.	<p>S.3.1.1 Identify appropriate sites with high shellfish aquaculture capability for First Nations tenure opportunities. Priority areas are the North Shore/Boswell Inlet (SMZ 1), Port Neville (SMZ 25), Booker Lagoon (SMZ 11) and Kalogwis (SMZ 22) – see Chapter 5. <i>Start within 12 months, new funding or resources required</i></p> <p>S.3.1.2 Initiate discussions between First Nations and the provincial government on tenuring loxiwe to the appropriate First Nation(s) to protect their cultural and economic use by First Nations. <i>Start within 6 months, no new funding or resources required, governance structure required</i></p> <p>S.3.1.3 Encourage opportunities for First Nations investment, partnership and participation in aquaculture activities through business planning and access to capital. <i>Ongoing activity, no new funding or resources required</i></p>
O.3.2 Minimise the impacts of aquaculture on First Nations traditional uses and activities.	<p>S.3.2.1 Encourage tenure holders to work with First Nations to address seasonal traditional uses and activities through appropriate tenure development provisions. <i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.8 - Issue 4. Economic efficiencies and effectiveness of the aquaculture industry</b>	
O.4.1 Improve economic efficiencies and effectiveness among aquaculture producers.	<p>S.4.1.1 Encourage development of a trained labour pool and related infrastructure development, and increase industry, government and First Nations collaboration on resourcing aquaculture production, processing, distribution and marketing. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p> <p>S.4.1.2 Encourage industry to use a market-driven approach to expand the shellfish industry. <i>Ongoing activity, no new funding or resources required</i></p> <p>S.4.1.3 Support the establishment of integrated shellfish businesses or cooperatives that include hatcheries and the growing, processing and distribution of products. <i>Ongoing activity, no new funding or resources required</i></p>

<b>4.3.8 - Issue 5. Branding and marketing of local aquaculture products</b>	
O.5.1 Improve branding and marketing of Plan Area aquaculture products.	S.5.1.1 Build on existing marketing strategies for EBM aquaculture products produced in association with existing seafood marketing organisations. <i>Start within 24 months, new funding or resources required, governance structure required</i>
	S.5.1.2 Develop branding and marketing based on EBM products developed by First Nations. <i>Start within 24 months, new funding or resources required, governance structure required</i>
<b>4.3.8 - Issue 6. Potential impacts of aquaculture on the marine ecosystem</b>	
O.6.1 Reduce potential impacts of aquaculture on marine ecosystem health.	S.6.1.1 Encourage development and application of technological improvements to reduce the potentially adverse impacts of aquaculture, particularly in light of climate change. <i>Start within 12 months, no new funding or resources required</i>
	S.6.1.2 Review provincial tenure policy to enhance debris management by aquaculture tenure holders to minimise off-tenure impacts. (Strategy 2.1.3, Section 4.3.3) <i>Start within 12 months, new funding or resources required</i>
	S.6.1.3 Work with institutions and industry to develop and fund robust information and research programs, including but not limited to the impact of benthic fouling, the transmission of pathogens and the impact of therapeutants (vaccines, antibiotics or pesticides to combat disease or parasites). <i>Ongoing activity, no new funding or resources required</i>
	S.6.1.4 Encourage industry to work with First Nations, local governments and stakeholders to review potential changes to existing siting guidelines. <i>Start within 24 months, no new funding or resources required, governance structure required</i>
	S.6.1.5 Support time limited or seasonal management and/or siting adjustments to minimise interference of aquaculture sites with the seasonal migration of marine species. <i>Ongoing activity, no new funding or resources required</i>
<b>4.3.8 - Issue 7. Potential impacts of climate change on aquaculture</b>	
O.7.1 Anticipate and respond to potential effects of climate change on aquaculture.	S.7.1.1 Work with industry and relevant government agencies to identify and assess the effects of climate change on aquaculture operations, including but not limited to increases in algal blooms and disease, acidification, decreased oxygen and sea level rise. <i>Start within 12 months, no new funding or resources required, governance structure required</i>
	S.7.1.2 Evaluate potential new aquaculture opportunities and threats resulting from climate change and the movement of species. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.7.1.3 Enhance the resilience of native and cultivated shellfish populations and the ecosystems on which they depend. <i>Ongoing activity, no new funding or resources required</i>



#### 4.3.9 Energy

Mapped information regarding renewable energy generation is key to identifying potential areas of development for both industry and spatial planning with other users. However, current information on potential renewable energy sites is lacking.

Tidal and wave energy generation is relatively new in BC; few pilot projects are in place. Wind energy development is occurring on land, but there are no offshore wind energy projects in operation. There is public interest in learning from experiences with renewable energy generation in other parts of the world and understanding the technologies and ecological implications of renewable energy.

The 2007 BC Energy Plan encourages the development of renewable energy projects by providing information that is relevant to pre-engineering projects, and addresses development plans, pricing, electricity purchase agreements and applications for remote communities or small-scale projects. Some small off-grid communities have been supported by BC Hydro's Remote Community Electrification Program; however, no new projects are being developed at this time. The Fraser Basin Council's Remote Community Implementation Program is meant to complement other programs with mentorship and funding. There is an interest in increasing renewable energy generation in the Plan Area, and increasing community participation in, and benefit from, local projects.

The use of renewable energy is viewed as a way to reduce greenhouse gas emissions when it directly displaces the use of nonrenewable sources (about 10 percent of BC's current supply) or if it will meet future increased energy demands. In remote marine communities that depend on diesel generators, smaller scale technologies, including tidal energy, could eventually supply electricity and reduce greenhouse gas production where conditions are appropriate. However, like other sectors, renewable energy generation technology and infrastructure will need to be adaptable to climate change.

4.3.9 - Issue 1. Opportunities for renewable energy generation development	
Objective	Strategy
O.1.1 Encourage new and maintain existing opportunities for renewable energy generation in locations with high potential.	S.1.1.1 Work with industry to improve inventory of areas with high potential for marine renewable energy generation. <i>Start within 24 months, no new funding or resources required, governance structure required</i>
	S.1.1.2 Use appropriate tools to maintain industry access to areas with high potential for renewable energy generation. <i>Ongoing activity, no new funding or resources required</i>

<b>4.3.9 - Issue 2. Common understanding of renewable energy technology</b>	
O.2.1 Improve the common understanding of renewable energy technology.	S.2.1.1 Work with industry to develop information programs, workshops and education sessions on the implications of renewable energy technologies. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.2.1.2 Implement information programs, workshops and education sessions with First Nations and local communities in areas with high potential for development of renewable energy generation. <i>Start within 24 months, new funding or resources required, governance structure required</i>
<b>4.3.9 - Issue 3. Benefits and impacts from renewable energy generation projects</b>	
O.3.1 Increase benefits and reduce adverse impacts from renewable energy generation projects.	S.3.1.1 Undertake a review of barriers and challenges to local community/First Nations participation in the renewable energy sector. <i>Start within 24 months, new funding or resources required</i>
	S.3.1.2 Ensure or require local and First Nations partnerships, interests and benefits from renewable energy generation projects. <i>Ongoing activity, no new funding or resources required</i>
	S.3.1.3 Encourage collaboration between proponents and communities (including First Nations) in designing and developing renewable energy generation projects. <i>Ongoing activity, no new funding or resources required</i>
	S.3.1.4 Investigate funding sources and opportunities to support local and First Nations participation in the development of renewable energy generation. <i>Start within 24 months, no new funding or resources required</i>
	S.3.1.5 Work with industry and BC Hydro to transition diesel-dependent communities (including First Nations) to renewable energy, in areas with high potential for renewable energy generation. <i>Start within 24 months, new funding or resources required, governance structure required</i>
	S.3.1.6 Ensure that the assessment of renewable energy generation projects includes consideration of impacts on ecosystems and other uses and activities, particularly fisheries and recreation activities. <i>Ongoing activity, no new funding or resources required</i>
	S.3.1.7 Continue to promote energy conservation programs and measures to minimise the contribution of energy development projects to climate change and pollution. <i>Ongoing activity, no new funding or resources required</i>
<b>4.3.9 - Issue 4. Impacts of climate change on energy generation and related infrastructure</b>	
O.4.1 Minimise climate change impacts on energy generation and related infrastructure.	S.4.1.1 Encourage the use of local, traditional and scientific knowledge of observed and predicted climate change in the assessment of renewable energy generation projects. <i>Ongoing activity, no new funding or resources required</i>
	S.4.1.2 Encourage industry to assess and respond to the potential impacts of climate change on renewable energy operations and infrastructure. <i>Ongoing activity, no new funding or resources required</i>

#### 4.3.10 Fishery Economy and Associated Values

The fishery economy includes all of the direct and indirect social, cultural and economic benefits derived from current commercial fishing, recreational fishery service providers, recreational fishing and aquaculture. The province and partner First Nations have a vital interest and role in this economy, including fish and seafood processing, distribution, retailing, business development and skills training, disposition of tenures, and maintenance of associated infrastructure.

Commercial and recreational fisheries are key industries that support the Plan Area economy. The economy, society and culture of First Nations have traditionally and continue to be strongly associated with marine resource harvesting including species that are fished. Fisheries are an integral part of coastal communities, as recognised in the United Nations Convention on the Law of the Sea agreement ratified by Canada, and are the base of First Nations food, social and ceremonial practices. Access to marine space to pursue fisheries is important for maintaining this industry and critical for First Nations practices.

Declines in some stocks and changing management have resulted in diversification of species harvested, and an overall decrease in the size of the commercial fishing industry. From 1994 to 2002, a large number of coastal fishery licences were retired, as evidenced by a substantial drop in licences held in the Plan Area, particularly by fishers (more than 50 percent) based in Port Hardy. The number of people making a living from fishing decreased quickly in a short period. There is also a lack of N̓anwak̓olas member First Nations ownership and participation in the commercial fishery. In 2007–2009, the member nations had less than a 1 percent share of the provincial average landed value. Maintaining this core industry and local participation is an issue, along with maintaining sufficient infrastructure.

Over the last 50 years, the regional and global seafood industry has become increasingly competitive and BC industries have had to adapt and reposition. Traceability and sustainability, through certification programs, dockside monitoring programs and fisheries vessel observer programs are becoming business requirements in the industry, reflecting a growing environmental ethic and enabling better access to international markets. Sustainable food trends and local uniqueness may also benefit niche market developments, such as First Nations products.

The number of recreational tidal (salt) water licence has declined since 1995, although the number of days fished per angler has remained stable. Recreational fisheries remain popular with local residents but visitor numbers have declined, similar to other areas of tourism. Nevertheless, recreational fishing accounts for 40 percent of the fishing sector's (aquaculture, commercial and recreational) contribution to BC's economy. The Plan Area has a solid

reputation for recreational fishing products and experiences on which to build a local marketing program.

First Nations access to species that are fished is and will continue to be important, for both harvesting, sharing, and for value as a food source. Access to this marine resource can be affected by other users and tenures.

Fisheries can have an impact on the environment and resources. However, the Plan seeks to support new and existing provincial programs and regulations with the purpose of restoring marine habitats, and increasing compliance with regulations. With climate change, flexibility in fishing fleets will be important to respond to the northerly movement of species, which may reduce or change the opportunities for existing fisheries. New fisheries may also develop with species movement or changes in consumer preferences. Changes in sea level, storm frequency and intensity have the potential to impact docking and processing infrastructure within risk areas.

4.3.10 - Issue 1. Support for existing and future fisheries in adjacent coastal communities	
Objective	Strategy
O.1.1 Maintain support for the fisheries economy as a mainstay of adjacent coastal communities.	S.1.1.1 Increase local resident and First Nations involvement in and benefit from commercial and recreational fisheries through offloading, processing and guiding. <i>Ongoing activity, no new funding or resources required</i>
	S.1.1.2 Work with appropriate agencies to investigate the feasibility of establishing new fisheries related economic opportunities. Priority areas include Port Neville (SMZ 25) and Loughborough Inlet/Matlatlen/Stafford/Apple River (SMZ 29) – see Chapter 5. <i>Ongoing activity, new funding or resources required</i>
4.3.10 - Issue 2. Promote effective processing and marketing of BC fisheries products and experiences	
O.2.1 Promote the effective processing and marketing for BC fisheries products and experiences.	S.2.1.1 Support opportunities for local and First Nations investment, partnership and participation in sustainable BC seafood processing activities and operations. <i>Ongoing activity, no new funding or resources required</i>
	S.2.1.2 Facilitate a First Nations-based marketing strategy that includes certification by an independent body. <i>Start within 24 months, new funding or resources required</i>
	S.2.1.3 Work with recreational fishing service providers to facilitate a recreational fisheries marketing program for the Plan Area. <i>Start within 24 months, new funding or resources required, governance structure required</i>
4.3.10 - Issue 3. Maintaining First Nations fishing activities	
O.3.1 Use available and new tools to reinforce the importance of First Nations fishing activities.	S.3.1.1 Support First Nations monitoring of marine activities as they relate to continued First Nations fishing activities. <i>Ongoing activity, no new funding or resources required</i>

	<p>S.3.1.2 Encourage agreements between tenure holders and commercial and recreational fishing service operators with First Nations on seasonal access to provincial tenured areas that are traditionally used for First Nations purposes, through such venues as sector workshops.</p> <p><i>Ongoing activity, no new funding or resources required, governance structure required</i></p>
<b>4.3.10 - Issue 4. Environmental impacts of fishery activities</b>	
O.4.1 Reduce the ecological impacts of commercial and recreational fisheries.	<p>S.4.1.1 Support sustainable fisheries practices such as existing voluntary sustainability initiatives.</p> <p><i>Ongoing activity, no new funding or resources required</i></p> <p>S.4.1.2 Continue to support rockfish conservation initiatives. A Priority Area is Kalogwis (SMZ 22) – see Chapter 5.</p> <p><i>Ongoing activity, no new funding or resources required</i></p> <p>S.4.1.3 Encourage compliance through existing and new monitoring programs, information and education (e.g. guardian watchmen, electronic monitoring).</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.10 - Issue 5. Deterioration and loss of fisheries habitat and species</b>	
O.5.1 Maintain and enhance species and habitat for sustainable fisheries.	<p>S.5.1.1 Continue to use and support provincial programs, and regulations to maintain, protect and rebuild salmon, Eulachon, herring, rockfish and shellfish populations, as well as key habitat, such kelp beds, eelgrass and estuaries. Priorities include: partnerships with Da'naxda'xw/Awaetlala for enhancement of Pink Salmon in Glendale Cove (Knight Inlet South SMZ 20); Da'naxda'xw/Awaetlala led projects for research and restoration of eulachon stocks (Knight Inlet North SMZ 21); Wei Wai Kum salmon habitat restoration (Loughborough Inlet/Matlaten/Stafford/Apple SMZ 29; Hardy Bay SMZ 8); and for salmon habitat in Coho Creek (Ba'as/Blunden Harbour PMZ 9) – see Chapter 5.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
<b>4.3.10 - Issue 6. Impacts of climate change on fisheries infrastructure and processing</b>	
O.6.1 Ensure that fisheries infrastructure and processing facilities are capable of responding to climate change implications.	<p>S.6.1.1 Encourage processors to work with fishermen to evaluate the ability of processing infrastructure to be altered in response to changes in species and timing of harvests.</p> <p><i>Start within 24 months, new funding or resources required, governance structure required</i></p> <p>S.6.1.2 Incorporate changes in sea level, storm frequency and intensity in designing fisheries infrastructure within areas identified in vulnerability assessments as high risk.</p> <p><i>Start within 24 months, no new funding or resources required</i></p>

#### 4.3.11 Governance and Collaborative Management

Governance is critical to the implementation of an EBM approach and the success of the Plan. For the general public governance and collaborative management issues appear to be related to a lack of understanding about processes, including decision-making, transparency and

accountability, appeal processes, roles and responsibilities and jurisdictional overlap; inclusion of local residents in management and planning; and adaptation to climate change. From a First Nations perspective issues also include unresolved questions of Aboriginal rights including Aboriginal title.

Jurisdictional complexity, uncertainty regarding Aboriginal rights and title and limitations on the nature and scope of participation by First Nations, the public and sectors, has led to a lack of understanding of and satisfaction with governance processes. In some circumstances, this includes a concern with the opportunities and ability for First Nations, the public and sectors to participate in marine management.

As a result of various court decisions, management agreements and provincial government policy on land use planning, greater collaboration between the provincial government and First Nations is occurring. This reflects the broader trend in government-to-government planning in BC. In some respects, this collaboration demonstrates a strengthening of the role of local interests in resource management, and there is an opportunity to continue to improve relationships between First Nations and other levels of government.

The marine environment is changing in response to climate change; however, there is some concern that legislation, regulation and policies may prevent or discourage adaptation to climate change.

4.3.11 - Issue 1. Understanding of decision-making and appeal processes for marine uses and activities	
Objective	Strategy
O.1.1 Improve understanding of marine governance processes.	S.1.1.1 Review the adequacy of existing information and communication materials regarding marine governance and jurisdiction for various government agencies and First Nations. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.2 Develop and/or improve information access and education on marine governance and jurisdiction. <i>Start within 12 months, new funding or resources required, governance structure required</i>
4.3.11 - Issue 2. Adequacy of First Nations, local resident, local government and stakeholder participation in marine resource management	
O.2.1 Increase the participation of First Nations, local residents, local governments and stakeholders in marine resource management.	S.2.1.1 Increase opportunities for First Nations, local residents, local governments and stakeholders to provide input to marine management decisions. <i>Ongoing activity, new funding or resources required, governance structure required</i>



	<p>S.2.1.2 Increase First Nations, local resident, local government and stakeholder participation in management and development plans, including planning priorities. <i>Ongoing activity, new funding or resources required, governance structure required</i></p> <p>S.2.1.3 Develop collaborative management agreements between First Nations and the provincial government on marine management. <i>Ongoing activity, new funding or resources required, governance structure required</i></p> <p>S.2.1.4 Review tenure policy for opportunities to improve, where appropriate, local governments' and existing tenure holders' input into decisions on new tenures and renewals. <i>Start within 6 months, no new funding or resources required</i></p> <p>S.2.1.5 Explore opportunities for more effective and collaborative First Nations engagement in environmental assessment processes. <i>Start within 12 months, no new funding or resources required, governance structure required</i></p>
<b>4.3.11 - Issue 3. Working relationships between First Nations and local governments</b>	
O.3.1 Improve relationships and communications between First Nations and local governments.	<p>S.3.1.1 Encourage development agreements between First Nations and local governments. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p> <p>S.3.1.2 Review and increase the effectiveness of existing agreements between First Nations and local governments. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p>
<b>4.3.11 - Issue 4. Legislation, regulations and policy constraints on adaptation to climate change</b>	
O.4.1 Improve legislation, regulations and policies related to climate change adaptation.	<p>S.4.1.1 Work with relevant agencies to review and revise existing legislation, regulations and policies (where appropriate) to address identified constraints on the adaptability of marine uses and activities to climate change. <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.4.1.2 Encourage more effective collaboration among First Nations and government agencies regarding the incorporation of climate change implications on tenure decisions related to infrastructure development. <i>Ongoing activity, no new funding or resources required, governance structure required</i></p> <p>S.4.1.3 Identify the adaptability of current management practices (including tenure referrals and modification) of marine uses and activities to climate change, and methods of monitoring adaptability. <i>Start within 12 months, new funding or resources required, governance structure required</i></p>

#### 4.3.12 Regulatory Compliance and Enforcement

The primary issue for compliance and enforcement of marine uses and activities is the lack of resources for maintaining on-the-water presence. Compliance and enforcement activities are challenging to conduct in some parts of the Plan Area, largely because of the size of the area and its remoteness. Surveillance costs are high, and staff from appropriate government agencies lack the resources required for conducting frequent patrols. However, advancements in technology have also led to new methods of compliance and enforcement monitoring.

Some marine-based industries are required by the regulatory agency to undertake rigorous monitoring and accountability programs. In some instances, the provincial government relies on a professional accountability model.

First Nations hereditary responsibility as stewards of their traditional territories means they are most likely to be in the areas where activities occur, but there are challenges with sufficiency of resources to monitor activities, and with clarity of regulatory enforcement mandates.

4.3.12 - Issue 1. Capacity for on-the-water surveillance, compliance and enforcement	
Objective	Strategy
O.1.1 Improve capacity for on-the-water surveillance, compliance and enforcement activities.	S.1.1.1 Jointly explore funding sources, new opportunities, and the use of new technologies with appropriate government agencies and local marine surveillance and enforcement programs. <i>Ongoing activity, new funding or resources required, governance structure required</i>
	S.1.1.2 Coordinate training for marine surveillance and enforcement with relevant agencies and organisations. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.3 Promote and/or renew existing, and investigate potential new, local educational opportunities (e.g., lighthouse keepers, StraitWatch) regarding cultural and heritage resources and ecological disturbances, including wildlife and pollution incidents. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.4 Assess the adequacy of existing programs and regulations, and work within agency and organisation mandates to establish partnership agreement(s) for the efficient and effective use of local surveillance and enforcement personnel and equipment. <i>Start within 12 months, new funding or resources required, governance structure required</i>
	S.1.1.5 Assess provincial conservation and protection regulations and policy regarding cultural and heritage resources to improve surveillance and enforcement requirements, if required. <i>Start within 12 months, new funding or resources required, governance structure required</i>

#### 4.3.12 - Issue 2. First Nations role in on-the-water monitoring, surveillance and enforcement within existing regulatory regimes

O.2.1 Increase and enhance First Nations role in on-the-water monitoring, surveillance and enforcement within existing regulatory regimes.

S.2.1.1 Work with relevant government agencies to identify opportunities where Guardian Watchmen could participate in the surveillance of marine activities and the enforcement of marine regulations.

*Start within 6 months, new funding or resources required, governance structure required*

S.2.1.2 Increase the use of Guardian Watchmen programs to assist with monitoring and facilitating compliance with tenure provisions, marine plans and existing regulations. This could include, but is not limited to, ecological conditions, conservancies and protected areas, marine oil spill response, cultural and heritage resources, and related early warning systems.

*Start within 12 months, new funding or resources required, governance structure required*

S.2.1.3 Identify opportunities for the Guardian Watchmen program to participate in surveillance of unregulated activities, such as public recreation and tourism.

*Start within 12 months, new funding or resources required, governance structure required*

S.2.1.4 Identify funding and resource opportunities for enabling First Nations involvement in the Guardian Watchmen program.

*Start within 12 months, new funding or resources required, governance structure required*

#### 4.3.13 Research, Education and Training

The need to support a robust marine research program in BC, to include First Nations, and to address EBM knowledge gaps were identified issues with regards to this topic. Research is conducted by a variety of organisations, including universities and colleges, governments, industry and nonprofit groups. This, combined with lack of consistent, long-term funding, makes coordination of research a challenge.

Traditional and local knowledge are now considered to be legitimate and necessary contributions to research, management and policy decisions, although they are subject to constraints associated with funding and mechanisms for providing input. The integration of traditional and local knowledge into research and education has been increasing and is expected to continue to increase, but greater participation of First Nations in research, adaptive planning and decision-making is needed.

Coordinated research and education programs are needed to ensure effective planning and management and to enable community members to gain skills for working in and enhancing businesses in the marine-based economy. The 2010 North Island Coordinated Workforce Strategy identified workforce gaps related to employer engagement and capacity, delivery of

education and training, First Nations and other groups under-represented in the workforce, and funding. Due to the small population in the Plan Area, it is a challenge to find skilled workers and to have enough students to provide skills training. Although employers have said they are dissatisfied with local training opportunities, there has also been a lack of employer participation in coordinating training opportunities. Furthermore, education can increase understanding about the marine environment and encourage compliance with regulations.

There are research gaps in a number of important areas, including ecosystem functioning and ecosystem health monitoring. Addressing these gaps would provide a greater opportunity to adaptively plan and manage for operations and activities. In 2009, the Pacific Marine Analysis and Research Association developed a summary of identified data and information gaps, and uncertainties that can limit the ability to implement EBM. The five main topics identified were biodiversity, habitat, ecological functions, and human activities and their resulting stressors.

Climate change may also affect ecosystems, but currently, there is very limited public understanding of the implications of these effects on the Plan Area.

4.3.13 - Issue 1. Robustness of marine research program strategy	
Objective	Strategy
O.1.1 Increase support for a robust marine research program strategy in BC.	<p>S.1.1.1 Support independent, government, industry and academic funding for, and collaboration on, the development of a marine research program strategy that is consistent with a national research strategy. Include priority topics such as thresholds for pollutants, long-term marine ecosystem health assessments, impacts of light pollution on seabirds and other species, climate change, and analysis of existing data sets (including recreational dive site datasets for ecological values).</p> <p><i>Ongoing activity, no new funding or resources required, governance structure required</i></p>
	<p>S.1.1.2 Work with organisations, institutions, industry and governments to develop robust and objective baseline research and monitoring programs.</p> <p><i>Ongoing activity, new funding or resources required, governance structure required</i></p>
	<p>S.1.1.3 Provide local opportunities for hands-on and applied research training.</p> <p><i>Ongoing activity, new funding or resources required, governance structure required</i></p>
	<p>S.1.1.4 Connect existing resources, such as staffed lighthouses, research stations, volunteer organisations and businesses in remote areas, to marine research programs.</p> <p><i>Ongoing activity, no new funding or resources required, governance structure required</i></p>

	<p>S.1.1.5 Coordinate research and study efforts with other MaPP sub-regions on topics of common interest.  <i>Ongoing activity, new funding or resources required, governance structure required</i></p>
<b>4.3.13 - Issue 2. Adequacy of First Nations participation in marine research</b>	
O.2.1 Increase participation of First Nations in marine research.	<p>S.2.1.1 Investigate grants and funding sources for increasing research by member First Nations on marine ecosystems, including improved inventories of traditional ecological knowledge.  <i>Start within 12 months, new funding or resources required</i></p> <p>S.2.1.2 Develop programs to increase the collection of information by First Nations through partnerships with institutions, industry and governments.  <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.2.1.3 Encourage research institutions and industry to use First Nations in conducting research programs.  <i>Ongoing activity, no new funding or resources required, governance structure required</i></p>
<b>4.3.13 - Issue 3. Adequacy of marine sector training and education programs</b>	
O.3.1 Increase opportunities for marine related apprenticeships, co-op programs, internships, secondary school partnerships and workforce training or retraining.	<p>S.3.1.1 Work with existing regional and local committees to identify and address gaps in training and establish programs to educate community youth about opportunities for marine sector employment training.  <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.3.1.2 Increase multi-sector cooperation to create a critical mass for training opportunities for mutual certifications.  <i>Start within 12 months, no new funding or resources required, governance structure required</i></p> <p>S.3.1.3 Evaluate current human resource needs and future sector growth as the basis for training programs.  <i>Start within 12 months, new funding or resources required, governance structure required</i></p> <p>S.3.1.4 Encourage training and hiring of local residents for jobs in the marine economic sectors.  <i>Ongoing activity, no new funding or resources required</i></p>
O.3.2 Increase understanding of the marine environment and regulations.	<p>S.3.2.1 Develop or expand education and awareness programs regarding prevention, regulatory compliance, restoration and recovery (e.g., Straitwatch, Observe Record and Report, marine mammal incident reporting).  <i>Ongoing activity, new funding or resources required</i></p>
<b>4.3.13 - Issue 4. Common understanding of marine ecosystems</b>	
O.4.1 Address identified research gaps regarding marine ecosystems for implementing EBM in BC.	<p>S.4.1.1 Collaborate with research agencies, organisations and universities to reassess the status of research gaps and existing resources for EBM and create an implementation plan to address opportunities.  <i>Start within 24 months, new funding or resources required, governance structure required</i></p>

	<p>S.4.1.2 Design monitoring and research programs to answer specific technical or management questions using appropriate government and/or academic standards. A priority area is Port Hardy (SMZ8) – See Chapter 5.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
	<p>S.4.1.3 Encourage the timely provision of monitoring data collected by government as a requirement of tenures to nongovernment researchers.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
	<p>S.4.1.4 Identify marine species and ecosystem research priorities through the provincial Conservation Framework.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
O.4.2 Reduce potential detrimental impacts of research on habitats and species.	<p>S.4.2.1 Avoid using destructive methods in research programs.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
	<p>S.4.2.2 Consider cumulative effects when designing research programs.</p> <p><i>Ongoing activity, no new funding or resources required</i></p>
O.4.3 Improve understanding of marine ecosystem functions and dynamics.	<p>S.4.3.1 Collaboratively develop and make available education materials to improve public understanding of, and caring for, marine cultural, heritage and ecological resources.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.4.3.2 Identify areas for research and education purposes.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.4.3.3 Provide, and increase awareness of, opportunities for stewardship involving education, restoration and monitoring.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.4.3.4 Support the development and use of a common marine biogeographic classification system, as a common basis for research, planning and monitoring.</p> <p><i>Ongoing activity, no new funding or resources required, governance structure required</i></p>
<b>4.3.13 - Issue 5. Understanding of climate change effects on oceans</b>	
O.5.1 Improve understanding of the effects of climate change on the marine environment and resources.	<p>S.5.1.1. Increase public awareness of climate change and potential future impacts through existing community outreach and public education initiatives.</p> <p><i>Start within 12 months, new funding or resources required, governance structure required</i></p>
	<p>S.5.1.2 Gather traditional, local, industry (e.g., aquaculture) and scientific knowledge of climate change (e.g., flooding, severe marine storms, acidification) to better understand the potential impacts of climate change and develop response or adaptation measures.</p> <p><i>Start within 24 months, new funding or resources required, governance structure required</i></p>



---

S.5.1.3 Using preliminary climate change vulnerability assessments and other resources, prepare a climate change vulnerability assessment for the Plan Area to identify priorities including protection of ecosystems and cultural and heritage resources; economic risks and opportunities; impacts on community infrastructure; and community design/planning.

*Start within 24 months, new funding or resources required, governance structure required*

---

S.5.1.4 Improve research programs to inform understanding of climatic and oceanographic dynamics, ecological responses to climate change, and potential climate refugia.

*Start within 24 months, new funding or resources required*

---



## CHAPTER 5: AREA-SPECIFIC MANAGEMENT DIRECTION

### 5.1 Purpose of Area-Specific Management Direction

Chapter 5 identifies specific spatial zones and associated recommendations for marine uses and activities in the Plan Area. All spatial recommendations in this marine plan provide policy guidance intended to inform the decision making process regarding uses and activities in the areas identified. This chapter is also intended to assist marine tenure applicants, stakeholder groups, industry and the general public in accessing and using marine space and resources.

The zoning direction assists in identifying areas that may contribute to both North Vancouver Island and MaPP study area marine protection networks and areas where area-specific management provisions and conditions are to be applied.

Information related to activities primarily under federal government jurisdiction, was considered in the development of these zones (to the extent made available), but additional steps, including stakeholder engagement, socioeconomic analyses and conflict resolution mechanisms, will be needed to determine the implications of the plan zones and related recommendations.

### 5.2 Marine Zoning System

#### 5.2.1 Framework and Approach

The Plan adheres to the MaPP Regional Zoning Framework by allocating marine space to three broad zones: General Management Zone (GMZ), Special Management Zone (SMZ) and Protection Management Zone (PMZ). In addition, proposed and legally designated provincial government marine parks, conservancies, wildlife management areas, ecological reserves and other lands secured for conservation purposes exist in the Plan Area (Figures 5 and 7). The zoning designations apply to the entire water surface, water column and seabed, and are not intended to include layered or overlapping zones. Zoning is intended to reduce present and potential conflicts among uses and activities, provide business and user group certainty,

improve efficiency in permitting decisions, provide information regarding regional marine protected area network planning, and give general guidance for resource managers. Zones are not intended to be exclusive for any one use or activity.

Marine space was allocated to specific zones through a sequence of steps that involved the review and assessment of existing marine and coastal plans, local government zoning, mapped information and local knowledge. Decision support tools were used throughout this process. More information on the steps involved is provided in Chapter 3.

### 5.2.2 Plan Zones

Marine spatial zones for the Plan Area are shown in Figure 7.

The General Management Zone represents a single zone designation with standard provisions, conditions and recommended uses. It includes areas in which there are no known conflicts between ecosystem and human use values that require special designation at this time. Approximately 45 percent of the Plan Area is designated as GMZ.

The Special Management Zone is a single zone that represents potentially compatible and co-existing uses, activities, values and interests. It is assigned to management emphasis areas that are intended to strengthen, encourage and/or maintain opportunities for important existing values, uses or activities associated with local communities, First Nations and marine economic sectors that are related to the area emphasis. Approximately 22 percent of the Plan Area is designated as SMZ.

The Protection Management Zone is allocated to 10 specific geographic areas. The PMZ allocates space primarily for conservation purposes or objectives, and may provide a basis for protecting local conservation values. The PMZs recommended in this marine plan are not designating marine protected areas (MPAs), but can provide valuable information to the MPA Network Planning process. MaPP's spatial zoning for protection management references the International Union of the Conservation of Nature's (IUCN) protected area management categories. The IUCN categories were used to:

- Provide a consistent, internationally recognized approach to expressing the range of management approaches required to conserve a diversity of marine values;
- Assist planners and stakeholders in providing recommendations for how uses and activities under provincial and First Nation management/authority should be managed to conserve a range of values in locally specific circumstances; and,

- Assist planners in assessing the implications of the PMZ recommendations in a consistent and comprehensive manner.

The appropriate (provincial and First Nations) policy and legal instruments for achieving stated zoning objectives will be determined during plan implementation. In total, the PMZ areas cover approximately 10 percent of the Plan Area, and are additional to the existing (2 percent) and proposed provincial marine protection area designations and the proposed federal Scott Islands Marine National Wildlife Area (20 percent).

These zones do not provide recommendations on marine uses and activities outside of provincial regulatory authority such as but not limited to commercial, recreational, aboriginal fisheries, aquaculture licencing and marine transportation and shipping.

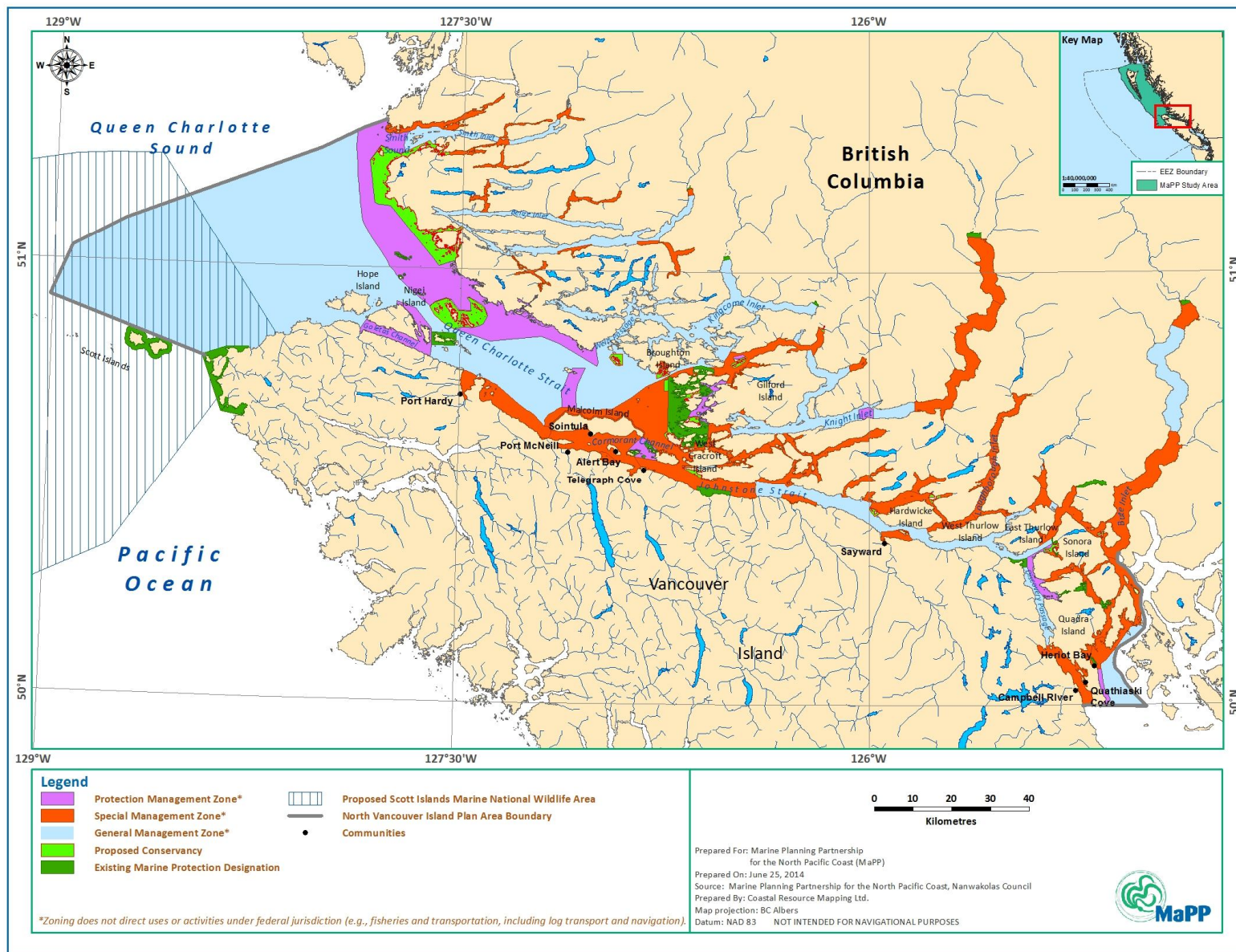


Figure 7. Plan Area zoning designations.

## 5.3 Uses and Activities Approach

Recommendations are made for a consistent set of uses and activities in the Plan Area that are appropriate to the sub-regional planning scale and the limits of provincial jurisdiction (Table 8). Focus is placed on uses and activities that require provincial government authorisation or tenure, but other key marine uses and activities in the Plan Area are also described.

*Table 8: Definitions of marine uses and activities addressed in the Plan.*

<b>Marine Use/Activity</b>	<b>Description</b>
Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants	Selection of areas suitable for the cultivation and harvesting of marine plants, shellfish and other invertebrates for commercial purposes. Culture activity occurs on the sea floor and/or between the high water mark and the low water mark in a natural or manufactured environment. Includes associated facilities and infrastructure such as accommodation, rock walls, fencing and anti-predator netting. Note: Also includes associated licensing for plants.
Off-Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants	Selection of areas suitable for the cultivation and harvesting of marine plants, shellfish and other invertebrates for commercial purposes. Culture activity occurs on the surface or within the water column using grow-out structures such as bags, nets, strings, trays or tubes suspended from longlines or rafts anchored to the seabed. Includes associated facilities and infrastructure. Note: Also includes associated licensing for plants.
Off-Bottom Aquaculture (Sites) – Finfish	Selection of areas suitable for the cultivation and harvesting of finfish for commercial purposes. Culture activity occurs on the surface or within the water column using net cages anchored to the seabed or closed pens. Includes associated facilities and infrastructure such as anchor blocks, feed barges and sheds, accommodation, navigational markers, net storage and mooring lines.
Renewable Energy Generation	Energy generation from wave, tidal and/or other renewable marine sources as well as offshore wind energy. Includes facilities and infrastructure such as generation structures fixed or anchored to the seabed or foreshore, accommodation, and industrial facilities such as maintenance buildings. Does not include transmission or distribution lines on land or in the sea, which are included under the definition of linear utilities.



Forestry Operations	Marine operations associated with the deposition, sorting and processing of harvested timber. Includes related facilities and infrastructure, log dumps, log sorts, heli-log drop sites, as well as physical structures such as anchor devices, fill, pilings, permanent ways or ramps and accommodation. Does not include log transportation.
Mining Operations	Marine operations associated with extracting of minerals, sand and gravel from foreshore, nearshore and offshore areas, as well as related facilities and infrastructure. Does not include wharves or docks used for loading and transporting of mined products from upland mining operations because these are included under the definition of Level 2 docks.
Commercial and Recreational Anchorage	A natural sheltered area or harbour used for temporary and untenured public or commercial boat anchorage Note: Anchorage restrictions do not apply to commercial towboat reserves and provincially designated boat havens, nor do they apply to vessels in distress or other emergency situations.
Level 1 Docks, Wharves and Facilities	Facilities designed to accommodate commercial, community, public, or private marine use. Facilities generally do not include a concentration of marine services. Includes private and public moorage facilities, commercial and community boat ramps, docks associated with upland lodges and base camps, boat haulouts, and associated structures such as boat lifts and anchor lines. Permanently affixed to the foreshore or seabed.
Level 2 Docks, Wharves and Facilities	Facilities designed to attract and accommodate commercial vessels or ships, or multiple vessels for commercial, industrial, community, public or private marine uses. Includes docks, wharves, piers, ramps, breakwaters, and related structures in harbours, marinas and ferry terminals, and associated marine services (e.g., ways, repairs, food services, pump-out sites, fuel). Structures may be affixed to the foreshore and seabed by pilings or floats, or involve foreshore fill. Includes commercial ports.
Float Homes	Structures built on a flotation system, which are used for permanent or seasonal residential habitation and are not intended for navigation or as a navigational craft. Does not include floating structures used for commercial or industrial purposes (e.g., accommodations for workers).
Floating Lodges	Floating structures and facilities used for accommodation associated with commercial tourism purposes, including floating lodges or “mother ships” moored on the seabed. May include access to camps on adjacent upland. Does not include pocket cruisers or private commercial tourism vessels.

Commercial Recreation and Tourism	Non-extractive commercial recreation involving a paid service component such as crewed boats, guiding and interpretation, cultural tourism to interpret cultural heritage, nature-based adventure and ecotourism.
Public Recreation and Tourism	Non-extractive self-guided uses and activities include birding, boating, jet skiing, kayak staging and landing areas, motor boating, sailing, scuba diving, snorkelling, stand up paddle boarding, surfing, swimming, temporary anchorage, water skiing, whale watching, wildlife viewing and windsurfing. Public recreation does not involve a paid service component.
Research	Activities designed to establish or expand knowledge of the marine environment and undertaken by educational institutions, research institutions, surveyors, research companies or consultants. Also includes citizen science, nonprofit activities and locally based research and monitoring activities.
Linear and Point-Source Utilities	Underwater lines and structures including, but not limited to those used for flow, transit, distribution or broadcast of water, electricity and telecommunication services for public and/or private purposes. Generally on or under the seabed or anchored to the seabed but may also be suspended in the water column. Includes associated infrastructure and rights-of-way. Point source utilities are outfalls and discharge points, including but not limited to those used for sewage, wastewater and stormwater for public, private, commercial and/or industrial purposes.

A three-level code is applied to zones and emphasis areas to indicate the level of recommended support for potential uses and activities. The code reflects the degree of support for the acceptance and processing of any application or authorisation that is required by the provincial government for that use, including referral to First Nations and local government. Uses may be acceptable (A), not acceptable (N), or conditionally acceptable (C). Where conditionally acceptable (C), the Plan identifies special area-based plan conditions that should be met before the use is accepted for further review and consideration. The table recommendations do not alter existing tenure application referral obligations.

#### 5.4. General Management Zone

The management intent for the General Management Zone (GMZ) is general ecosystem-based management for a wide range of co-existing, compatible and sustainable marine uses and activities associated with public, private and community uses. There are general provisions (Table 9), recommended used and activities (Table 10), and area-based conditions (Table 11) for the GMZ.

*Table 9: General provisions in the General Management Zone.*

1	Plan Area management direction (Chapter 4) is applicable in addition to standard best management practices, regulatory processes and tenure policies and provisions.
2	First Nations marine resource use continues in accordance with legal constitutional obligations and government policies.
3	All proposed uses and activities should address constitutional obligations owed by the Crown to First Nations and relevant interests of First Nations.
4	All proposed tenured activities should minimise impacts on critical habitat for northern resident Killer Whales (Appendix A2) and listed species.
5	Proposals for uses and activities within the zone should be accompanied by supporting reports and recommendations on potential adverse site-specific effects on the seasonal migration of marine species, provided by a member of an appropriate legislated self-regulating professional body.
6	The appropriate provincial or federal protected area management agency should be included in the referral of applications for uses and activities immediately adjacent to an existing protected area.
7	All proposed development or disturbance activities within or adjacent to estuaries or lagoons within the zone should be planned and managed to avoid significant adverse impacts on ecological function and species habitats. Uses and activities should not be in contravention of existing management plans for estuaries or lagoons, and if contradictions exist, the stronger conservation condition should apply.
8	Existing tenured uses and activities identified in Table 10 as conditional (C) may continue unless the tenure expires, is abandoned or is determined to have no future use for the tenured purpose. An existing use or activity identified in the Plan as conditional may be renewed if the Plan conditions in Table 11 are met.
9	Tenure boundary amendments should be accommodated for existing acceptable (A) or conditional (C) tenures within the zone as identified in Table 10 to reflect best management practices.
10	Applications for tenures in the zone should be referred to the local government.
11	All proposed uses and activities in the zone should be in accordance with local government bylaws and zoning.
12	The zone does not provide direction for any use or activity that is under federal jurisdiction (e.g., commercial and recreational fisheries, and transportation, including log transport and navigation).

Table 10: Recommended Uses and Activities for the General Management Zone.

Marine Use/Activity		Recommendation
Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants		A
Off-Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants		A
Off-Bottom Aquaculture (Sites) – Finfish		C
Renewable Energy Generation		A
Forestry Operations		A
Mining Operations		N
Commercial and Recreational Anchorage		A
Level 1 Docks, Wharves and Facilities		A
Level 2 Docks, Wharves and Facilities		A
Float Homes		C
Floating Lodges		A
Commercial Recreation and Tourism		A
Public Recreation and Tourism		A
Research		A
Linear and Point Source Utilities		A
A	Uses and activities are considered ‘acceptable’ subject to all applicable laws, policy and relevant agreements. Acceptability of any use/activities does not guarantee that a use/activity will be approved.	
C	Uses and activities are considered conditionally ‘acceptable’ subject to all applicable laws, policy and relevant agreements, and provided they are consistent with (adhere to) the plan conditions. Conditional acceptability of any use/activities does not guarantee that a use/activity will be approved.	
N	Uses and activities are considered ‘not acceptable’ and should not be approved.	
Where a use/activity is outside provincial regulatory authority, the approval of that use/activity is subject to the decision-making process (es) of the responsible authorities (including commercial and recreational fisheries, transportation and aquaculture licencing). Absence does not imply that the use/activity was not considered or evaluated or is of no interest. The reader should contact the appropriate management authority (ies) for direction on uses/activities that are not identified in the table. Zoning does not direct uses or activities outside of provincial regulatory authority.		

Table 11: Area-based conditions for conditional marine uses and activities in the General Management Zone.

Marine Use/Activity	Area-Based Conditions
Off-Bottom Aquaculture Sites – Finfish	<b>All GMZ areas:</b> address the interests of the First Nation(s) in whose territory the application is proposed, and ensuring that the site location is outside the provincial Discovery Islands net-pen salmon aquaculture moratorium (Appendix A3).

Float Homes	<b>All GMZ areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws and be in compliance with the provincial government Residential and Floating Home Community policies.
-------------	--

## 5.5 Special Management Zone

The management intent for the Special Management Zone (SMZ) is ecosystem-based management of potentially compatible and co-existing uses, activities, values and interests. SMZ areas are assigned a management emphasis that is intended to strengthen, encourage and/or maintain opportunities for important existing values, uses or activities associated with local communities, First Nations and marine economic sectors related to the area emphasis.

**SMZ Community Emphasis Areas** are intended to reinforce their value for seasonal and year-round uses and activities that are associated with, required by, and dictated primarily by, adjacent or nearby communities. The uses and activities in SMZ Community Emphasis Areas should strengthen, encourage and/or maintain adjacent and/or surrounding community interests and values.

**SMZ Cultural/Economic Emphasis Areas** are intended to reinforce their high value to First Nations, on a seasonal and year-round basis, for cultural value protection, Aboriginal economic development opportunities, and food security. This includes continued First Nations marine resource use and access to cultural resources, including those for spiritual, social, food and marine plant fibre harvest, educational and ceremonial purposes. Uses and activities in SMZ Cultural/Economic Emphasis Areas should strengthen, encourage and/or maintain First Nations cultural resources and economic opportunities.

**SMZ Recreation/Tourism Emphasis Areas** are intended to reinforce their high value to existing commercial tourism operations, particularly from late May to early October. Other uses and activities in SMZ Recreation/Tourism Emphasis Areas should strengthen, encourage and/or maintain recreation and tourism interests and values, including access to launching, landing, camping, mooring and diving sites.

Community Emphasis Areas comprise approximately 3 percent (5 areas) of the total Plan Area, Recreation/Tourism Emphasis Areas account for 11 percent (11 areas), and Cultural/Economic Emphasis Areas constitute approximately 8 percent (22 areas). The SMZ Emphasis Areas listed in Table 12 and shown in Figure 8.

There are general provisions (Table 13), recommended used and activities (Table 14), and area-based conditions (Table 15) for the SMZ.

*Table 12: Special Management Zone Emphasis Areas identified in Figure 8.*

Number	Area Location
<b>Community Emphasis Areas</b>	
8	Hardy Bay
12	McNeill/Cormorant/Sointula
16	Echo Bay
37	Heriot Bay
38	Discovery Passage
<b>Cultural/Economic Emphasis Areas</b>	
1	North Shore/Boswell Inlet
2	Ahelakerho/Nathlegalis/Wyclese/Naysash
4	Kokwiiss/Alison Sound/Wa'ump/Tsai-kwi-ee
5	NenahImai Lagoon/Woods Lagoon/Warner Bay
6	'Oo-Tso'—Lis'/Frederick Sound
7	Wa?Watl/Seymour Estuary
9	Beaver Harbour
11	Booker Lagoon
13	Nimpkish Estuary
15	Maple Cove/Gilford Creek
17	Viner Sound/Shoal Bay
21	Knight Inlet North
22	Kalogwis
23	Minstrel Island/Call Inlet/Havanna Channel
24	Hiladi/Adam River
25	Port Neville
26	H'ksum/Sayward
27	Forward/Wellbore/Sunderland
28	Jackson/Topaz



29	Loughborough Inlet/Matlaten/Stafford/Apple River
30	Phillips Arm Entrance
31	Phillips Arm

#### **Recreation/Tourism Emphasis Areas**

3	Walkum Bay
10	North Malcolm/Hanson/Johnstone
14	Village Island
18	Tribune/Bond
19	Thompson Sound
20	Knight Inlet South
32	Nodales/Frederick Arm
33	Stuart Island
34	Bute Inlet North
35	Maurelle Island/Okisollo Channel/Read Island
36	Hoskyn Channel

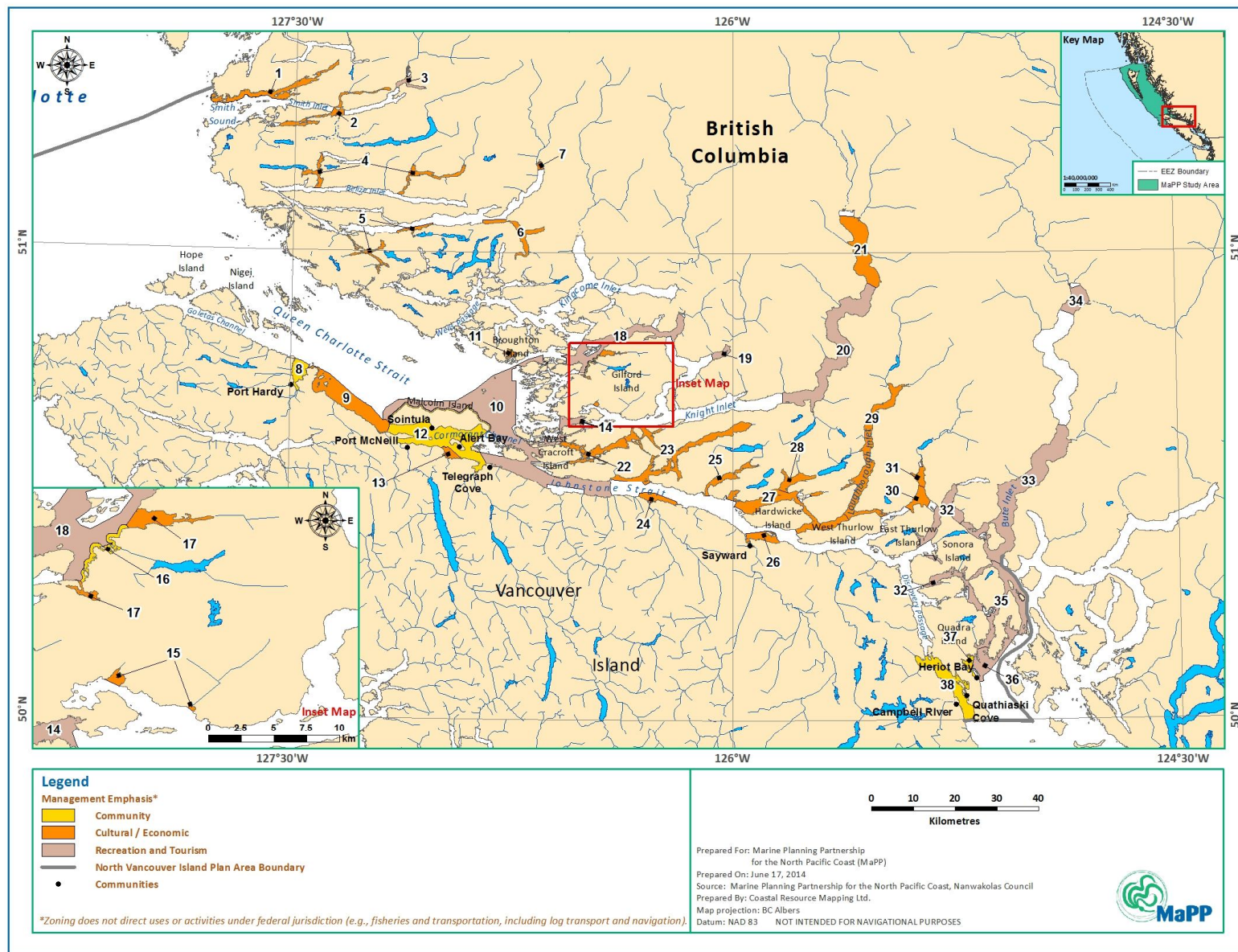


Figure 8. Special Management Zone Emphasis Areas.

*Table 13: General provisions for the Special Management Zone.*

1	Plan Area management direction (Chapter 4) is applicable in addition to standard best management practices, regulatory processes and tenure policies and provisions.
2	First Nations marine resource use continues in accordance with legal constitutional obligations and government policies.
3	All proposed uses and activities should address constitutional obligations owed by the Crown to First Nations and relevant interests of First Nations.
4	All proposed tenured activities should minimise impacts on critical habitat for northern resident Killer Whales (Appendix A2) and listed species.
5	Proposals for uses and activities within the zone should be accompanied by supporting reports and recommendations on potential adverse site-specific effects on the seasonal migration of marine species, provided by a member of an appropriate legislated self-regulating professional body.
6	The appropriate provincial or federal protected area management agency should be included in the referral of applications for uses and activities immediately adjacent to an existing protected area.
7	All proposed development or disturbance activities within or adjacent to estuaries or lagoons within the zone should be planned and managed to avoid significant adverse impacts on ecological function and species habitats. Uses and activities should not be in contravention of existing management plans for estuaries or lagoons, and if contradictions exist, the stronger conservation condition should apply.
8	Existing tenured uses and activities identified in Table 14 as not acceptable (N) or conditional (C) may continue unless the tenure expires, is abandoned or is determined to have no future use for the tenured purpose. An existing use or activity identified in the Plan as conditional may be renewed if the Plan conditions in Table 15 are met. Nontenured uses identified as not acceptable (N) should be removed.
9	Tenure boundary amendments should be accommodated for existing acceptable (A) or conditional (C) tenures within the zone as identified in Table 14 to reflect best management practices.
10	Applications for tenures in the zone should be referred to the local government.
11	All proposed uses and activities in the zone should be in accordance with local government bylaws and zoning.
12	The zone does not provide direction for any use or activity that is under federal jurisdiction (e.g., commercial and recreational fisheries, and transportation, including log transport and navigation).
13	All proposed uses and activities in the zone should minimize their impacts on key species and ecological functions that support or reinforce the SMZ area management emphasis.
14	In a zone's <b>Cultural/Economic Emphasis Areas</b> , efforts should be made to continue and/or develop agreements, protocols and other formal arrangements between First Nations and third parties.
15	In a zone's <b>Recreation/Tourism Emphasis Areas</b> , new and replacement tenure applications for <b>Conditional uses and activities</b> should be referred by the appropriate provincial government agency to existing commercial recreation and tourism tenured or permitted operators who are potentially affected in the proposed area of operation.

Table 14: Recommended Uses and Activities for Special Management Zone Emphasis Areas.

Marine Use/Activity		Community Emphasis SMZ: 8, 12, 16, 37, 38	Cultural/Economic Emphasis SMZ: 1, 2, 4–7, 9, 11, 13, 15, 17, 21–31	Recreation/Tourism Emphasis SMZ: 3, 10, 14, 18–20, 32–36
Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants		C	A	A
Off-Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants		C	C	C
Off-Bottom Aquaculture Sites – Finfish		C	C	C
Renewable Energy Generation		C	C	C
Forestry Operations		C	C	C
Mining Operations		N	N	N
Commercial and Recreational Anchorage		C	C	A
Level 1 Docks, Wharves and Facilities		A	C	A
Level 2 Docks, Wharves and Facilities		C	N	C
Float Homes		C	N	N
Floating Lodges		C	C	A
Commercial Recreation and Tourism		C	C	C
Public Recreation and Tourism		A	C	A
Research		A	C	A
Linear and Point Source Utilities		A	C	A
A	Uses and activities are considered to be ‘acceptable’ subject to all applicable laws, policy and relevant agreements. Acceptability of any use/activities does not guarantee that a use/activity will be approved.			
C	Uses and activities are considered to be conditionally ‘acceptable’ subject to all applicable laws, policy and relevant agreements; and provided they are consistent with (adhere to) the plan conditions. Conditional acceptability of any use/activities does not guarantee that a use/activity will be approved.			
N	Uses and activities are considered to be ‘not acceptable’ and should not be approved.			
Where a use/activity is outside provincial regulatory authority, the approval of that use/activity is subject to the decision-making process (es) of the responsible authorities (including commercial and recreational fisheries, transportation and aquaculture licencing). Absence does not imply that the use/activity was not considered or evaluated or is of no interest. The reader should contact the appropriate management authority (ies) for direction on uses/activities that are not identified in the table. Zoning does not direct uses or activities outside of provincial regulatory authority.				

Table 15: Area-based conditions for conditional uses and activities in the Special Management Zone.

Marine Use/Activity	Area-Based Conditions
Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants	<b>Community Emphasis Areas:</b> should maintain First Nations bottom aquaculture economic opportunities; should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.
Off-Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants	<p><b>Community Emphasis Areas:</b> should maintain First Nations off-bottom aquaculture economic opportunities; should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.</p> <p><b>Recreation/Tourism Emphasis Areas:</b> address relevant feedback from referrals to affected commercial recreation and tourism tenure holders.</p> <p><b>Cultural/Economic Emphasis Areas:</b> address the interests of the First Nation(s) in whose territory the application is proposed.</p> <p><b>Kalogwis Cultural/Economic Emphasis (SMZ 22):</b> avoid adverse impact on First Nations economic aquaculture opportunities.</p> <p><b>Knight Inlet North Cultural/Economic Emphasis (SMZ 21):</b> design practices to avoid adverse operational and site impacts from activities during the Eulachon run.</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> notify appropriate First Nations of expiring marine tenures and provide opportunities for application; ensure new tenures provide continued First Nations marine access to the Salmon River Indian Reserve; should observe, abide by and comply with Village of Sayward bylaws.</p>
Off-Bottom Aquaculture (Sites) – Finfish	<p><b>All Emphasis Areas:</b> address the interests of the First Nation(s) in whose territory the application is proposed; ensuring that the site location is outside the provincial Discovery Islands net-pen salmon aquaculture moratorium (Appendix A3).</p> <p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.</p> <p><b>Recreation/Tourism Emphasis Areas:</b> address relevant feedback from referrals to affected commercial recreation and tourism tenure holders.</p> <p><b>Cultural/Economic Emphasis Areas:</b> apply a distance of at least 50 m between aquaculture sites and aquaculture tenures and shellfish beaches.</p> <p><b>Kalogwis Cultural/Economic Emphasis (SMZ 22):</b> maintain First Nations aquaculture economic opportunities.</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> should observe, abide by and comply with Village of Sayward bylaws.</p>



Renewable Energy Generation	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.</p> <p><b>Recreation/Tourism Emphasis Areas:</b> address relevant feedback from referrals to affected commercial recreation and tourism tenure holders.</p> <p><b>Cultural/Economic Emphasis Areas:</b> provide opportunity for First Nations benefits.</p> <p><b>Knight Inlet North SMZ Cultural/Economic Emphasis (SMZ 21):</b> design practices to avoid adverse operational and site impacts from activities during the Eulachon run.</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis Area (SMZ 26):</b> ensure new tenures provide continued First Nations marine access to the Salmon River Indian Reserve; should observe, abide by and comply with Village of Sayward bylaws.</p>
Forestry Operations	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws; have discussions with First Nation(s) to address potential impacts.</p> <p><b>Recreation/Tourism Emphasis Areas:</b> address relevant feedback from referrals to affected commercial recreation and tourism tenure holders.</p> <p><b>Knight Inlet South Recreation/Tourism Emphasis (SMZ 20):</b> address First Nations interests in avoiding log dumping and log transport through the bay at the mouth of Matsui Creek during seasonal salmon migration; apply practices to avoid adverse operational and site impacts from activities during the Eulachon run.</p> <p><b>Knight Inlet North Cultural/Economic Emphasis (SMZ 21):</b> design practices to avoid adverse operational and site impacts during the Eulachon run.</p> <p><b>Booker Lagoon Cultural/Economic Emphasis (SMZ 11) and Kalogwis Cultural/Economic Emphasis (SMZ 22):</b> involve appropriate First Nations in the site identification, assessment and establishment of forestry operations.</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> avoid expansion of the existing log handling tenure boundary; notify appropriate First Nations of expiring marine tenures and provide opportunities for application; ensure new tenures provide continued First Nations marine access to the Salmon River Indian Reserve; should observe, abide by and comply with Village of Sayward bylaws.</p>
Commercial and Recreational Anchorage	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.</p> <p><b>Cultural/Economic Emphasis Areas:</b> apply a distance of at least 50 m between anchorage locations and aquaculture tenures and shellfish beaches.</p> <p><b>Knight Inlet North Cultural/Economic Emphasis (SMZ 21):</b> avoid anchoring during the Eulachon run.</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> should observe, abide by and comply with Village of Sayward bylaws.</p>



Level 1 Docks, Wharves and Facilities	<p><b>Cultural/Economic Emphasis Areas:</b> apply a distance of at least 50 m between structures and aquaculture tenures and shellfish beaches.</p> <p><b>Knight Inlet North Cultural/Economic Emphasis (SMZ 21):</b> provide opportunities for benefit to appropriate First Nation(s).</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> notify relevant First Nations of expiring marine tenures and provide opportunities for application; ensure new tenures provide continued First Nations marine access to the Salmon River Indian Reserve; should observe, abide by and comply with Village of Sayward bylaws.</p>
Level 2 Docks, Wharves and Facilities	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.</p> <p><b>Recreation/Tourism Emphasis Areas:</b> address relevant feedback from referrals to affected commercial recreation and tourism tenure holders, and accommodate or avoid displacement of recreation and tourism facilities.</p>
Float Homes	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws, and comply with the provincial government Residential and Floating Home Community policies.</p>
Floating Lodges	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws.</p> <p><b>Cultural/Economic Emphasis Areas:</b> require use of liquid waste holding tanks; involve appropriate First Nations in the site identification for floating lodges; provide opportunities for benefits to appropriate First Nation(s).</p> <p><b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> should observe, abide by and comply with Village of Sayward bylaws.</p>
Commercial Recreation and Tourism	<p><b>Community Emphasis Areas:</b> should observe, abide by and comply with City of Campbell River, Town of Port McNeill, District of Port Hardy, Regional District of Mount Waddington and Strathcona Regional District bylaws; have discussions with First Nation(s) to address potential impacts on First Nation(s) cultural resources.</p> <p><b>Knight Inlet South Recreation/Tourism Emphasis (SMZ 20):</b> design practices to avoid adverse operational and site impacts from activities during the Eulachon run, and maintain economic opportunities for marine recreation and tourism development by appropriate First Nations at Glendale Cove.</p> <p><b>Viner Sound/Shoal Bay Cultural/Economic Emphasis (SMZ 17):</b> maintain economic opportunities in Viner Sound for appropriate First Nation(s) cultural tourism development.</p> <p><b>Tribune/Bond and Thompson Sound Recreation/Tourism Emphasis (SMZ 18):</b> maintain economic opportunities for appropriate First Nation(s) marine wildlife viewing development; minimise potential conflict with seasonal public recreation and tourism activities.</p>

	<b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> notify appropriate First Nations of expiring marine tenures and provide opportunities for their application; should observe, abide by and comply with Village of Sayward bylaws.
Public Recreation and Tourism	<b>Cultural/Economic Emphasis Areas:</b> address the interests and minimise conflicts with identified First Nations economic opportunities.
Research	<b>Cultural/Economic Emphasis Areas:</b> provide opportunities for First Nations leadership and participation in research activities, and access to research results.
Linear and Point-Source Utilities	<b>Cultural/Economic Emphasis Areas:</b> address the interests of the First Nation(s) in whose territory the application is proposed; apply a distance of at least 50 m between anchorage locations and aquaculture tenures and shellfish beaches; provide opportunities for benefits to First Nations and adjacent communities. <b>H'ksum/Sayward Cultural/Economic Emphasis (SMZ 26):</b> ensure new tenures provide continued First Nations marine access to the Salmon River Indian Reserve; should observe, abide by and comply with Village of Sayward bylaws.

## 5.6 Protection Management Zone

The 10 geographic areas in the Protection Management Zone (PMZ) are listed in Table 16 and shown in Figure 9. Areas 1 and 2 generally align with International Union for Conservation of Nature (IUCN) Protected Area Category III, Areas 3–8 generally align with Category IV, and Areas 9 and 10 generally align with Category V (Appendix D1). Interpretation of the IUCN categories in the Recommended Uses and Activities Tables and/or zoning maps does not imply management direction for marine uses and activities outside of provincial regulatory authority. Additionally, identification of PMZs and the use of IUCN categories are not intended to predetermine the outcome of other related planning processes and should not be interpreted as such.

The information assembled through the NVI planning process, can be advanced for further study such as contributing to ongoing efforts to design a marine protected area (MPA) network in the Northern Shelf Bioregion. Furthermore, the work undertaken during the planning process to assemble and analyze baseline data, to spatially identify ecological, cultural, and First Nations values, to identify current uses and activities and future economic opportunities, and to recommend management objectives, can make important contributions to the MPA network planning process. The applicable First Nation will pursue designation of the Ba'as/Blunden Harbour PMZ area as a Tribal Protected Area under the Indigenous Peoples' and Community

Conserved Territories and Areas system. It is intended that a protection management plan for each PMZ area will be developed collaboratively with relevant First Nations.

It is intended that ecosystem-based management will be conducted in the proposed PMZ areas to conserve and maintain a suite of ecological functions and features, ecosystems, specific species of concern/interest, and cultural resources.

There are general provisions (Table 17), recommended used and activities (Table 18), and area-based conditions (Table 19) for the PMZ.

*Table 16: Protection Management Zone areas identified in Figure 9.*

Number	Location	Description/Function	IUCN Category
1.	North Malcolm	Important habitat and species, in particular a significant and unique glass sponge reef formation, which includes a complex ecosystem that supports local biodiversity; contains critical habitat for northern resident Killer Whales (Appendix A2) and habitat for pelagic and nearshore birds that is adjacent to their colonies.	III
2.	Hoeya Sill	Representative of shallow-sill ecosystems of coral fans and sponges; several deepwater and/or rare species, including Gorgonian coral, soft goblet sponge, cloud sponge, Townsend eualid shrimp and Bigmouth Sculpin, occurring at unusually shallow depths; Bigmouth Sculpins, brain sponge, Leister Sculpin, at or near their southern range limits.	III
3.	Cape Caution	Important species and habitats, including those of cultural importance to First Nations; connects existing conservation and protection areas and provides a network/corridor between the Central Coast and North Vancouver Island Marine Plan Areas, which assists in the conservation and protection of habitat and seasonal runs and activities of species with cultural and economic value; includes important areas for Grey Whales, Humpback Whales and northern resident Killer Whales, and herring; includes important habitat for seabirds that breed in adjacent conservation and protection areas.	IV

4.	Nigei	A diverse marine ecosystem, with important marine species and habitat; important recreation and tourism area that includes numerous internationally recognized scuba diving sites; includes important areas for Humpback Whales and northern resident Killer Whales, herring and Sea Otters; connects existing conservation and protection areas.	IV
5.	Cormorant Channel	Important species and habitats, including those of cultural importance to First Nations; significant for First Nations seasonal marine harvesting and ecotourism activities; numerous first class scuba diving sites readily accessible from Telegraph Cove; an important whale and wildlife viewing area; includes important habitat for herring and Humpback Whales, and critical habitat for the northern resident Killer Whales (Appendix A2).	IV
6.	Burdwood Group	Important marine species, habitats, First Nations cultural resources, such as cultural tourism, loxiwe, shell middens and a former seasonal village/resource processing site.	IV
7.	Broughton	High marine recreational values; contains diverse marine species and habitats, including important areas for herring and northern resident Killer Whales; includes First Nations cultural resources uses and activities, such as cultural tourism, loxiwe, shell middens and a former seasonal village/resource processing site.	IV
8.	Rock Bay	Important marine species and habitats, including herring important areas, whale rubbing locations; provides protection of representative marine ecosystems at the confluence of three channels that support rich intertidal species and habitats.	IV
9.	Ba'as/Blunden Harbour	Considerable cultural modification by First Nations based on use of important marine species and habitat ongoing practices and teachings, restoration of First Nations cultural resources, and their associated marine species and habitats, and is important for repatriation; area intended to encourage conservation and maintenance of essential ecological values.	V
10.	Southeast Quadra Island	Significant ecological values due to major upwelling of nutrients creating a rich, diverse marine ecosystem; key First Nations cultural/economic interests and local resident scenic values. Safeguarding the integrity of the interaction between people and the environment is vital to protecting and sustaining this area.	V

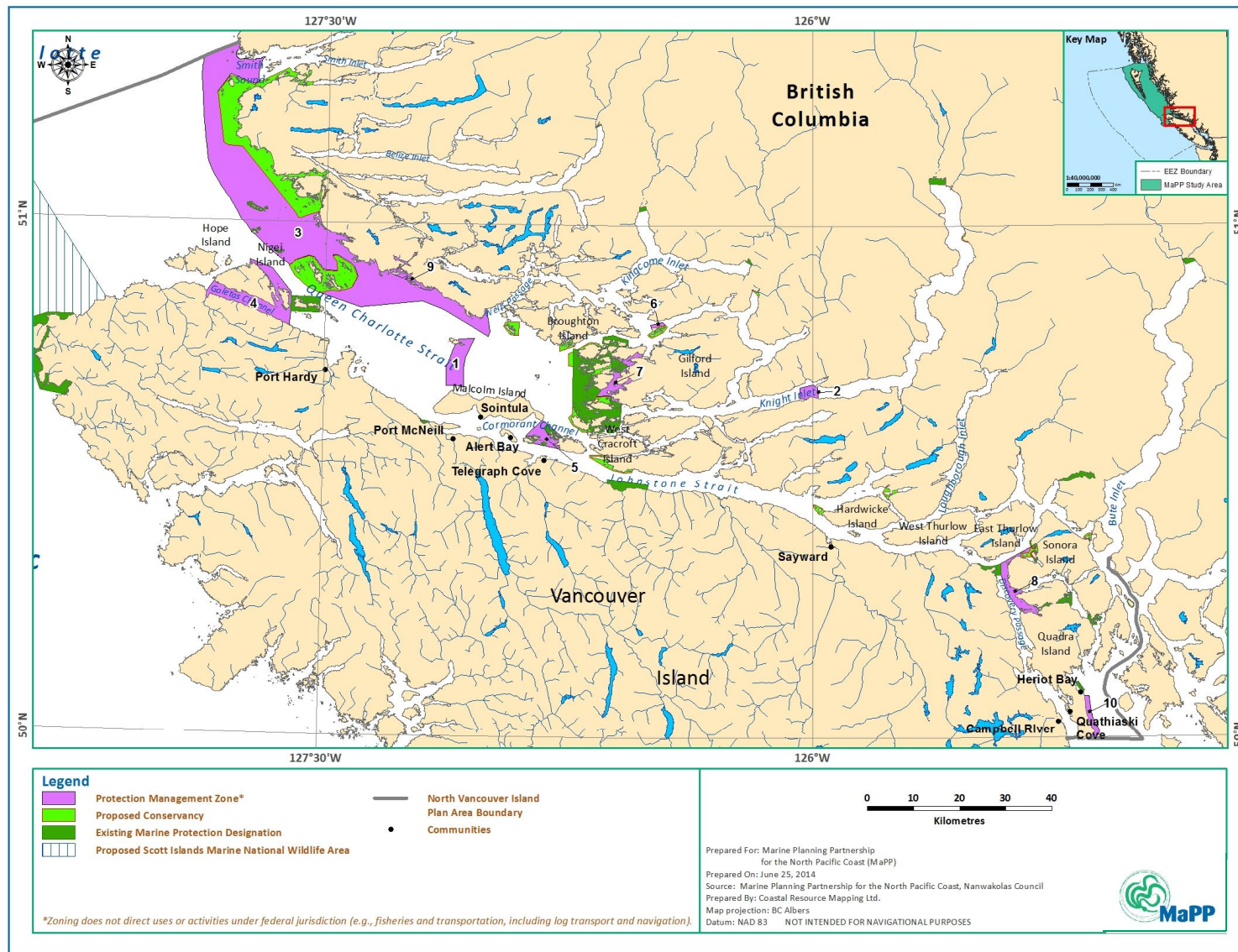


Figure 9. Protection Management Zone areas in the Plan Area



*Table 17: General provisions for Protection Management Zone areas.*

1	Plan Area management direction (Chapter 4) is applicable in addition to standard best management practices, regulatory processes and tenure policies and provisions.
2	First Nations marine resource use continues in accordance with legal constitutional obligations and government policies, except where otherwise specified in an agreement or a jointly approved protection management plan.
3	All proposed uses and activities should address constitutional obligations owed by the Crown to First Nations and relevant interests of First Nations.
4	All proposed tenured activities should minimise impacts on critical habitat for northern resident Killer Whales (Appendix A2) and listed species.
5	Proposals for uses and activities within the zone should be accompanied by supporting reports and recommendations on potential adverse site-specific effects on the seasonal migration of marine species, provided by a member of an appropriate legislated self-regulating professional body.
6	The appropriate provincial or federal protected area management agency should be included in the referral of applications for uses and activities immediately adjacent to an existing protected area.
7	All proposed development or disturbance activities within or adjacent to estuaries or lagoons within the zone should be planned and managed to avoid significant adverse impacts on ecological function and species habitats. Uses and activities should not be in contravention of existing management plans for estuaries or lagoons, and if contradictions exist, the stronger conservation condition should apply.
8	Existing tenured uses and activities identified in Table 18 as not acceptable (N) or conditional (C) may continue unless the tenure expires, is abandoned or is determined to have no future use for the tenured purpose. An existing use or activity identified in the Plan as conditional may be renewed if the Plan conditions in Table 19 are met. Nontenured uses identified as not acceptable (N) should be removed.
9	Tenure boundary amendments should be accommodated for existing acceptable (A) or conditional (C) tenures within the zone as identified in Table 18 to reflect best management practices.
10	Applications for tenures in the zone should be referred to the local government. Note: This applies in the case of a PMZ unless the PMZ direction is superseded by an approved protection management plan (developed with sector input).
11	All proposed uses and activities in the zone should be in accordance with local government bylaws and zoning.
12	The zone does not provide direction for any use or activity that is under federal jurisdiction (e.g., commercial and recreational fisheries, and transportation, including log transport and navigation).
13	All proposed uses and activities in the zone should minimize their impacts on key species and ecological functions that support or reinforce the PMZ area management emphasis.
16	A protection management plan should be developed for each PMZ Area with sector input.



- 
- |    |   |
|----|---|
| 17 | Uses and activities in the zone should be managed to avoid adverse effects and maintain First Nations use and development of loxiwe for shellfish aquaculture and other development that is compatible with the zone. |
|----|---|
- 
- |    |   |
|----|---|
| 18 | Collaborative monitoring and enforcement, including First Nations Guardian Watchmen programs, should be an important component of PMZs. |
|----|---|
- 
- |    |  |
|----|--|
| 19 | All uses and activities in the <b>North Malcolm (PMZ 1)</b> should avoid impacts on glass sponge reef habitat, and be nonextractive. Note: This plan recommends no commercial, recreational and port vessel temporary anchorage in this PMZ. |
|----|--|
- 
- |    |   |
|----|---|
| 20 | All uses and activities in the <b>Hoeya Sill (PMZ 2)</b> should avoid impacts on coral habitat. Note: This plan recommends no commercial, recreational and port vessel temporary anchorage in this PMZ. |
|----|---|
-

Table 18: Recommended Uses and Activities for Protection Management Zone areas.

Marine Use/Activity		North Malcolm PMZ 1	Hoeya Sill PMZ 2	Cape Caution PMZ 3	Nigei PMZ 4	Cormorant Channel PMZ 5	Burdwood Group PMZ 6	Broughton PMZ 7	Rock Bay PMZ 8	Ba'as/Blunden Harbour PMZ 9	Southeast Quadra PMZ 10
Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants		N	N	C	C	C	C	C	C	C	C
Off-Bottom Aquaculture (Sites) – Shellfish, other Invertebrates, Marine Plants		N	N	C	C	C	C	C	C	C	C
Off-Bottom Aquaculture (Sites) – Finfish		N	N	C	C	N	C	N	N	N	N
Renewable Energy Generation		N	N	C	C	C	C	C	N	C	N
Forestry Operations		N	N	C	C	N	N	C	N	N	N
Mining Operations		N	N	N	N	N	N	N	N	N	N
Commercial and Recreational Anchorage		N	N	C	C	A	C	C	A	C	N
Level 1 Docks, Wharves and Facilities		N	N	C	C	C	C	C	C	C	C
Level 2 Docks, Wharves and Facilities		N	N	N	N	N	N	N	N	N	N
Float Homes		N	N	N	N	N	N	N	N	N	N
Floating Lodges		N	N	N	C	N	C	N	N	N	N
Commercial Recreation and Tourism		A	A	A	A	A	A	C	A	C	N
Public Recreation and Tourism		A	A	A	A	A	A	A	A	C	A
Research		C	C	A	A	A	A	A	A	C	A
Linear Utilities		N	N	C	C	C	C	C	C	C	N
Point-Source Utilities		N	N	N	N	N	N	N	N	N	N
A	Uses and activities are considered to be ‘acceptable’ subject to all applicable laws, policy and relevant agreements. Acceptability of any use/activities does not guarantee that a use/activity will be approved.										
C	Uses and activities are considered to be conditionally ‘acceptable’ subject to all applicable laws, policy and relevant agreements, and provided they are consistent with (adhere to) the plan conditions. Conditional acceptability of any use/activities does not guarantee that a use/activity will be approved.										
N	Uses and activities are considered to be ‘not acceptable’ and should not be approved.										
Where a use/activity is outside provincial regulatory authority, the approval of that use/activity is subject to the decision-making process(es) of the responsible authorities (including commercial and recreational fisheries, transportation and aquaculture licencing). Absence does not imply that the use/activity was not considered or evaluated or is of no interest. The reader should contact the appropriate management authority (ies) for direction on uses/activities that are not identified in the table. Zoning does not direct uses or activities outside of provincial regulatory authority.											

*Table 19: Area-based conditions for conditional uses and activities for Protection Management Zone areas.*

<b>Marine Use/Activity</b>	<b>Area-Based Conditions</b>
Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants	<p><b>All PMZ areas where conditional:</b> maintain First Nations bottom aquaculture economic opportunities.</p> <p><b>Rock Bay (PMZ 8) and Southeast Quadra (PMZ 10):</b> should observe, abide by and comply with Strathcona Regional District bylaws.</p>
Off-Bottom Aquaculture (Sites) – Shellfish, Other Invertebrates, Marine Plants	<p><b>All PMZ areas where conditional:</b> maintain First Nations off-bottom aquaculture economic opportunities.</p> <p><b>Rock Bay (PMZ 8) and Southeast Quadra (PMZ 10):</b> should observe, abide by and comply with Strathcona Regional District bylaws.</p>
Off-Bottom Aquaculture (Sites) – Finfish	<p><b>Cape Caution (PMZ 3), Nigei Island (PMZ 4) and Burdwood Group (PMZ 6):</b> consider the interests of the First Nation(s) in whose territory the application is proposed.</p> <p><b>Burdwood Group (PMZ 6):</b> avoid impacts on First Nations loxiwe.</p>
Renewable Energy Generation	<p><b>All PMZ areas where conditional:</b> provide opportunities for local benefits.</p>
Forestry Operations	<p><b>Cape Caution (PMZ 3) and Nigei (PMZ 4):</b> heli-drop operations permitted subject to compatibility with PMZ intent and values, consistency with appropriate government guidelines, avoidance of adverse impact on Eulachon, herring and salmon migration. Site limitations may be identified in an approved Protection Management Plan.</p> <p><b>Broughton (PMZ 7):</b> heli-drop operations permitted only in Cramer passage between Baker Island and Gilford Island, subject to compatibility with PMZ intent and values, consistency with appropriate government guidelines, avoidance of adverse impact on Eulachon, herring and salmon migration.</p>
Commercial and Recreational Anchorage	<p><b>Cape Caution (PMZ 3) and Ba'as/Blunden Harbour (PMZ 9):</b> designate anchorage sites in collaboration with local First Nations.</p> <p><b>Nigei (PMZ 4), Burdwood Group (PMZ 6) and Broughton (PMZ 7):</b> use holding tanks in marine vessels.</p>
Level 1 Docks, Wharves and Facilities	<p><b>All PMZ areas where conditional:</b> provide opportunities for servicing protection area operations.</p> <p><b>Ba'as/Blunden Harbour (PMZ 9):</b> provide opportunities for the use and benefit of the appropriate First Nations.</p> <p><b>Southeast Quadra (PMZ 10):</b> should observe, abide by and comply with Strathcona Regional District bylaws.</p>

Floating Lodges	<b>Nigei (PMZ 4), Burdwood Group (PMZ 6):</b> demonstrate the ability to enhance ecological- and conservation-based tourism activities.
Commercial Recreation and Tourism	<b>Broughton (PMZ 7):</b> avoid impacts on First Nations bottom and off-bottom aquaculture, and support from First Nations where loxiwe sites are to be used. <b>Ba'as/Blunden Harbour (PMZ 9):</b> obtain a signed protocol with the appropriate First Nations for avoiding impacts on cultural resources, including traditional uses and activities.
Public Recreation and Tourism	<b>Ba'as/Blunden Harbour (PMZ 9):</b> adhere to First Nations procedures for avoiding impacts on cultural resources, including traditional uses and activities.
Research	<b>North Malcolm (PMZ 1) and Hoeya Sill (PMZ 2):</b> avoid disturbance of sensitive features and habitat. <b>Ba'as/Blunden Harbour (PMZ 9):</b> provide opportunities for First Nations leadership and participation in research activities.
Linear Utilities	<b>All PMZ areas where conditional:</b> provide opportunities for servicing protection area operations. <b>Cape Caution (PMZ 3), Cormorant Channel (PMZ 5) and Rock Bay (PMZ 8):</b> provide opportunities to benefit adjacent or nearby communities.



## CHAPTER 6: PLAN IMPLEMENTATION

### 6.1 Plan Review, Amendment and Updating

The Plan is intended to remain relevant to changing issues, priorities and conditions based on a number of structures and mechanisms, all of which are subject to modification based on available implementation funding.

A standing Plan Implementation and Monitoring Committee (PIMC) will be created that will be comprised of representatives from local governments and key marine use and activity sectors in the Plan Area. Membership will be confirmed by the provincial government and Nanwakolas Council, and Terms of Reference will be established to outline the committee's roles, responsibilities and engagement schedule.

Provincial government and Nanwakolas staff will maintain a joint Technical Team to manage implementation tasks and address Plan implementation issues. The Technical Team will report to a senior management committee representing the provincial government and the Nanwakolas Council.

Plan implementation progress will be reviewed annually from the date of final Plan approval, with the assistance and advice of the PIMC. The Plan may be amended based on the annual review.

Provincial government and Nanwakolas staff will prepare an annual audit report of Plan implementation using a set of implementation performance measures that will outline the degree to which Plan strategies and zoning recommendations are being followed by governments (including First Nations) and participating stakeholders. A report on EBM implementation indicators will also be prepared to show the extent to which the Plan recommendations are creating positive change in health and wellbeing. A list of interpretation issues, Plan variation requests and public comments received during the reporting period, as well as recommended Plan amendments, will be included in the report along with recommended actions or plan adjustments.

The annual audit report will be presented to the Implementation and Monitoring Committee. Opportunities will be provided at that time for Plan amendment to reflect recommendations from the annual report. The PIMC will also consider the need for any broader review of Plan amendments by agencies, the public and interest groups.

In addition to an annual meeting PIMC will meet as required to provide advice on important implementation activities. These will generally reflect the implementation priorities in the plan area and are also expected to include discussions on PMZ and other zoned areas. Conflict resolution mechanisms will be established, based on existing best practices and guidelines, and utilized where appropriate to guide stakeholder discussions on priority implementation activities. Where necessary, PIMC sub-committees may be struck to assist in development of advice.

The PIMC will formally review the Plan three years after its initial approval. On the basis of this formal review, the Plan may be updated and reaffirmed by the provincial government and Nanwakolas Council. Reaffirmation of the updated Plan will require a full review of proposed changes by the PIMC. The formal Plan review may include input from the general public and nonparticipating interests. Appropriate public notification procedures will be developed to communicate the revised or modified plans.

Federal departments will be provided with opportunities to participate in Plan implementation.

## **6.2 EBM Implementation Indicators**

EBM implementation indicators will be selected to measure long-term changes in marine ecosystems, including community and human health, which are potentially attributed to the implementation of Plan recommendations. Considerable work has been done on the development of indicators but the final selection has not been made. The indicators reflect key aspects of marine ecosystem attributes and how they are measured. EBM indicator review and selection will be a priority task for the implementation stage of the plan and will be done with the advice of the PIMC. See Appendix E1 for a preliminary list of indicators.

## **6.3 Implementation Agreements**

The Plan will be implemented through an Implementation Agreement that will be negotiated and signed by the Nanwakolas Council and provincial government.



## 6.4 Plan Variance Requests

The identification of a use or activity as “Conditionally Acceptable,” or “Not Acceptable” may be challenged by a proponent. Any request for a variance in Plan recommendations should provide technical rationale, reflect an EBM approach, provide site information and provide support from Nanwakolas member First Nations and local government authorities. Variance requests will be based on criteria determined by a Technical Team and may include consideration of new technologies or methods of operation, new economic activities or ventures, or information that was not available at the time of plan development.

In addition to normal referral recipients, applications for proposals that may constitute a Plan variance will be referred by the tenuring agency to a Technical Team representative, who will refer them to the PIMC, where relevant, for comment. The Technical Team will receive the PIMC responses, incorporate all feedback, and conference with the PIMC as necessary to discuss a recommendation which will be provided to the tenuring agency. The established conflict resolution mechanism will be applied to PIMC discussions if necessary. A decision on the proposal and identification of conditions will be made by the tenuring agency, and the PIMC members advised of the outcome.

Acceptance of, and support for, a proposed Plan variance request should not be interpreted as approval of, or support for, the issuance of any authorisation.

During the annual review, the outcome of Plan variance requests may be reflected in a revised Plan if numerous requests have been successful.

The Plan variance process will be formalised in an agreement between the provincial government and Nanwakolas Council.

## 6.5 Implementation Priorities and Schedule

The Plan recommendations, including Plan Area management direction strategies and zone recommendations are intended to be implemented in accordance with Table 20. This table will form the basis of reports to the Plan Implementation and Monitoring Committee.

*Table 20: Plan implementation schedule and resource requirements.*

Implementation Priority 1: Start within 6 months of Plan approval		
<i>Topic</i>	<i>Strategy</i>	<i>Requirements</i>
Conservation and Protection	2.1.1, 4.2.4, 6.1.1	No new funding
Cultural and Heritage Resources	1.1.1	No new funding
Governance and Collaborative Management	2.1.4	No new funding
Pollution	3.1.4	No new funding; governance structure
Cultural and Heritage Resources	4.1.4	No new funding; governance structure
Aquaculture	3.1.2	No new funding; governance structure
Forestry Operations	1.1.4	Funding
Pollution	1.1.1, 1.1.2, 2.1.4, 3.1.1, 3.1.3	Funding; governance structure
Community and Economy	1.2.1	Funding; governance structure
Conservation and Protection	2.2.2, 4.2.1, 4.3.1, 5.1.1	Funding; governance structure
Cultural and Heritage Resources	3.1.1	Funding; governance structure
Forestry Operations	1.1.2, 3.1.3	Funding; governance structure
Aquaculture	2.1.1	Funding; governance structure
Regulatory Compliance and Enforcement	2.1.1	Funding; governance structure
Implementation Priority 2: Start within 12 months of Plan approval		
<i>Topic</i>	<i>Strategy</i>	<i>Requirements</i>
Community and Economy	1.2.2, 4.1.1	No new funding
Aquaculture	2.1.3, 6.1.1	No new funding
Pollution	2.1.2	No new funding; governance structure
Conservation and Protection	3.1.2	No new funding; governance structure
Forestry Operations	5.1.1	No new funding; governance structure
Aquaculture	7.1.1	No new funding; governance structure
Governance and Collaborative Management	2.1.5	No new funding; governance structure
Research, Education and Training	3.1.2	No new funding; governance structure
Pollution	1.1.6, 4.1.1, 5.1.1, 5.1.3	Funding
Infrastructure	3.1.2	Funding
Conservation and Protection	2.1.2, 2.1.3, 3.2.1	Funding
Cultural and Heritage Resources	4.1.2, 4.1.6, 5.1.1	Funding
Recreation and Tourism	1.1.5, 3.1.4	Funding
Aquaculture	3.1.1, 6.1.2	Funding
Research, Education and Training	2.1.1	Funding
Community and Economy	5.1.1, 5.1.2, 5.1.3	Funding; governance structure
Infrastructure	1.1.1	Funding; governance structure

Pollution	1.1.4, 1.1.5, 2.1.1, 4.1.2, 4.1.3	Funding; governance structure
Conservation and Protection	1.1.3, 3.1.1, 4.1.1	Funding; governance structure
Cultural and Heritage Resources	2.1.1, 3.1.2, 4.1.1, 4.1.3	Funding; governance structure
Recreation and Tourism	1.1.1, 1.1.2, 1.1.3, 4.1.1	Funding; governance structure
Forestry Operations	3.1.1, 3.1.2	Funding; governance structure
Aquaculture	7.1.2	Funding; governance structure
Energy	2.1.1	Funding; governance structure
Governance and Collaborative Management	1.1.1, 1.1.2, 4.1.1, 4.1.3	Funding; governance structure
Regulatory Compliance and Enforcement	1.1.2, 1.1.3, 1.1.4, 1.1.5, 2.1.2, 2.1.3, 2.1.4	Funding; governance structure
Research, Education and Training	2.1.2, 3.1.1, 3.1.3, 4.3.1, 4.3.2, 4.3.3, 5.1.1	Funding; governance structure

### Implementation Priority 3: Start within 24 months of Plan approval

<i>Topic</i>	<i>Strategy</i>	<i>Requirements</i>
Conservation and Protection	2.2.3, 6.1.2	No new funding
Forestry Operations	4.1.2	No new funding
Energy	3.1.4	No new funding
Fisheries Economy and Associated Values	6.1.2	No new funding
Aquaculture	6.1.4	No new funding; governance structure
Energy	1.1.1	No new funding; governance structure
Conservation and Protection	6.1.3	Funding
Energy	3.1.1	Funding
Fisheries Economy and Associated Values	2.1.2	Funding
Research, Education and Training	5.1.4	Funding
Conservation and Protection	4.2.2	Funding; governance structure
Recreation and Tourism	3.1.3	Funding; governance structure
Forestry Operations	4.1.1	Funding; governance structure
Aquaculture	5.1.1, 5.1.2	Funding; governance structure
Energy	2.1.2, 3.1.5	Funding; governance structure
Fisheries Economy and Associated Values	2.1.3, 6.1.1	Funding; governance structure
Research, Education and Training	4.1.1, 5.1.2, 5.1.3	Funding; governance structure

### Ongoing Priority: Ongoing after Plan approval

<i>Topic</i>	<i>Strategy</i>	<i>Requirements</i>
Community and Economy	2.1.1, 3.1.1, 4.1.2, 5.1.4, 5.1.5	No new funding
Infrastructure	1.1.4, 2.1.1, 2.1.2, 3.1.1	No new funding

Pollution	2.1.3, 5.1.2	No new funding
Conservation and Protection	2.1.4, 2.1.5, 2.1.6, 4.2.3	No new funding
Cultural and Heritage Resources	3.1.3, 4.1.5	No new funding
Recreation and Tourism	1.1.6, 2.1.5, 3.1.1, 3.1.2	No new funding
Forestry Operations	1.1.1, 1.1.3, 2.1.1, 2.1.3, 4.1.3	No new funding
Aquaculture	2.1.4, 3.1.3, 3.2.1, 4.1.2, 4.1.3, 6.1.3, 6.1.5, 7.1.3	No new funding
Energy	1.1.2, 3.1.2, 3.1.3, 3.1.6, 3.1.7, 4.1.1, 4.1.2	No new funding
Fisheries Economy and Associated Values	1.1.1, 2.1.1, 3.1.1, 4.1.1, 4.1.2, 4.1.3, 5.1.1	No new funding
Research, Education and Training	3.1.4, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2	No new funding
Conservation and Protection	1.1.1, 1.1.2	No new funding
Pollution	1.1.3	No new funding; governance structure
Recreation and Tourism	2.1.3, 2.1.4	No new funding; governance structure
Aquaculture	2.1.2, 4.1.1	No new funding; governance structure
Fisheries Economy and Associated Values	3.1.2	No new funding; governance structure
Governance and Collaborative Management	3.1.1, 3.1.2, 4.1.2	No new funding; governance structure
Research, Education and Training	1.1.1, 1.1.4, 2.1.3, 4.3.4	No new funding; governance structure
Community and Economy	1.1.2	Funding
Pollution	5.1.4	Funding
Conservation and Protection	2.2.1, 3.2.2, 6.1.4	Funding
Cultural and Heritage Resources	1.1.2	Funding
Recreation and Tourism	1.1.4	Funding
Forestry Operations	1.1.1, 2.1.2	Funding
Aquaculture	1.1.2	Funding
Fisheries Economy and Associated Values	1.1.2	Funding
Research, Education and Training	3.2.1	Funding
Community and Economy	1.1.1, 2.1.2	Funding; governance structure
Infrastructure	1.1.2, 1.1.3	Funding; governance structure
Pollution	1.1.7, 3.1.2, 4.1.4	Funding; governance structure
Recreation and Tourism	2.1.1, 2.1.2	Funding; governance structure
Aquaculture	1.1.1	Funding; governance structure
Governance and Collaborative Management	2.1.1, 2.1.2, 2.1.3	Funding; governance structure
Regulatory Compliance and Enforcement	1.1.1	Funding; governance structure
Research, Education and Training	1.1.2, 1.1.3, 1.1.5	Funding; governance structure

## REFERENCES

The following key documents were used to develop the plan. For more information, see the *Current Conditions and Trends for North Vancouver Island* report (In prep.).

British Columbia Marine Conservation Analysis (BCMCA). 2011. Marine Atlas of Pacific Canada: a product of the British Columbia Marine Conservation Analysis (BCMCA).

Government of British Columbia. 2002. North Island Straits Coastal Plan. BC Ministry of Sustainable Resource Management, Coast and Marine Planning Branch, Victoria, BC.

Government of British Columbia. 2004. The Johnstone-Bute Coastal Plan. BC Ministry of Sustainable Resource Management, Coast and Marine Planning Branch, Victoria, BC.

Nanwakolas Council. 2011. Marine planning. <http://www.nanwakolas.com/marine-planning-nanwakolas-council-british-columbia-native-people-first-nations>

Nanwakolas Council. 2012. Ha-Ma-Yas Marine Plan: September 17, 2012 draft endorsed for consultation.

Pacific North Coast Integrated Management Area (PNCIMA) initiative. 2011. Atlas of the Pacific North Coast Integrated Management Area.

## GLOSSARY

**Abandoned, derelict and problem vessels and structures** – Vessels and structures deserted by the owner on foreshore and other marine areas, and usually in a state of disrepair such that assistance is required to remove the object.

**Anadromous** – Fish that are born and reared in freshwater, move to the ocean to grow and mature, and return to freshwater to reproduce.

**Biodiversity (biological diversity)** – The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

**Capability mapping** – The mapping or modelling of biological and physical environmental variables that, when measured, provide spatially explicit and quantitative information for the survival and reproduction of a species or population

**Commercial fishing** – Harvest of wild finfish and invertebrates for commercial purposes.

**Community** – (1) An incorporated or unincorporated First Nations or non-First Nations settlement, including its residents, infrastructure and supporting services and businesses; (2) in ecology, a group of interdependent organisms living together in the same area.

**Conservancy** – Land designated by the Province of British Columbia in accordance with the Park Act and the Protected Areas of British Columbia Act to maintain biological diversity; natural environments; First Nations' social, ceremonial and cultural uses; and recreational values. Conservancies were developed as a result of the Coast Land Use Decision.

**Conservation** – (1) The maintenance or sustainable use of the Earth's resources in order to maintain ecosystem, species and genetic diversity and the evolutionary and other processes that shape them. (2) In the context of the International Union for the Conservation of Nature definition of a Marine Protected Area, conservation refers to the in situ maintenance of ecosystems, and natural and semi-natural habitats and viable populations of species in their natural surroundings.

**Cultural Resource** - A term that broadly encompasses areas, activities, sites, objects and resources of cultural value to First Nations.

**Cumulative effects (CE)** – Environmental, social and economic changes caused by the combined and incremental effects of past, present and proposed activities and events.

**Cumulative effects assessment (CEA)** – An assessment of the incremental effects of an action on environmental, social and economic values when the effects are combined with those from other past, present and foreseeable future actions.



**Direct effect** – An effect in which the cause-effect relationship has no intermediary effects.

**Ecological reserve** – An area selected to preserve representative and special natural ecosystems, plant and animal species, features and phenomena. Scientific research and educational purposes are the principal uses of ecological reserves. Ecological Reserves were first established under the *Land Act* in 1969

**Ecosystem** – A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.

**Ecosystem services** – The benefits people obtain from ecosystems, including provisioning services, such as food and water; regulating services, such as the regulation of floods, drought, land degradation and disease; supporting services, such as soil formation and nutrient cycling; and cultural services, such as recreational, spiritual, religious and other nonmaterial benefits.

**Endangered species** – Species that are threatened with immediate extinction or extirpation if the factors threatening them continue to operate. Included are species whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

**Extirpate** – The elimination of a species or subspecies from a particular area but not from its entire range.

**First Nations marine resource use** – The harvest of marine resources by First Nations, for a variety of purposes.

**Food web** – A method for describing the feeding interactions in a community.

**Foreshore (intertidal area)** – (1) In the context of tenuring lands in British Columbia, the foreshore is "that land in tidal areas lying between the high tide and the mean low tide and that land in non-tidal areas that is alternatively covered by water and exposed with the normal rise and fall of the level of the body of water, i.e., that land between the ordinary high and low water mark". (2) Generally speaking, foreshore is the part of the shore between the normal high and low water marks, or between the water and cultivated or developed land.

**Geographic Response Plan (GRPs)** – Geographic-specific response plans for marine-related incidents. They include response strategies tailored to a specific beach, shore or waterway, and are meant to avoid or minimize impact.

**Heritage resources** – Objects, sites and values related to non-Aboriginal history and culture in British Columbia.

**Important Areas** – areas identified for species as part of the Ecologically and Biologically Significant Areas for the Pacific Coast Integrated Management Area process based on uniqueness, aggregation, fitness consequences, naturalness and resilience.

**Indicators** – Quantitative/qualitative statements or measured/observed parameters that can be used to describe existing conditions and measure changes or trends over time.

**Indigenous Peoples' and Community Conserved Areas and Territories** – Natural and/or modified ecosystems containing biodiversity and cultural values and ecological services that are conserved by indigenous peoples (First Nations) and local communities through customary laws or other means. Indigenous Peoples' and Community Conserved Areas and Territories have been implemented for economic, cultural, spiritual and aesthetic purposes in different parts of the world but are not a legal designation in Canada at this time.

**Indirect effect** – An effect in which the cause-effect relationship has intermediary effects. Because an interaction with another action's effects is required to have a cumulative effect (hence, creating intermediary effects), cumulative effects may be considered as indirect.

**Integrated multi-trophic aquaculture** – The cultivation, in proximity, of species from different trophic levels and complementary ecosystem functions, in a way that allows one species' uneaten feed and wastes/nutrients/by-products to be recaptured and converted into fertiliser, feed and energy for the other crops, and to take advantage of synergistic interactions between species.

**Intertidal** – see foreshore.

**Local** – Confined to or immediately adjacent to a geographical area found within the Plan Area.

**Loxiwe** – Foreshore areas that were artificially modified in the past by First Nations, through the mounding of rocks to trap sediment and create beds for growing of clams. First Nations consider these areas to be cultural sites and are still used for food gathering purposes.

**Marine Protected Area (MPA)** – An area legally established to protect all or a portion of the sea surface, water column, seabed and/or associated flora, fauna and recreational, scientific, cultural and historical features, and may include an area established under Canada's Oceans Act, National Marine Conservation Areas Act, National Parks Act, Canada Wildlife Act, Migratory Birds Convention Act, or British Columbia's Park Act, Protected Areas of British Columbia Act, Ecological Reserve Act, Environment and Land Use Act, Land Act or Wildlife Act.

**Marine Spatial Planning** – A public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process.

**Mitigation** – A means of reducing the significance of adverse effects.

**Monitoring** – Involves routinely observing or measuring something and recording the data consistently in order to compare changes before and after an action is implemented and to establish trends over time.

**Nearshore** – The sub-tidal area below the low tide mark (i.e., below zero tide), generally extending to the 20 m depth.

**Park** - Crown land designated under the Park Act or by the Protected Areas of British Columbia Act.

**Pelagic** – Organisms that swim or drift in oceans or open waters, as opposed to those that live in waters adjacent to land or inland. Pelagic organisms include plants, fish and oceanic birds.

**Protection** – Any regulatory or other provision to reduce the risk of negative impacts of human activities on an area.

**Recreational fisheries** – Recreational angling, collecting of shellfish, harvesting of finfish and invertebrates by residents and visitors for personal use.

**Recreational fishery service provider** – A person or business engaged in providing services such as a fishing lodge and/or carrying passengers on a charter vessel for the primary purpose of recreational fishing, whenever valuable consideration passes directly or indirectly to the person or business.

**Refugia** – Habitat that organisms retreat to, persist in or can potentially expand from under changing environmental conditions.

**Resilience (Ecological)** – (1) The ability of a system to undergo, absorb and respond to change and disturbance while maintaining its functions and controls. (2) The amount of change or disturbance that can be absorbed by a system before the system is redefined by a different set of processes and structures.

**Restoration** – The act or process of assisting the recovery and management of damaged ecosystems, restoring internal processes, as well as ecosystem components. Critical to restoration is the identification and control of the cause(s) of ecosystem degradation. “Restoration” is considered to broadly encompass a continuum of degrees or stages of restoration and various terms in different statutes and other legal mechanisms; e.g., “restoration”, “rehabilitation”, “remediation”, and “reclamation”.

**Seabed** – The ground under the sea; the ocean floor.

**Stakeholders** – Individuals or groups of people with particular interests in an issue or area.

**Suitability or suitability mapping** – The mapping or modelling of species or activity viability based on ecological capability combined with social, economic, resource use, infrastructure, marketing and/or cultural parameters.

**Sustainable use** – Applicable only to renewable resources, and refers to using them at rates within their capacity for renewal. Minerals, oil, gas and coal are effectively non-renewable and thus cannot be used sustainably. However, the length of time that these non-renewable

resources are available can be extended by recycling materials, using less of a resource to make a product, and switching to renewable substitutes.

**Threshold** – A limit of tolerance of a valued ecosystem component (VEC) to an effect that, if exceeded, results in an adverse response by that VEC. (2) The level of magnitude of a system process at which sudden or rapid change occurs. A point or level at which new properties emerge in an ecological, economic or other system, invalidating predictions based on mathematical relationships that apply at lower levels.

**Traditional knowledge** – Knowledge gained from generations of First Nations living and working within their family, community or culture.

**Trophic** – Referring to feeding and nutrition.

**Wildlife Management Area** – An area of land designated under section 4(2) of the *Wildlife Act* for the benefit of regionally to internationally significant fish and wildlife species or their habitats. Conservation and management of fish, wildlife and their habitats is the priority in a Wildlife Management Area, but other compatible land uses may be accommodated.

**Zoning** – The process of designating spatial area(s) using defined geographic coordinates, with each zone type or category having a distinct objective or purpose, description, management recommendation or direction, name and/or identifier.

## APPENDIX A1: SPECIES AT RISK

### Provincial Species at Risk

Red List: a provincial designation that includes any ecological community, and indigenous species and subspecies that is extirpated, endangered, or threatened in BC.

Blue List: a provincial designation that includes any ecological community, and indigenous species and subspecies that is of special concern (formerly vulnerable) in BC.

Yellow List: a provincial designation for species and ecological communities that are secure (not included in this list unless it also has one of the risk status' under SARA).

### Federal *Species at Risk Act* (SARA)

The Act was developed to prevent wildlife species from becoming extinct and to enable their recovery. It provides for the legal protection of wildlife species and the conservation of their biodiversity.

Endangered: a wildlife species that is facing imminent extirpation or extinction.

Threatened: a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

Special concern: a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Common Name	Scientific Name	BC List	<i>Species at Risk Act</i>
<b>Birds</b>			
Ancient Murrelet	<i>Synthliboramphus antiquus</i>	Blue	Special Concern
Black-footed Albatross	<i>Phoebastria nigripes</i>	Blue	Special Concern
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>	Red	
Buller's Shearwater	<i>Puffinus bulleri</i>	Blue	
California Gull	<i>Larus californicus</i>	Blue	
Caspian Tern	<i>Hydroprogne caspia</i>	Blue	
Cassin's Auklet	<i>Ptychoramphus aleuticus</i>	Blue	
Common Murre	<i>Uria aalge</i>	Red	

Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Blue	
Flesh-footed Shearwater	<i>Puffinus carneipes</i>	Blue	
Horned Puffin	<i>Fratercula corniculata</i>	Red	
Laysan Albatross	<i>Phoebastria immutabilis</i>	Red	
Long-tailed Duck	<i>Clangula hyemalis</i>	Blue	
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Blue	Threatened
Northern Fulmar	<i>Fulmarus glacialis</i>	Red	
Pelagic Cormorant, <i>pelagicus</i> subspecies	<i>Phalacrocorax pelagicus pelagicus</i>	Red	
Peregrine Falcon, <i>pealei</i> subspecies	<i>Falco peregrinus pealei</i>	Blue	Special Concern
Pink-footed Shearwater	<i>Puffinus creatopus</i>	Blue	Threatened
Red-necked Phalarope	<i>Phalaropus lobatus</i>	Blue	
Short-tailed Albatross	<i>Phoebastria albatrus</i>	Red	Threatened
Surf Scoter	<i>Melanitta perspicillata</i>	Blue	
Thick-billed Murre	<i>Uria lomvia</i>	Red	
Tufted Puffin	<i>Fratercula cirrhata</i>	Blue	
Western Grebe	<i>Aechmophorus occidentalis</i>	Red	
Yellow-billed Loon	<i>Gavia adamsii</i>	Blue	

## **Fish**

Basking Shark	<i>Cetorhinus maximus</i>		Endangered
Bluntnose Sixgill Shark	<i>Hexanchus griseus</i>		Special Concern
Cutthroat Trout, <i>clarkii</i> subspecies	<i>Oncorhynchus clarkii clarkii</i>	Blue	
Eulachon	<i>Thaleichthys pacificus</i>	Blue	
Green Sturgeon	<i>Acipenser medirostris</i>	Red	Special Concern
Longspine Thornyhead	<i>Sebastolobus altivelis</i>		Special Concern
Rougheye Rockfish type I and type II	<i>Sebastes</i> sp. type I and type II		Special Concern
Tope (Soupfin Shark)	<i>Galeorhinus galeus</i>		Special Concern



---

**Invertebrates**

---

Northern Abalone	<i>Haliotis kamtschatkana</i>	Red	Threatened
Olympia Oyster	<i>Ostrea lurida</i> (formerly <i>Ostrea conchaphila</i> )	Blue	Special Concern

---

**Mammals**

---

Blue Whale	<i>Balaenoptera musculus</i>	Red	Endangered
Fin Whale	<i>Balaenoptera physalus</i>	Red	Threatened
Grey Whale	<i>Eschrichtius robustus</i>	Blue	Special Concern
Harbour Porpoise	<i>Phocoena phocoena</i>	Blue	Special Concern
Humpback Whale	<i>Megaptera novaeangliae</i>	Blue	Threatened
Killer Whale (Northeast Pacific northern resident population)	<i>Orcinus orca</i> pop. 6	Red	Threatened
Killer Whale (Northeast Pacific offshore population)	<i>Orcinus orca</i> pop. 2	Red	Special Concern
Killer Whale (Northeast Pacific southern resident population)	<i>Orcinus orca</i> pop. 5	Red	Endangered
Killer Whale (West Coast transient population)	<i>Orcinus orca</i> pop. 3	Red	Threatened
North Pacific Right Whale	<i>Eubalaena japonica</i>	Red	Endangered
Northern Fur Seal	<i>Callorhinus ursinus</i>	Red	
Sea Otter	<i>Enhydra lutris</i>	Blue	Special Concern
Sei Whale	<i>Balaenoptera borealis</i>	Red	Endangered
Sperm Whale	<i>Physeter macrocephalus</i>	Blue	
Steller Sea Lion	<i>Eumetopias jubatus</i>	Blue	Special Concern

---

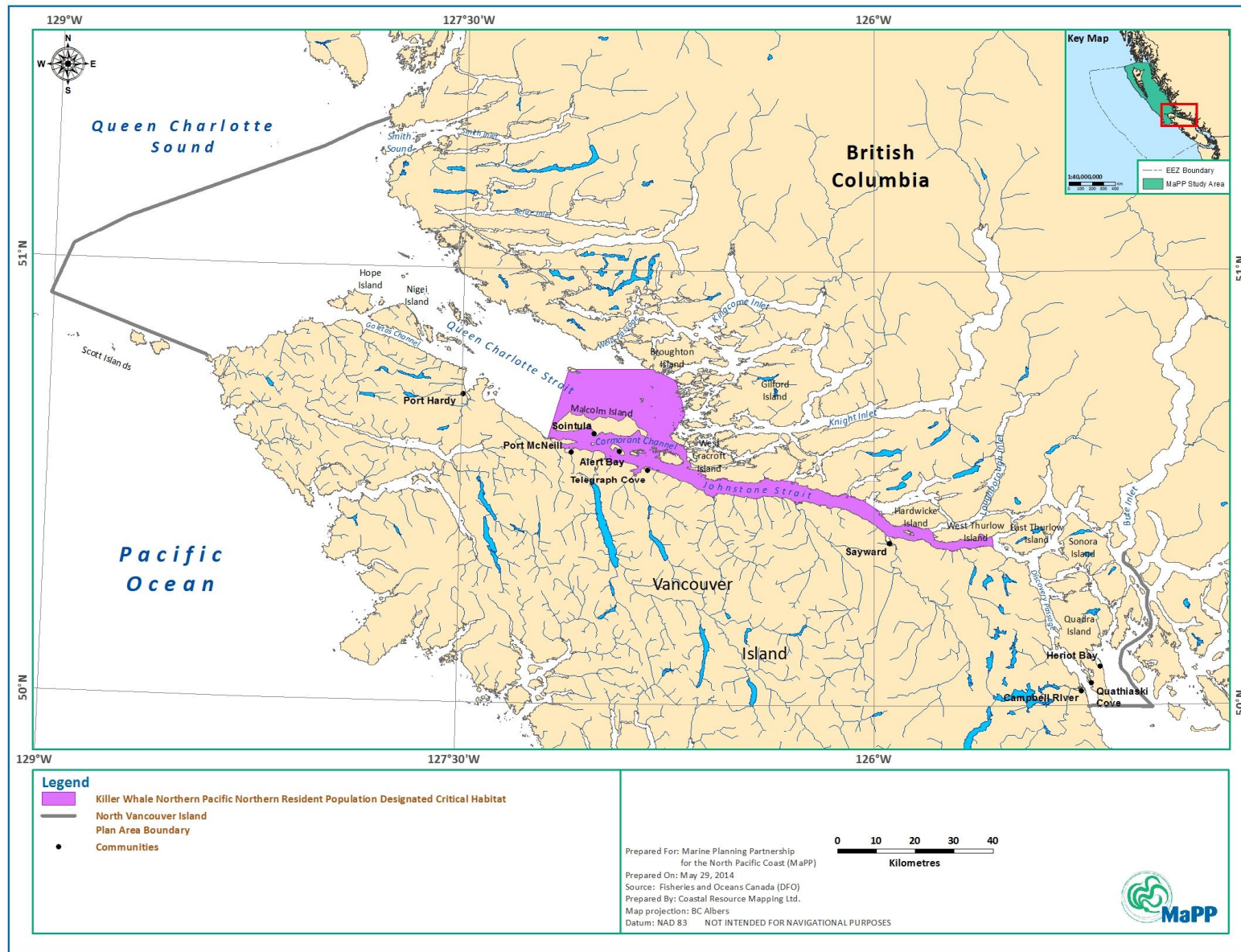
**Reptiles**

---

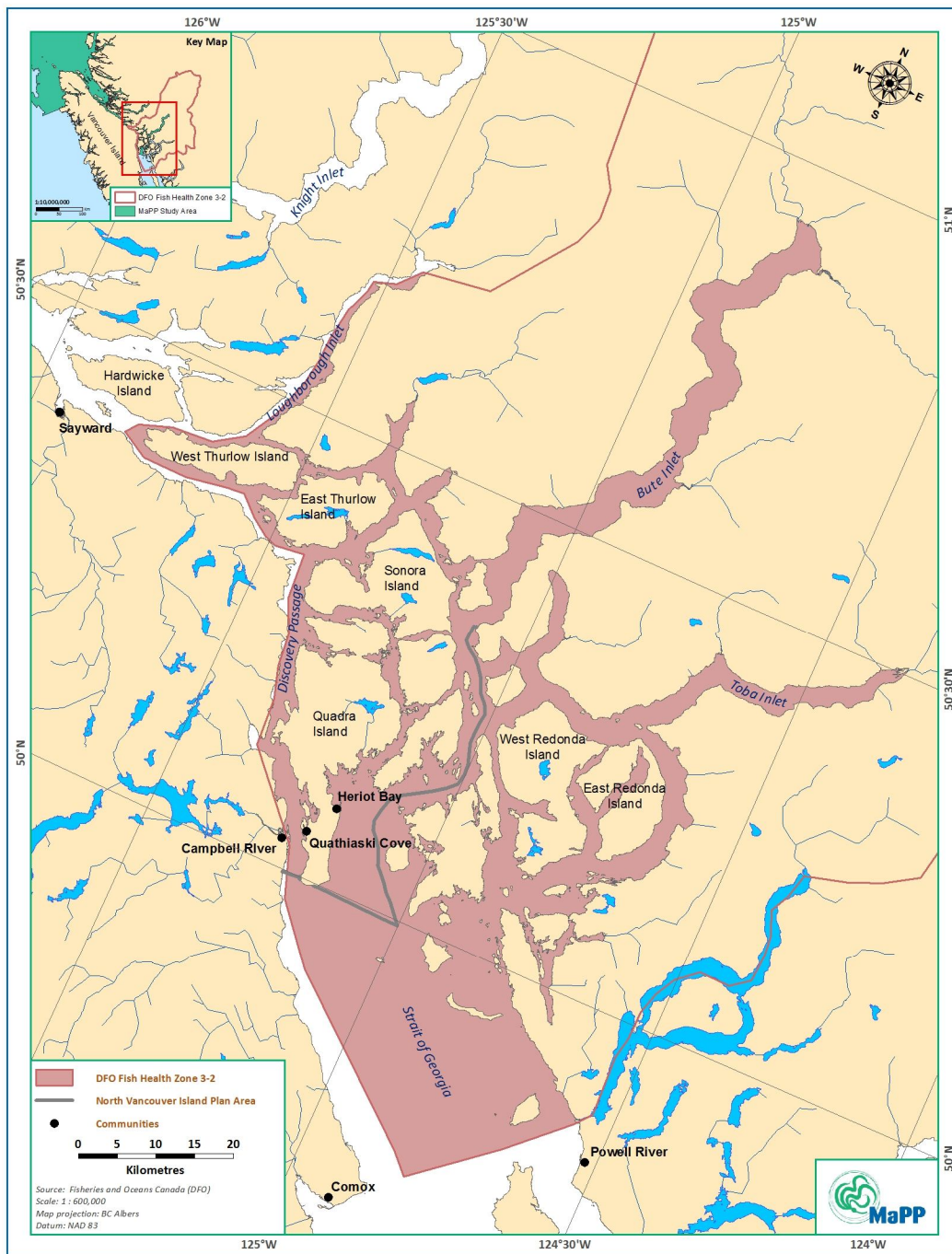
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	Red	Endangered
------------------------	-----------------------------	-----	------------

---

## APPENDIX A2: NORTHERN RESIDENT KILLER WHALE CRITICAL HABITAT



## APPENDIX A3: FISHERIES AND OCEANS CANADA FISH-HEALTH ZONE 3-2



The figure shows the area in which the provincial government stated it will not issue “any new tenure agreements for net-pen salmon farms in the Discovery Islands until September 30, 2020.”

## APPENDIX B1: SUPPORT LETTERS

To:

**Matthew Justice (co-chair) NVI MPAC, Ministry of Forests, Lands and Natural Resource Operations**

**John Bones (co-chair) NVI MPAC, Nanwakolas Council**

July 15, 2014

**Re: The Conservation Sector's Level of Support for the North Vancouver Island (NVI) MaPP Marine Plan**

We would like to commend you for supporting the development of a NVI marine plan that is comprehensive and inspiring. The final draft plan creates a solid foundation from which to build. The plan enables improved ocean management in response to current and future threats. While the NVI ocean environment is currently in a relatively healthy condition and supports many uses including a growing recreation and tourism sector, this plan will help to address the many challenges to maintaining a healthy ocean in the region.

We believe that this plan has been achieved as a result of the close and effective working relationship between the provincial government, the Nanwakolas Council First Nations together with stakeholders to achieve common goals. By following the ecosystem-based management approach, agreed upon by sectors who participated in the planning process, will help to maintain the ecosystem services required by all British Columbians.

The Conservation Sector supports the June 2014 Final Draft NVI Marine Plan and hopes that this version of the plan, developed through the multi-sector process, is respected. We believe that the plan could be improved in the following areas:

1. Increase the total area covered by protection management zones to safeguard ecosystem benefits by protecting the environment from short-term (e.g. pollution) and long-term (e.g. climate change) human impacts. Engagement with the federal government is necessary for the creation of a network of marine protected areas based on sound scientific principles, using the protected management zones as a foundation.
2. Revision of aquaculture tenure application criteria to reflect new scientific information and the recommendations from the Cohen Commission.
3. An improved conflict resolution process to provide greater comfort for all sectors.



4. We are concerned that some sectors, especially those who have chosen not to participate at the stakeholder table, have misconceptions about protection management zones. Education of all sectors and the public to develop a common understanding about the benefits that will accrue from increasing the areas under protection management will be valuable.

It is vital that the plan is endorsed at the highest levels and implementation is adequately planned, staffed and funded in order to realize the vision of the provincial government, Nanwakolas First Nations and all participating stakeholders.

The conservation sector is encouraged by this marine plan. We look forward to assisting with effective plan implementation and working towards continued plan improvements, through continued collaboration between the province, First Nations, the federal government and all sectors.

Sincerely,



Gordon Curry  
NVI Conservation Lead  
Living Oceans Society



Kat Middleton  
NVI Conservation Alternate  
David Suzuki Foundation

And



Morag Carter  
Living Oceans  
Society



Sabine Jessen  
Canadian Parks and  
Wilderness Society BC

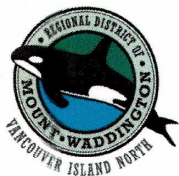


Linda Nowlan  
World Wildlife Fund  
Canada



Jay Ritchlin  
David Suzuki  
Foundation





## Regional District of Mount Waddington

PO Box 729 2044 McNeill Road, Port McNeill, BC V0N 2R0

Telephone (250) 956-3161 Fax (250) 956-3232

Web-site: [www.rdmw.bc.ca](http://www.rdmw.bc.ca) Email: [info@rdmw.bc.ca](mailto:info@rdmw.bc.ca)

Matthew Justice, Senior Resource Specialist  
C/O Resource Management Objectives Branch  
Ministry of Forests, Lands & Natural Resource Operations  
2<sup>nd</sup> Floor, 1520 Blanshard St.,  
Victoria, BC, V8W 3K2

John Bones, Marine Planning Coordinator  
C/O Nanwakolas Council  
1441 16<sup>th</sup> Ave.,  
Campbell River, BC, V9W 2E4

July 29, 2014

Dear Co-chairs,

I am pleased to advise you that on July 15, 2014, the Regional District of Mount Waddington Board passed a resolution supporting the replacement of the existing North Island Straits Coastal Plan with the proposed North Vancouver Island Marine Plan. The proposed Marine Plan represents one of the largest marine planning undertakings on our coast, incorporates ecosystem based management principles, and demonstrates a move towards collaborative resource management. In collaboration with various stakeholders, the Regional District of Mount Waddington participated in the planning process through Directors Heidi Soltau and Doug Aberley, who took part in the advisory committees of the Marine Planning Partnership.

The Regional Board would like to request that any future amendments, updates or implementation strategies of the Marine Plan include further consultation with the local governments and First Nations within the Regional District of Mount Waddington.

Yours truly,

Dave Rushton  
Chair, Regional District of Mount Waddington

INCORPORATED JUNE 13, 1966

MUNICIPALITIES: ALERT BAY, PORT ALICE, PORT HARDY, PORT MCNEILL

ELECTORAL AREAS: "A" (SOINTULA); "B" (HOLBERG, WINTER HARBOUR); "C" (QUATSINO, COAL HARBOUR, HYDE CREEK); "D" (WOSS, TELEGRAPH COVE)



North Vancouver Island  
Marine Planning Partnership ("MaPP") Initiative

July 23, 2014

**RE: Letter of General Support for the NVI Marine Plan**

Dear:

Matthew Justice, NVI MPAC Co-Chair,  
Ministry of Forests, Lands and Natural Resource Operations

John Bones, NVI MPAC Co-Chair,  
Nanwakolas Council

Thank you for inviting the Clean Energy Association of BC to be represented in the ecosystem-based management planning of the North Vancouver Island ("NVI") marine area. We appreciated the opportunity to participate along with other stakeholders on the NVI Marine Planning Advisory Committee from 2012 - 2014.

We are happy to provide our broad support for the NVI Marine Plan.

We understand that the NVI MaPP is a partnership between the Province of British Columbia and the Nanwakolas Council and appreciate the efforts made to ensure that key stakeholder interests were considered in the plan.

We also recognize that identifying key stakeholder interests in the NVI Marine Plan area, and making that information publically available, will assist prospective developers in terms of flagging those key interests in the early stages of their development processes.

We do not foresee unnecessary hardships for the clean energy sector resulting from the plan. However, we would like to point out that clean energy technologies are ever-changing and although we cannot predict how the plan will impact our sector as it continues to evolve over time, we are open to further dialogue if the need arises.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul Kariya", with a stylized flourish at the end.

Paul Kariya  
Executive Director

Clean Energy | Association of British Columbia

354 - 409 Granville Street | Vancouver, BC V6C 1T2, Canada | Office: 604.568.4778 | Fax: 604.568.4724 | [www.cleanenergybc.org](http://www.cleanenergybc.org)

August 19, 2014

BC Provincial Government  
Ministry of Forest,  
Lands and Natural Resource Operations  
Victoria, BC

**Attn: Steve Thompson, Minister**

**Re: MaPP North Vancouver Island Planning Process**

This letter is written to express our support for the MaPP North Vancouver Island plan which was recently completed and is now awaiting sign off.

The VIU Centre for Shellfish Research and its affiliate institutions at VIU (Institute for Coastal Research and the Deep Bay Marine Field Station) became involved in this initiative as we were interested in seeing opportunities and growth for the sustainable shellfish aquaculture sector on Vancouver Island. We participated at the planning table as part of this BC Government-Nanwakolas process since its inception, providing our shellfish aquaculture expertise to the table and to the process team.

We believe this process provided an important opportunity for people of North Vancouver Island to discuss and develop a suite of strategies and zoning options for marine conservation and use in North Vancouver Island. The BC Government-Nanwakolas co-managed process team was responsive to our suggestions and revisions in terms of the shellfish sector, and the final document reflects this.

We look forward to being involved in the implementation stages of this plan, as needed – again offering academic research, education and extension related expertise and collaborative opportunities that will benefit Vancouver Island communities.

Yours truly,



Don Tillapaugh,  
Director  
VIU Centre for Shellfish  
Research  
e: don.tillapaugh@viu.ca



Brian Kingzett,  
Manager  
VIU Deep Bay Marine Field  
Station, MaPP NVI Shellfish  
representative  
e: brian.kingzett@viu.ca



Michele Paterson,  
Program Manager  
VIU Institute for Coastal  
Research, MaPP NVI shellfish  
alternate  
e: michele.patterson@viu.ca



**OFFICE OF THE  
CHIEF ADMINISTRATIVE OFFICER**

August 31, 2014

**SENT VIA EMAIL:** [matthew.Justice@gov.bc.ca](mailto:matthew.Justice@gov.bc.ca)  
(original by regular post)

Marine Planning Partnership (MaPP)  
North Vancouver Island Marine Plan  
Attn: Mr. Matthew Justice  
5722 Brookwood Drive  
Nanaimo, BC V9T 5P3

Dear Mr. Justice:

**RE: MARINE PLANNING PARTNERSHIP (MAPP) NORTH VANCOUVER ISLAND MARINE PLAN**

Further to your request of August 19, 2014, please be advised that at its regular meeting on August 28, 2014 the Board of Directors for the Strathcona Regional District passed the following resolutions:

*THAT the Board support the Marine Planning Partnership (MaPP) North Vancouver Island Marine Plan, and*

*THAT the Board extend an invitation for a MaPP representative to attend a Board meeting as a delegation.*

The following are the dates of our Board meetings until the end of 2014:

October 8	October 23
November 12	November 27

Please advise if any of the above dates will conform with your schedule to meet with the Regional Board members. Do not hesitate to contact me with any questions or concerns that may arise.

Sincerely,

A handwritten signature in black ink, appearing to read "Russ Hotseppiller", written over a horizontal line.

Russ Hotseppiller  
Chief Administrative Officer

#301 – 990 Cedar Street, Campbell River, BC V9W 7Z8  
Tel: 250-830-6700 Fax: 250-830-6710  
Toll free: 1-877-830-2990 [www.strathconard.ca](http://www.strathconard.ca)



## APPENDIX B2: MARINE PLAN ADVISORY COMMITTEE

### Advisory Committee Participants (some sector representatives changed during the process)

The start of the participant period is based on the first meeting attendance.

Name	Sector	Role	Participation Period
Bruce Storry	Coastal Forestry	Member	July 2012–June 2014
Jonathan Armstrong	Coastal Forestry	Alternate	November 2012–July 2012
Lorena Hamer	Commercial Fisheries	Member	September 2012–March 2013
Dan Edwards	Commercial Fisheries	Alternate Member	January 2013–March 2013 November 2013– June 2014
Jim McIsaac	Commercial Fisheries	Alternate	January 2013–March 2013
Kim Olsen	Commercial Fisheries	Alternate	November 2013–June 2014
Richard Snowdon	Commercial Tourism	Member	July 2012– June 2014
Andrew Jones	Commercial Tourism	Alternate	July 2012–May 2013
Jamie Scarrow	Commercial Tourism	Alternate	June 2013–August 2013
Jacob Etzkorn	Marine Conservation	Member	July 2012–August 2013
Gord Curry	Marine Conservation	Member	September 2013– June 2014
Bill Wareham	Marine Conservation	Alternate	July 2012–August 2013
Panos Grames	Marine Conservation	Alternate	November 2012–August 2013
Kat Middleton	Marine Conservation	Alternate	September 2013– June 2014
Kim Wright	Marine Conservation	Alternate	July 2013–October 2013
Richard Opala	Finfish Aquaculture	Member	July 2012– June 2014
David Minato	Finfish Aquaculture	Alternate	July 2012– June 2014
Jim Abram	Local Government – Strathcona RD	Member	November 2012– June 2014
Jude Schooner	Local Government – Strathcona RD	Alternate	November 2012– June 2014
Heidi Soltau	Local Government – RD of Mount Waddington	Member	July 2012– June 2014
Doug Aberley	Local Government – RD of Mount Waddington	Alternate	June 2013– June 2014
Alan Thomson	Public Recreation	Member	July 2012– June 2014
Nick Heath	Public Recreation	Alternate	July 2012– June 2014
Rupert Gale	Public Recreational Fishing	Member	July 2012–September 2012
Dwayne Mustard	Rec. Fishing Service Providers	Member	September 2012– June 2014
Paul Kariya	Renewable Energy	Member	July 2012– June 2014
Ellen Bird	Renewable Energy	Alternate	September 2012– June 2014
Bill Johnson	Renewable Energy	Alternate	March 2013–December 2013
Brian Kingzett	Shellfish Aquaculture	Member	November 2012– June 2014
Michele Patterson	Shellfish Aquaculture	Alternate	July 2012– June 2014

## Schedule of Marine Plan Advisory Committee Meetings

Meeting Number	Date	Location	Objectives
1	July 9–10, 2012	Campbell River	Introduction to participants, process and roles
2	September 27–28, 2012	Campbell River	Feedback on plan components, discussion of desired future state, introduction to issues, objectives and strategies
3	November 28–29, 2012	Campbell River	Review issues, objectives and strategies and draft vision statement
4	January 22–23, 2013	Campbell River	Review current conditions and trends, issues, objectives and strategies and introduction to the zoning framework
5	March 6–7, 2013	Campbell River	Review of preliminary zoning, data layers and spatial planning
6	June 5–6, 2013	Campbell River	Overview of Preliminary Draft 1 of the NVI Marine Plan and orientation to the marine spatial planning tool
7	September 9–10, 2013	Port McNeill	Review of Preliminary Draft 2 of the NVI Marine Plan and field trip
7b	October 10, 2013	Campbell River	Area-specific management direction and marine spatial planning
8	November 21–22, 2013	Campbell River	Review of Preliminary Draft 3 of the NVI Marine Plan
9	February 19–20, 2014	Campbell River	Review of Preliminary Draft 4 of the NVI Marine Plan
10	June 5-6, 2014	Campbell River	Review of the final draft of the NVI Marine Plan

## Schedule of NVI Planning Team and Sector Meetings

Date	Location	Objectives
February 27, 2014	Nanaimo	Meeting with commercial recreation and tourism, and conservation
February 28, 2014	Nanaimo	Meeting with finfish aquaculture
March 3, 2014	Victoria	Meeting with commercial fisheries
June 10-17, 2013	Emails	Resolve final issues with commercial fisheries, forestry, finfish aquaculture and local governments



## Marine Plan Advisory Committee Terms of Reference

### Context

The Nanwakolas Council and the provincial government are jointly preparing a marine plan for the North Vancouver Island sub-region of the North Pacific Coast. This work is being done pursuant to a November 2011 Letter of Intent among the Nanwakolas Council, Coastal First Nations-Great Bear Initiative, the North Coast-Skeena First Nations' Stewardship Society, and the provincial government (represented by the Ministry of Forests, Lands and Natural Resource Operations). The Letter of Intent, related funding agreements and work plans constitute the Marine Planning Partnership for the North Pacific Coast (MaPP). MaPP provides for collaborative development of four sub-regional marine plans, and a regional planning document using an ecosystem-based management approach. MaPP may also serve to inform the Pacific North Coast Integrated Management Area (PNCIMA) planning process currently underway.

Preparation of the North Vancouver Island Marine Plan is being led by a joint provincial government - Nanwakolas Council Technical Team. Plan preparation will commence in March 2012, and will be completed by November of 2013 for final review and approval. The sub-regional Plan Area is shown in Attachment 1.

### Committee Roles and Responsibilities

The general role of the Marine Plan Advisory Committee (MPAC) is to provide stakeholder advice and feedback on a North Vancouver Island Marine Plan.

Specific **responsibilities** of the MPAC are to:

- a) Review, discuss and provide timely feedback and advice on draft components of the Marine Plan during its development;
- b) Review, discuss and provide timely feedback and advice on a final Marine Plan prior to its approval by the Nanwakolas Council and the provincial government;
- c) Assist in the promotion of, and participate in any public meetings organized by the Technical Team to solicit input at key stages of Marine Plan development; and
- d) Confirm the nature and extent of support for the final Marine Plan by the interests represented on MPAC.

The role and responsibilities of the MPAC **do not include** provision of advice on process design or public communications, unless specifically requested by the Technical Team.

## MPAC Composition

The MPAC will be comprised of representatives of key marine interests, as shown in Table 1.

MPAC members will be appointed by the Technical Team on the basis of a nomination and selection process developed by the Technical Team.

Alternate members may be nominated for appointment by the Technical Team to attend advisory meetings and observe discussions, for continuity and familiarity purposes. An alternate may participate in meeting discussions only in the absence of the member that is represented by the alternate.

The Technical Team will provide co-chairs for each meeting, who will be responsible for agendas, background materials, technical presentations, venues, and other meeting details.

Other Technical Team members or provincial/Nanwakolas Council staff may attend MPAC meetings to present information and products and address questions on specific topics.

Table 1: MPAC representation and seats

Marine Conservation (1)	Commercial Recreational Fisheries (1)
Commercial Fisheries (1)	Public Recreational Angling (1)
Marine Transportation Carriers (1)	Municipal or Regional Government (2)
Commercial Tourism (1)	Public Recreation (1)
Finfish Aquaculture (1)	Shellfish Aquaculture (1)
Renewable Energy (1)	Forest Industry (1)

## MPAC MEMBER RESPONSIBILITIES

MPAC members (and alternates) will:

- a) Communicate on a regular basis with individuals and organizations having similar marine interests to convey information on emerging MaPP products and develop feedback and advice on draft Marine Plan components;

- b) Make best efforts to keep their sectors or colleagues informed of the role of the MPAC and Marine Plan review progress;
- c) Develop advice that considers relevant government policies and programs, the perspectives of other MPAC members, and supporting data and documentation;
- d) Abide by the Code of Conduct established for MPAC meetings as outlined in Attachment 2;
- e) Make best efforts to attend all scheduled meetings of the MPAC as outlined in Attachment 3;
- f) Advise the Technical Team co-chairs if unable to attend a scheduled meeting, and ensure the designated alternate is available for the meeting.

## MEETING PROCEDURES

MPAC meetings will primarily be in-person meetings and will preferably be held in central communities in the Plan Area in accordance with the meeting schedule in Attachment 3. Teleconference or webinar meetings may occur in-between face-to-face meetings.

Most meetings will be facilitated by an independent facilitator, whose role is to:

- a) Provide good meeting management, including adherence to agendas and timelines;
- b) Enforce adherence to the Code of Conduct (Attachment 2);
- c) Encourage all perspectives to be expressed on a topic, and provide clarification of the members' views on draft Plan products; and
- d) Provide closure to discussion topics and agenda items, by ensuring clarity on topics being discussed, summarizing advice heard, and acknowledging key points.

General consensus or agreement on advice is a desirable meeting outcome, but not a pre-requisite for moving on to review other draft Marine Plan products identified on a meeting agenda.

The Technical Team co-chairs are responsible for developing and circulating meeting agendas, and for distributing review materials in advance of meetings. Meeting materials will be circulated no later than two weeks in advance of a meeting to provide adequate review time, unless otherwise arranged with a majority of MPAC members.

A general meeting summary will be prepared by the Technical Team co-chairs as input to final Marine Plan products, and posted to the MaPP website. The summary will identify key discussion items, key advice given, and any agreements reached. Summaries will be circulated within 14 business days of a meeting and members provided a minimum of 5 business days to review and comment before posting to the website.

Meetings are intended to be progressive and focussed. Consequently, past meeting summaries and review of amended Marine Plan products will not be included on MPAC meeting agendas.

The MPAC schedule will include time for a review of a final draft Marine Plan; to enable MPAC members to determine the extent to which advice and comment on individual components has been incorporated.

MPAC meetings are not intended to be public meetings, and will not be advertised. However, notice of meetings will be posted on the MaPP website and the public will not be excluded from meetings. Public observers will be expected to adhere to meeting procedures and to refrain from entering discussions without the express approval of the co-chairs.

#### PLAN REVIEW TOPICS

The MPAC will meet to review, discuss and provide feedback on draft planning products (including objectives, strategies, best practices, implementation measures, and spatial designations) for all key marine uses and activities in the sub-region.

Draft Marine Plan products will be developed using the best available information, including traditional and local knowledge, and using independent scientific and technical advice where required. MPAC members may bring additional information to the Technical Team's attention for consideration in draft Marine Plan products preparation and revisions.

#### FUNDING

Funding will be provided to MPAC members to cover their travel and accommodation expenses for meeting participation, and a per diem provision to cover meals and incidental costs not otherwise provided or covered by MaPP. Expenses for alternates will be provided when alternates are substituting for their member, and (if funding is available) for attendance at meetings where their member is present. Expense claims must be submitted within 15 business days of the meeting end date or they will not be accepted. Expense claims will be reimbursed within 30 days of receipt.

Where considered necessary and if MaPP funds permit, the Technical Team co-chairs will consider requests by MPAC members for additional funding to facilitate review of draft materials by others within a sector or area of interest represented by an MPAC member.

Appendix 1: Map of Sub-Regional Marine Plan Area

Appendix 2: MPAC code of conduct

Members (and Alternates) agree to:

- a) Act in good faith in all aspects of the MPAC meeting process;
- b) Treat each other with respect and as equals;
- c) Strive to present the perspectives of their sectors or interests that they represent;
- d) Assist the facilitator/co-chairs in ensuring that meetings are efficient and effective;
- e) Assist the facilitator/co-chairs in ensuring all perspectives are expressed on an agenda topic;
- f) Seek to reach agreement on advice and feedback with other members, wherever possible;
- g) Explain reasons or provide rationale for their comments on Marine Plan products;
- h) Focus disagreements on the issues or facts, not on individuals or groups;
- i) Make good faith efforts to accurately characterize MPAC discussions to constituents, members of their interest groups, and members of the public;
- j) Adhere to this Code of Conduct and raise directly with MPAC members any matter they perceive to be in violation of this Code of Conduct.

# North Vancouver Island Marine Plan Advisory Committee (MPAC)

## Terms of Reference Clarification Addendum (October 18, 2013)

### Topic Area

#### 1. Roles and Responsibilities

- MPAC members may offer advice on process as it relates to the *MPAC meeting schedule and review topics*; and
- MPAC members may assist in the promotion of, or participate in, public meetings and *associated communications*.

#### 2. Composition

- Alternate members may attend all MPAC meetings, but will *only be covered under meeting expenses and included in MPAC discussions when the primary member is not available*;
- *MPAC members may, by way of the MaPP Support Fund, fund alternates to come to MPAC meetings as laid out in the proposal guidelines of the MaPP Support Fund*; and,
- “Commercial Recreational Fishing” interests will be referred to as “*Recreational Fishing Services*” and “Public Recreational Angling” will be referred to as “*Public Recreational Fishing*.”

#### 3. Meeting Procedures

- Meeting summaries will be provided to MPAC members following each MPAC meeting as well as an ‘*advice log*’ to document all advice captured during meetings. *Written comment on MaPP products will also be documented and distributed to all members prior to each meeting*;
- Advice logs will include status updates, noting whether the advice is under consideration, has been incorporated, or not feasible. *A brief synopsis on input received will be given at MPAC meetings*.
- *An online dropbox has been created for distribution of MPAC documents in each sub region*. The intent is to allow MPAC members to see what is going on in each subregion and as the method for distributing larger document files and higher resolution maps.

#### 4. Meeting Schedule

- Meeting scheduling will be reviewed at each MPAC meeting. *Online Doodle Polls* will be used to plan meetings and coordinate member availability at least three months in advance.

#### 5. Extension

- The term of service was extended to June 30, 2014 due to the extension of the MaPP Initiative.



## APPENDIX B3: ENGAGEMENT WITH NON-PARTICIPATING GROUPS

Date	Group	Form of Engagement	Purpose
March 2012	Other First Nations within the NVI Marine Plan Area*	Letter from the Province of British Columbia	Invitation to meet to discuss the process
February 2013	Other First Nations within the NVI Marine Plan Area	Letter from the Province of British Columbia	Update on process and invitation for further discussion
February 2013	Other First Nations within the NVI Marine Plan Area	Letter from the Province of British Columbia	Inform of changes to boundary
December 2013	Shellfish Aquaculture Industry Advisory Panel	In person presentation	Presenting MaPP and the development of the NVI Marine Plan
January – April 2014	Kwakiutl District Council (KDC) including the Tlatlasikwala First Nation	Email correspondence	Regarding the development of the NVI Marine Plan
April 2014	Other First Nations within the NVI Marine Plan Area	Letter from the Province of British Columbia	Update on process and invitation for further discussion; provision of the draft plan
April 2014	Homalco First Nation	In person meeting	Discussions regarding the NVI Marine Plan
July 2014	'Namgis First Nation	Telephone call, and email correspondence	Discussions regarding the NVI Marine Plan
April 2014	North Island Sport Fishing Advisory Board Representative	Telephone call	Discussions regarding the NVI Marine Plan
April – August 2014	Commercial fisheries, seafood and sport fisheries groups	Correspondence with the Province of British Columbia	Discuss sub-regional plans including NVI
May 2014	BC Seafood Alliance and Marine Transportation Sector	Meeting with Minister Steve Thompson and other Ministers	Discuss sub-regional plans including NVI
August 2014	BC Seafood Alliance, Seafood Producers Association of BC, and Underwater Harvesters Association	In person meeting with MaPP Executive Committee	Discuss sub-regional plans including NVI
August 2014	Sports Fishing Institute of BC, and Sports Fisheries Advisory Board	In person meeting with MaPP Executive Committee	Discuss sub-regional plans including NVI

\*The provincial government has identified the following as First Nations with potential interests in the Plan Area:

## APPENDIX B4: SCIENCE ADVISORY COMMITTEE

Name	Affiliation	Area of Expertise
Natalie Ban	University of Victoria	cumulative effects, biodiversity
Rosaline Canessa	University of Victoria	spatial analysis, conservation planning, coastal zone management, tourism, recreation, interdisciplinary
Charles (Bud) Ehler	Ocean Visions	marine planning, integrated coastal and ocean management
Wolfgang Haider	Simon Fraser University	social and economic research, protected areas planning and management, nature conservation, outdoor recreation and tourism, human dimensions of recreational fishing and wildlife, landscape perception
Phil Levin	NOAA National Marine Fisheries Service	ecosystem science, ecological processes, fisheries, EBM
Gordon Munro	Clark, Munro and Associates; University of British Columbia (emeritus)	economics, fisheries, natural resources
Nancy Turner	University of Victoria	traditional knowledge, ethnobotany, ethnoecology
Frank Whitney	Retired, Fisheries and Oceans Canada	oceanography, nutrient transport, multi-decadal ecosystem processes, hypoxia, climate change
Spencer Wood	Natural Capital Project - Stanford University	socioecological interactions, models, ecosystem services, marine biodiversity

## APPENDIX B5: PLANNING SUPPORT TOOLS

### Regional Zoning Framework

The Regional Zoning Framework is intended primarily to provide guidance for marine and coastal resource management decision-makers and marine user groups. The framework identifies the goal, principles, scale, objectives, guidelines and designations to be used for zoning.

### Compatibility Matrix

The compatibility matrix is a high-level guidance document that is intended to help identify uses that may need to be separated spatially and/or temporally. Citing the reasons why two uses are considered to be incompatible or potentially incompatible is intended to help decision-makers identify management provisions that may be required to mitigate conflicts between uses.

### Vulnerability Matrix

The MaPP vulnerability matrix provides information supporting information when using the Regional Zoning Framework and the other planning tools (e.g., the compatibility matrix) for zoning designations in the MaPP sub-regions. It is a 2 x 2 matrix that provides a quantitative, qualitative, or relative value for the effects of marine issues or uses on marine ecosystem types. The matrix provides a measure of the vulnerability of ecosystem types to relevant stressors or marine uses in order to guide spatial planning in the MaPP region. The matrix uses the BC Marine Ecosystem Classification system, as well as biogenic habitats (e.g., coral sponge reefs) and biotic communities (e.g., eelgrass and kelp communities) as the ecosystem types.

### Marine Planning Portal

The portal is a spatial planning support tool. It is used to display spatially explicit data and draft plans for planning and discussion purposes throughout the MaPP study area. The portal is also intended to be used to educate and inform users about the ecology of, and the human uses and activities in, the marine environment of the North Pacific Coast.

# APPENDIX C1: ECOSYSTEM-BASED MANAGEMENT

## Draft EBM Goals

EBM goals are interconnected and cannot be taken as separate from one another. The purpose of the EBM framework is to achieve:

1. Integrity of the marine ecosystems, primarily with respect to their structure, function and resilience
2. Human well-being supported through societal, economic, spiritual and cultural connections to marine ecosystems
3. Collaborative, effective, transparent, integrated governance and management and public engagement
4. Improved understanding of complex marine ecosystems and changing marine environments

## Principles

An EBM approach:

1. seeks to maintain ensure ecological integrity
2. includes human wellbeing
3. is precautionary
4. is adaptive
5. includes the assessment of cumulative effects
6. is equitable, collaborative, inclusive and participatory
7. respects Aboriginal rights, Aboriginal titles and treaty rights
8. is area-based
9. is integrated
10. is based on science and wise counsel

## Assumptions

1. Ecosystem goods and services underlie and support human societies and economies; such goods and services can be direct or indirect.
2. Humans and their communities are part of ecosystems, and they derive social, cultural and economic value from marine ecosystem goods and services.
3. Human activities have many direct and indirect effects on marine ecosystems.
4. EBM informs the management of human activities.
5. Marine ecosystems exist on multiple spatial and temporal scales, and are interconnected.
6. Marine ecosystems are dynamic and subject to ongoing and sometimes unpredictable change.
7. Marine ecosystem states have limits to their capacity to absorb and recover from impacts.
8. Human understanding of marine ecosystems is limited.
9. Humans prefer some ecosystem states more than others.
10. Humans can manage some drivers of change better than others, and can adjust or respond to some changes better at the scale of MaPP planning.

## APPENDIX D1: INTERNATIONAL UNION FOR CONSERVATION OF NATURE CATEGORIES

The MaPP Zoning Framework provides additional information on the International Union for Conservation of Nature (IUCN) Protected Areas categories and their uses in planning.

IUCN Category	Definition
Ia	Strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.
Ib	Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.
II	Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristics of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities
III	Set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living component such as a specific coralline feature. They are generally quite small protected areas and often have high visitor value.
IV	Aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.
V	Areas where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.
VI	Areas that conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under low-level non-industrial sustainable natural resource management and where such use of natural resources compatible with nature conservation is seen as one of the main aims of the area.



## APPENDIX E1: EBM INDICATORS

Potential “Dashboard” EBM Indicators based on, Uuma Consulting, 2014.

### Ecological Indicators

Ecological components	Recommended indicators
Habitat Quality	Measure of functional estuarine habitat *additional indicators of all habitats will be identified
Community composition	Change in community composition
Trophic dynamics	Not recommended at this time
<b>Key species and communities</b>	
Birds	Shorebird abundance during spring/fall stopover Population size of breeding seabirds
Bivalves	Mussels
Cetaceans	Habitat use by marine mammals
Coastal riparian vegetation	Extent of intact coastal riparian vegetation
Corals and sponge reefs	Not recommended at this time
Crustaceans	Abundance and size of key crustacean species
Echinoderms	Urchin abundance and distribution
Eelgrass	Eelgrass distribution and biomass
Forage Fish	Forage fish community composition Herring spawn distribution and biomass
Groundfish	Benthic fish community composition
Introduced / invasive species	Invasive / non-native species distribution and abundance
Invertebrates	Benthic macro-invertebrate species community composition
Jellyfish	Not recommended at this time
Kelp forests	Kelp forest canopy cover
Macroalgae	Not recommended at this time
Pacific Salmon	Salmon abundance and distribution of adults by species
Pelagic fish	Not recommended at this time
Phytoplankton	Chlorophyll-a from satellite and/or in situ surveys
Sea otters	Sea otter presence / abundance
Seal	Seal abundance
Zooplankton	Not recommended at this time

Environmental states and drivers	Recommended indicators
Atmospheric forcing	Climate indices Wind speed and direction
Chemical oceanography	Dissolved carbon dioxide Dissolved oxygen Nutrient concentrations Ocean pH
Physical oceanography	Sea surface temperature Ocean salinity
Sea level	Sea level height
Sediment processes	Suspended sediments
Storms and waves	Frequency and intensity of storms
Watershed conditions	Freshwater runoff (sediment, volume, timing and temperature)
Wind driven upwelling/downwelling	Not recommended at this time (redundant with wind)

Human Pressures	Recommended indicators
Aquaculture	Number, size, location and type of finfish and shellfish aquaculture farms in BC
Coastal development	Coastal population density Shoreline armoring Square kilometers of forestry, agriculture, urban land cover
Fisheries and fisheries management	Number of pacific salmon released from hatcheries
Habitat modification	Habitat destroyed by fishing Coral and sponges occurrences in trawl observer data Seafloor alteration via dredging, drilling, dumping and/or construction
Ocean noise	Anthropogenic ocean noise at specific locations
Oil spills	Number, location and extent of coastal oil pollution events
Pollution and contamination	Water quality (turbidity, pollution, nutrient enrichment) Area of sediment with contaminant levels above SQ guidelines Shifts in point sources of pollution
Sedimentation and turbidity	Not recommended at this time (redundant with monitoring driver sediment processes)
Shipping and boating	Footprint of commercial and recreational boats

## Human Well-being Indicators

### *Institutional Indicators*

---

#### **In11: Institutional Follow-through: Administration**

1. Proportion of performance measures in the service plans of relevant government departments or agencies that are: not achieved, partially achieved, achieved, exceeded.
2. Changes in marine management service levels by government departments (by survey of managers) where budgets are stable or declining.
3. Changes in costs of marine management tracked over time (from MRAG, 2013): a) changes in government costs (budgets): Federal, First Nations, Provincial, Local; b) changes in management costs incurred by sectors.

---

#### **In12: Institutional Management and Follow-through: Assessment**

1. % of region with current/active community, sub-regional, regional assessments for: socio-economic, ecosystem, cultural, and climate change risks and vulnerabilities. Number of assessments that incorporate cumulative effects. See In9 below.
2. Number of assessment strategies in place in the region that involve collaboration in a) information sharing and b) monitoring efforts among governments, Nations, agencies, research institutes, ENGOs (see also *Administration*)

---

#### **In13: Institutional Management and Follow-through: Programs**

1. Proportion of performance measures of relevant government departments or agencies that are: not achieved, partially achieved, achieved, for the following programs:
  - Climate change
  - Emergency response
  - Sustainable Tourism
  - Sustainable economic development
  - Mitigation of human impacts on ecosystems
  - Restoration and protection of ecosystems
  - Infrastructure development
  - Transmission of cultural knowledge, preservation of cultural identities
  - Monitoring and surveillance
2. Changes in service levels by government departments where budgets are stable or declining for the above programs.
3. Changes in costs of program management for the previously listed programs tracked over time: a) changes in government costs (budgets): Federal, First Nations, Provincial, Local; b) changes in management costs incurred by sectors.

---

#### **In14/ P11: Institutional Authority: Regulations and Compliance**

1. Compliance: Number of warnings, citations or infractions issued for non-compliance per resource use activity or sector (Merritt 2013)

---

#### **In15: Institutional Authority: Plans and Policy**

1. % of plans and legislative policies relevant to the planning area that incorporate and demonstrate commitment to adaptive management
2. % of Plans for the MaPP region or sub-regions that a) use measures or targets that allow for performance assessment and b) are being met, nearly met, or exceeded.

---

#### **In16/S2: Institutional Authority: Formal Agreements: Protocols, Agreements, and Legislation**

1. % of total pieces of formal agreements (legislation, by-laws, agreements, MOEs, protocols, treaties) that have performance measures that assess a) their level of implementation; and b) their effectiveness at achieving their objectives

---

#### **S3/In17: Political Wellbeing: Governance Relationships**

1. Representation: Indicator 1: Representation—Percentage of collaborative planning bodies with complete/near complete representation and participation of relevant governments/ agencies. (MaPP Human Wellbeing and Governance Indicators Workshop 1, 2)
  2. Collaboration Index: 1) Number of government to government agreements (percentage of area covered by government to government agreements (Sheltair group, 2006, 2008); 2) Number of active treaty disputes; 3) Number of inter-measures agreements or other pre-treaty agreements; 4) Number of court cases regarding aboriginal rights and title (MaPP Human Wellbeing and Governance Indicators Workshop 2)
-

---

**S4/In18: Political Wellbeing: Leadership and Participation**

---

1. Engagement: % of management processes using the following engagement mechanisms: a) delegated management bodies; b) shared/joint/co-management; c) regular advisory bodies; d) periodic consultative sessions; e) information sharing events and mechanisms (websites, conferences, etc); f) no engagement. (MaPP Human Wellbeing and Governance Indicators Workshop 2)
  2. Quality of Leadership: Satisfaction survey in relation to quality of leadership in local governance and marine management (empowering others, balancing opportunities and risks, vision, coming to solutions, managing conflict) (MaPP Human Wellbeing and Governance Indicators Workshop 1)
- 

### *Social Indicators*

---

**S6/ P13: Community Wellbeing: Human Connections to Place and Environment**

---

1. Non-market Connections: Number of residents engaged in self-provisioning, and number and type of species used in self-provisioning (MaPP Human Well-being and Governance Indicators Workshop 1 2013)
  2. Market Connections: Number of active (at least one landing a year) fishing boats and number of boat trips per year (Merritt 2013)
- 

**S7/P14: Cultural Continuity**

---

1. Valuing Culture: Self-assessed value (high, medium, low) placed on the following: Speaking a traditional language; practicing traditional skills (harvesting, arts); being part of traditional cultural events and ceremonies; incorporating traditional practices, manners, and protocols at public events or political processes (adapted from Ura et al. 2012).
  2. Language: a) Number of speakers fluent in traditional languages per Nation (Sheltair Group 2006, Rubus EcoScience Alliance 2007, Merritt 2013) and b) Number of local residents participating in traditional language education (including demographic of participants: age, gender, ethnicity).
- 

**S8/ E4/ In19/ P15: Knowledge and Education**

---

1. Educational Attainment: Mean years of schooling, expectant years of schooling per region (HDI) or b) Percentage of population (25-54 years) without high-school and post-secondary certification by school district or health authority (BCStats, 2013)
  2. Local Training to Employment: Number of local training programs and employment placement rates after graduation from the programs (from Sheltair 2006, Loucks and Day, 2011, MaPP Human Well-being and Governance Indicators Workshops 1, 2)
  3. Integrated Knowledge: (see also *Assessment*)
    - % of marine management processes regularly using knowledge from the following sources when making decisions or plans: a) agency; b) other agencies or governments; c) First Nations; d) users; e) non-profits; f) community/local; g) academic.
    - % of marine management processes regularly using knowledge from the following disciplines to formulate decisions or plans: a) biological/ecological; b) social; c) economic; d) cultural.
    - % of marine management processes regularly using knowledge beyond a species or subject being directly managed: a) cumulative effects; b) ecosystem services; c) broader social consequences; d) broader economic consequences.
- 

**S9/P16: Personal Wellbeing: Physical, Mental, and Spiritual Health**

---

1. Physical Health: Life expectancy at birth per region (HDI, 2012)
  2. Emotional/Spiritual Health:
    - Self-assessed level of personal trauma experienced (by survey): Residential School; Major economic hardship; Personal traumatic event
    - Self-assessment of support levels: community support services, information about coping strategies, peer support, family support
      - Self-assessment of level of life satisfaction: How would you rate your present life situation, how do you see your life prospects. Rate on a scale of 1 to 10 (Gallup 2012)
- 

**S10 Population/ Demographics**

---

1. Demographics: Annual percent change in population size per community, including total population, age, gender, and ethnic composition (from Merritt, 2013), Watson 2013)
-

---

**S11/ E5: Work: Employment**

---

1. Participation: Rates of employment and unemployment and/or participation per sub-region or community and by occupation or industry (Clayoquot Biosphere Trust 2010; Fraser Basin Council 2010; BCStats, 2013; Watson 2013).
- 

**S12/ E6: Work: Job Satisfaction**

---

1. Self-assessed job satisfaction ratings in marine-related sectors.
- 

*Economic Indicators*

---

**Work—Labour Market (E7/ S13): Local Labour Capacity**

---

Number and percentage of workers in the plan area who:

1. Are permanent residents (of community or area) - First Nations and non-First Nations
  2. Are temporary workers/residents
  3. Commute from a home community
- 

**Financial Capacity— Distribution of Wealth (E8/S14): Income Disparity**

---

1. Number of income earners in the lower two income brackets (less than \$15,000, and \$15,000 to \$24,999 annually) as a percentage of higher income earners for the plan area (\$35,000+ and \$50,000+ categories)
- 

**Financial Capacity—Distribution of Wealth (E8/S14): Regional Wealth**

---

Wealth as indicated by either:

1. Gross regional income per capita
  2. Family income: Median household income per sub-region
- 

**Financial Capacity: (E9/S15): Local Investment**

---

1. Local Investment, consisting of:
    - Rate of marine related infrastructure development (number of new developments and cost scale).
    - Number of new local businesses, business incorporations
    - Commercial loan levels (dollars per plan area) (Rubus EcoScience Alliance, 2007)
    - Level of third party investment in social capital (ex. grant funding) and proportion of investment from different sources (private financial; institutions; government; foundation)
    - Percentage of resource revenues per sector directed to support: local community based programs or infrastructure, resource stewardship
- 

**Economic Structures and Systems: (E10) Diversity and Interdependence**

---

1. Employment per sector per region and sub-region
- 

**Economic Structures and Systems—Resilience and Sustainability (E11): Age of businesses and local ownership**

---

1. Indicator 1: Ratio of businesses that have existed under and over 7 years
  2. Indicator 2: Percentage of businesses operating in the region that are owned locally
- 

**Economic Access—Resource Access and Allocation: (E12/In20) Local Access**

---

1. Number and ratio of commercial and recreational licenses and tenures held:
    - Locally and non-locally
    - By First Nations and Non-First Nations by sector (including: fisheries, aquaculture, adventure tourism/commercial recreation, mineral exploration, energy production, and other natural resource tenures).
  2. Tenure application process: 1) How many new tenure applications have been made in a time period; b) What type of economic activity; b) how long has it taken to process; c) ratio of acceptance to rejection; d) if rejected, why?; e) if accepted, was there significant opposition and from whom?
- 

**Economic Access—Market Access (E13/In21): Local Access**

---

1. Number and percentage of a) locally produced marine related goods and services, and, b) locally produced value-added marine related goods and services, that are traded:
    - Locally or regionally
    - In Canada
    - Internationally
-

---

**Productivity—Costs and Barriers (E14): Yearly Costs, Net Profit/Loss, % of business profitable vs. non-profitable (per Sector)**

---

1. Average yearly costs (per sector) as measured by:
    - Costs of sales (direct expenses, broken down)
    - Operating expenses (indirect expenses, broken down)
  2. Net Profit/Loss
  3. % of businesses profitable vs. non-profitable
- 

**Productivity—Economic Output (E15): Primary Economic Output**

---

1. Primary economic output per marine sector by volume and value
- 

**Productivity—Growth (E16/In22): Business Licenses**

---

1. Number of business licences, including:
    - The number of business licenses issued each year
    - The number of *new* business licences issued each year
    - The number of new business incorporations and partnerships in the region registered annually
- 

## *Physical Indicators*

---

**Human Living Environment (P1/S1)**

---

- Living Standards: number of dwellings requiring major repair
  - Density: Number, size and density of communities
- 

**Safety and Emergency Response (P2/In1)**

---

- Changes over time of the number, distribution and age of marine emergency response facilities throughout the region
  - Change over time of number of Coastguard and Search and Rescue vessels
  - Change over time of the number of scheduled surveillance trips by the Coastguard
  - Change over time of the number of Coastguard and Search and Rescue stations/groups
  - Number of incidents in which the Coastguard and Search and Rescue was involved
  - Changes in the average length of response time by the Coastguard and Search and Rescue
  - Changes over time of the number, distribution and age of marine navigational aids
  - % change between staffed and automated/decommissioned lighthouses
- 

**Marine Related Infrastructure: Marine Access (P3/In2)**

---

- Changes over time of the number, distribution and age of major ports and marine terminal facilities
  - Changes over time of the types, numbers and sizes of vessels entering and exiting ports and marine terminals
  - Changes over time of volumes and values of goods entering and exiting ports
  - Changes over time of the number, distribution and age of Small Craft Harbours and marinas
  - Changes in wait lists for Small Craft Harbour berths
  - Changes over time of the number, distribution and age of public wharves, including Transport Canada wharves
  - % of marine infrastructure (ports, docks, wharves) with 'green' certification
- 

**Marine Related Infrastructure: Marine Fuel, Maintenance and Service Facilities (P4)**

---

- Changes over time of the number, distribution and age of shipyards, repair and storage facilities
  - Changes over time of the number, distribution and age of waste disposal services (marine related)
  - Changes over time of the number, distribution and age of marine fuel supply facilities
  - % of marine infrastructure (fuel, maintenance, disposal services) with 'green' certification
- 

**Fish Harvesting Infrastructure (P5)**

---

- Number and type of fishing boats in the water with different purposes (commercial, cultural, recreational, commercial/recreational)
  - Number and types of boat ownership in the water (local vs non-local)
  - Number of fishing trips made each year (by different fishing sectors and license types) \*\*\* This indicator guidesheet is included in the *Resource Use: Seafood-Wild and Farmed* section and is numbered Indicator 8
- 

**Processing Infrastructure (P6)**

---

- Number of local facilities that enable businesses to differentiate and/or brand products through harvesting, processing or experiential differences
- 

**Resource Use: Marine Transit (P7/In3)**

---



- Number of designated marine shipping and transport routes
- Usage levels in marine shipping and transport routes

---

#### **Resource Use: Seafood: Wild and Farmed (P8/E1)**

---

- Fishing Effort
- Proportion of Total Allowable Catch that is caught
- Number of days per year that fisheries are open

*Seafood Sustainability Index* including:

- Total current seafood production from plan area
- Regional seafood landings
- Regional seafood processing
- Regional consumption of seafood
- Export of seafood landed in the region
- Fish populations status, by species \*Also refer to Ecological Indicator Guide Sheets: Forage Fish, Crustaceans, Groundfish, Herring, Pacific Salmon, Sea Urchins for data and monitoring efforts related to abundance, size and trends of assessed fish stocks
- % of plan area with economically viable commercial fisheries potential that is closed
- Number of past or potential commercial fisheries that are closed
- Top five reasons for areas or fisheries being closed or inactive
- % of plan area with economically viable aquaculture potential
- % of plan area designated in plans for aquaculture production
- % of designated areas with active aquaculture production
- % of designated areas in de-commissioning or unutilized
- Top five reasons for designated aquaculture areas not being utilized for aquaculture
- Evaluation of pollution levels and safety of relevant species for human consumption\* Refer to Ecological Indicator Guide Sheets: Water Quality, Shifts in Point Sources of Pollution, Sediment Contamination, Marine Spills
- Habitat impact levels from aquaculture
- Levels of aquaculture-derived pharmaceuticals in fresh and salt water ecosystems
- Disease and parasite interactions between wild enhanced and aquaculture
- Fishery methods: seafloor disturbances\* Refer to Ecological Indicator Guide Sheets: Coral and Sponge By catch, Habitat Destruction by fishing
- Discard of catch at sea, including estimated mortality levels

---

#### **Resource Conservation (P9/In4)**

---

- % of plan area designated with official protected area status

---

#### **Resource Use: Designation of Space (In5/P10/E2)**

---

- Changes in time of percentage of plan area designated for specific uses
-



# WHERE TO GO FOR MORE INFORMATION

Marine Planning Partnership:  
[mappocean.org/](http://mappocean.org/)



**MaPP**

