



South Pender Island Local Trust Committee

Regular Meeting Agenda

Date: February 24, 2015
Time: 10:00 am
Location: South Pender Fire Hall
8961 Gowlland Point Road, South Pender Island, BC

	Pages
1. CALL TO ORDER	10:00 AM - 10:15 AM
2. APPROVAL OF AGENDA	
3. TOWN HALL AND QUESTIONS	
4. COMMUNITY INFORMATION MEETING	
none	
5. PUBLIC HEARING	
none	
6. MINUTES	10:15 AM - 10:30 AM
6.1 Adopted Local Trust Committee Minutes Dated November 4, 2014 (for Information)	4 - 8
6.2 Section 26 Resolutions-without-meeting Dated February 2015	9 - 9
6.3 Advisory Planning Commission Minutes (for Receipt)	10 - 14
6.3.1 <u>APC Draft Meeting Minutes Dated December 6, 2014</u> Email Dated December 6, 2014, from APC Member, Ron Henshaw	15 - 17
6.3.2 <u>APC Adopted Meeting Minutes of August 6, 2013</u>	18 - 21
6.3.3 <u>APC Adopted Meeting Minutes of November 2, 2012</u> Written Comments from APC Members, Jane Perch, Paul Petrie and Memo Dated November 2, 2012, from Cameron Thorn	22 - 43
7. BUSINESS ARISING FROM THE MINUTES	10:30 AM - 10:40 AM
7.1 Follow-up Action List Dated February 2015	44 - 44

8. DELEGATIONS	10:40 AM - 10:50 AM	
8.1 Monica Petrie re: Blue Dot Campaign (attached)		45 - 46
9. CORRESPONDENCE		
Correspondence received concerning current applications or projects is posted on the LTC webpage		
none		
10. APPLICATIONS AND REFERRALS		
none		
11. LOCAL TRUST COMMITTEE PROJECTS	10:50 AM - 11:30 AM	
11.1 Work Program & LUB Review		
11.1.1 <u>Staff Report</u>		47 - 55
11.1.2 <u>Email Dated October 31, 2014 From J. Chapman of MAP - Moving Around Pender</u>		56 - 83
12. REPORTS	11:30 AM - 12:00 PM	
12.1 Work Program Reports (attached)		
12.1.1 <u>Top Priorities Report Dated February 2015</u>		84 - 84
12.1.2 <u>Projects List Report Dated February 2015</u>		85 - 85
12.2 Applications Report		
none		
12.3 Trustee and Local Expense Report Dated January 2015 (attached)		86 - 86
12.4 Adopted Policies and Standing Resolutions (attached)		87 - 87
12.5 Local Trust Committee Webpage		
12.6 Chair's Report		
12.7 Trustee Report		
12.8 Trust Fund Board Reports (attached)		
12.8.1 <u>Trust Fund Report to South Pender Local Trust Committee</u>		88 - 90
12.8.2 <u>Trust Fund Board Report re: Eelgrass - Memo, Report & Map</u>		91 - 177
13. NEW BUSINESS	12:00 PM - 12:15 PM	
13.1 Industrial Activities by Freighters Anchored in Plumber Sound - Discussion		

14. UPCOMING MEETINGS

- 14.1 Next Regular Meeting Scheduled for Tuesday, April 28, 2015, at 10:00 am at the South Pender Fire Hall, 8961 Gowlland Point Road, South Pender Island.**

It was Moved and Seconded

That the South Pender Island Local Trust Committee reschedule the April 14, 2014 Regular Meeting to April 28, 2014, at 10:00 AM.

15. TOWN HALL

12:15 PM - 12:30 PM

16. CLOSED MEETING

none

17. ADJOURNMENT

12:30 PM - 12:30 PM



ADOPTED

South Pender Island Local Trust Committee Minutes of Regular Meeting

Date: November 4, 2014
Location: South Pender Fire Hall
8961 Gowlland Point Road
South Pender Island, BC

Members Present: Mike Jones, Local Trustee
Liz Montague, Local Trustee

Regrets: Ken Hancock, Chair

Staff Present: Robert Kojima, Regional Planning Manager
Shannon McConchie, Recorder

1. CALL MEETING TO ORDER

Chair Hancock was absent for the meeting.

By general consent Trustee Montague assumed the role of Acting Chair.

Acting Chair Montague called the meeting to order at 10:10 a.m.

2. APPROVAL OF AGENDA

2.1. Additions/Deletions

The following additions to the agenda were presented for consideration:

- 9.1 MAP Request to designate a cycle/pedestrian route on South Pender Island
- 9.2 Niall Parker Re: Pender Canal Signs.

By general consent the agenda was approved as amended.

2.2. Questions from Public on Agenda Items

None

3. TOWN HALL

A/Chair Montague invited the public to make comment.

Sara Steil asked that the South Pender Local Trust Committee (LTC) circulate an electronic poster for the Pender Islands Trust Protection Society (PITPS) event of March 7, 2015 both on the website and through email lists in February.

Regional Planning Manager (RPM) Kojima noted that this was something staff could attend to.

4. COMMUNITY INFORMATION MEETING

None

5. PUBLIC HEARING

None

6. PREVIOUS MEETINGS

6.1. Adopted Local Trust Committee Minutes

6.1.1. South Pender Island Local Trust Committee Adopted Minutes dated September 16, 2014

Presented for information

6.2. Public Hearing Records and Community Information Meeting Notes Received

None

6.3. Section 26 Resolutions-without-meeting

Presented for information

6.4. Advisory Planning Commission Minutes

None

7. BUSINESS ARISING FROM THE MINUTES

7.1. Follow-up Action Report

Regional Planning Manager Kojima provided information from the Follow up Action Report dated October 2014.

A/Chair Montague noted that the Canal Erosion Project file would be passed on to the new trustees.

RPM Kojima said the project could be kept on the FUAL for one of the new trustees to consider taking on.

8. DELEGATIONS

None

9. CORRESPONDENCE

9.1. MAP Request to Designate a Cycle/Pedestrian Route on South Pender Island

A conversation was held regarding the Moving Around Pender (MAP) Society's recommendation to designate a cycle/pedestrian route on South Pender. The purpose of this recommendation was to facilitate MAPS ability to work with the Ministry of Transportation and Infrastructure (MOTI).

RPM Kojima advised that this could be achieved by making an Official Community Plan amendment to the OCP map schedules and agreed that the correspondence submitted by MAPS to the Local Trust Committee (LTC) could be posted online as a late agenda item.

SP-2014-25

It was MOVED and SECONDED,

That the South Pender Island Local Trust Committee add "Designated Cycle and Pedestrian Routes on South Pender" to the Work Projects List.

CARRIED

9.2. Niall Parker Re: Pender Canal Signs

A/Chair Montague reviewed the correspondence regarding inconsistent signage at the canal. She noted that this correspondence would be included in the file for the next trustees.

10. APPLICATIONS, PERMITS, BYLAWS AND REFERRALS

10.1. SP-DVP-2014.1 (Lansdowne) Staff Report

SP-2014-26

It was MOVED and SECONDED,

That the South Pender Island Local Trust Committee Development Variance Permit application SP-DVP-2014.1 (Lansdowne) be approved.

CARRIED

11. LOCAL TRUST COMMITTEE PROJECTS

11.1. Land Use Bylaw (LUB) Review - Staff Report

Regional Planning Manager Kojima reviewed the report. Trustees Montague and Jones both thanked the Focus Groups for their work. Trustee Jones also commented that the Focus Groups seemed to have many questions and future meetings might benefit from staff attendance.

SP-2014-27

It was MOVED and SECONDED,

That the South Pender Island Local Trust Committee refer Focus Group reports 1, 2, and 3 to the Advisory Planning Commission for comment, that the Advisory Planning Commission be requested to report back to the Local Trust Committee in February 2015, and that staff attend the Advisory Planning Commission meetings as possible.

CARRIED

12. REPORTS

12.1. Work Program Reports

12.1.1. Adopted Policies and Standing Resolutions and Objectives

Presented for information.

12.1.2. South Pender Island Local Trust Committee Work Program

Work Program Report dated October 2014 / Memo (attached)

RPM Kojima reviewed the staff report. A discussion was held between the Trustees and RPM Kojima regarding the deletion and amalgamation of projects. It was agreed that the recommended changes would best serve the incoming LTC, with the additional amendment of renaming project 7 "Community Transition and Resilience" to "Climate Change Adaptation" with specific reference to sea level rise and shoreline erosion.

SP-2014-28

It was MOVED and SECONDED,

That the South Pender Island Local Trust Committee amend its Projects List by deleting projects 1,2,6,8, and 9; consolidating projects 3, 4, and 5; and renaming project 7 to "Climate Change Adaptation" with specific reference to sea level rise and shoreline erosion.

CARRIED

12.2. Applications Report

12.2.1. South Pender Island Local Trust Committee Application Report

Application Report dated October 2014 presented for information.

12.3. Expense/Budget Reports

12.3.1. Trustee and Local Expenses

LTC Expense Report dated September 2014 was provided for information.

12.4. Bylaw Enforcement Reports

None

12.5. South Pender LTC Web Page

The South Pender Island Local Trust Committee Website can be found at:
www.islandstrust.bc.ca/islands/local-trust-areas/south-pender

Trustee Jones requested that Advisory Planning Commission (APC) minutes, in draft, and agendas be posted to the website. RPM Kojima stated that this was possible.

12.6. Chair's Report

Trustee Montague (Acting Chair) shared that she had attended the Net Zero Energy presentation on October 25, 2014. She also thanked the South Pender community and Islands Trust Staff for their support and participation during her term as trustee.

12.7. Trustee Report

Trustee Jones shared that the fundraiser for leukemia research in which he shaved his head raised over \$1000. He also thanked the South Pender Island community and Islands Trust staff for their support and participation during his term.

13. OTHER BUSINESS

13.1. Upcoming Meetings

Annual schedule is being prepared for adoption by the new LTC

14. TOWN HALL MEETING

Jane Perch asked about the length of Advisory Planning Commission terms. Trustee Jones answered that their three year term was set in this LTC's second year, leaving one more year in their term.

Sara Steil thanked Trustees Jones and Montague for their service.

15. ADJOURNMENT

By general consent the meeting was adjourned at 10:57 am.

Ken Hancock, Chair

Certified Correct:

Shannon McConchie, Recorder

RWM From: November 04, 2014 To: February 17, 2015

South Pender Island

Resolution #	Action	Resolution Description	Resolution Date
2014-09	In Favour	THAT the South Pender Island Local Trust Committee Proposed 2015 Annual Meeting Schedule be adopted, thereby holding their Regular Local Trust Committee meetings on the following dates: February 24, April 14, June 16, September 1, and November 17, 2015, all at 10:00 a.m.	Dec 18, 2014
2014-08	In Favour	THAT the South Pender Island Local Trust Committee meeting minutes of November 4, 2014 be adopted.	Dec 02, 2014



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**South Pender Island
Advisory Planning Commission
Minutes**

Date of Meeting: Saturday, December 6, 2014

Location: South Pender Fire Hall
South Pender Island, BC

Members Present: Buffy Paterson, Chair
Ron Henshaw, APC Member
Jane Perch, APC Member
Donna Spalding, APC Member

Regrets: None

Staff Present: Shannon McConchie, Recording Secretary

Media and Others Present: There was one (1) member of the public present.

1. CALL TO ORDER

Advisory Planning Commission (APC) Chair Paterson called the meeting to order at 10:40 a.m.

2. APPROVAL OF THE AGENDA

By general consent the agenda was approved.

3. APPROVAL OF MINUTES FROM NOVEMBER 2, 2012

Chair Paterson initiated a discussion regarding the APC minutes of November 2, 2012 and noted that approval was delayed because the APC attachments were not being included in the minutes.

Referring to the Minutes Guideline, the APC members expressed their shared belief they were best serving their purpose by providing the Trustees and public with an accurate reflection of their discussions and opinions. The APC members discussed the following concerns:

- When an APC member is unable to attend a meeting they customarily submit a written opinion. The APC members agreed that, in their opinion, Trustees and the public should have access to these written opinions as part of the APC minutes.
- When a member of the public shares an opinion in writing, these opinions form part of the APC's discussion and the APC members agreed that, in their opinion, Trustees and the public should have access to these written opinions as part of the APC minutes.

Chair Paterson approved the minutes of November 2, 2012.

It was MOVED and SECONDED,

That the minutes from the November 2, 2012 South Pender Advisory Planning Commission meeting be resubmitted to the Local Trust Committee with attachments and request that the complete record of the November 2, 2012 meeting be included in the next Local Trust Committee agenda package.

CARRIED

It was MOVED and SECONDED,

That the South Pender Advisory Planning Commission requests the Local Trust Committee to have the minutes of the South Pender Advisory Planning Commission meetings posted to the Islands Trust Website.

CARRIED

4. APPROVAL OF MINUTES FROM AUGUST 6, 2013

Chair Paterson approved the minutes of the August 6, 2013 APC meeting.

5. REVIEW AND DISCUSSION OF THE SOUTH PENDER ISLAND LOCAL TRUSTEE REFERRAL

Chair Paterson opened the discussion by stating that the APC had been asked by the LTC to comment on the Land Use By-Law (LUB) Review Focus Groups Reports. She then read a letter submitted by APC member Henshaw and requested that it be attached to the minutes.

The APC members discussed and agreed that the referral should be deferred in order to allow the incoming LTC to review the Focus Group reports and staff reports before deciding whether to make a referral.

As part of the discussion, the APC members noted that the Focus Group comments reflected a need for a more comprehensive review than is allowed by the current project charter. There was consent among the APC members that they would like the LTC to consider expanding the scope of the project charter, as well as review the project timeline and budget, to allow for possible changes to the OCP in addition to the LUB.

It was MOVED and SECONDED,

That the South Pender Advisory Planning Commission recommend expanding the scope of the Land Use By-Law Review Project Charter to allow for Official Community Plan amendments as identified in the focus group comments and also that the Local Trustee Committee review the project timeline and budget.

CARRIED

6. OTHER BUSINESS

None

7. PUBLIC COMMENT

None

8. COMMENT TO LTC

The APC members asked that the minutes reflect their recognition of the significant work already invested in the LUB review project and their belief that significant work is still required. The members agreed that they welcome the opportunity to receive further referrals from the incoming LTC.

9. ADJOURNMENT

It was MOVED and SECONDED,
That the South Pender Advisory Planning Commission meeting be
adjourned at 12:30 p.m.

CARRIED

Buffy Paterson, Chair

CERTIFIED CORRECT:

Recorder



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- ☒ LTC
- ☒ ~~LECLERK~~

Shannon McConchie

Fwd: Dec 6 2014 APC meeting

1 message

Buffy Paterson
To: Shannon McConchie

Wed, Dec 10, 2014 at 1:43 PM

Begin forwarded message:

From: Ron Henshaw
Subject: Fw: Dec 6 2014 APC meeting
Date: December 6, 2014 at 9:34:17 AM PST
To:

Reply-To: Ron Henshaw



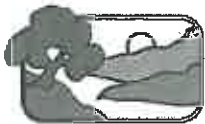
To my fellow APC members
South Pender Trustee Wendy Scholefield
South Pender Trustee Bruce McConchie

I would like this letter to be attached to and form part of the minutes.

I recommend the referral package be deferred.

Considering that the previous trustees advocated this referral, I think it is appropriate that the incoming Trustees have the opportunity to review the work done by the three focus groups during the previous term. Also I think it is in the best interests of the new Trustees to be able to review the content of comments made by staff before they make this referral as well.

Ron Henshaw



Islands Trust

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**South Pender Island
Advisory Planning Commission
Minutes**

Date of Meeting: Saturday, December 6, 2014

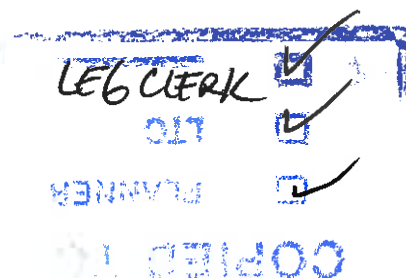
Location: South Pender Fire Hall
South Pender Island, BC

Members Present: Buffy Paterson, Chair
Ron Henshaw, APC Member
Jane Perch, APC Member
Donna Spalding, APC Member

Regrets: None

Staff Present: Shannon McConchie, Recording Secretary

Media and Others Present: There was one (1) member of the public present.



1. CALL TO ORDER

Advisory Planning Commission (APC) Chair Paterson called the meeting to order at 10:40 a.m.

2. APPROVAL OF THE AGENDA

By general consent the agenda was approved.

5. REVIEW AND DISCUSSION OF THE SOUTH PENDER ISLAND LOCAL TRUSTEE REFERRAL

Chair Paterson opened the discussion by stating that the APC had been asked by the LTC to comment on the Land Use By-Law (LUB) Review Focus Groups Reports. She then read a letter submitted by APC member Henshaw dated December 6, 2015. The letter outlined member Henshaw's recommendation to defer the referral package. Chair Paterson requested that the letter be attached to the minutes.

The APC members discussed and agreed that the referral should be deferred in order to allow the incoming LTC to review the Focus Group reports and staff reports before deciding whether to make a referral.

As part of the discussion, the APC members noted that the Focus Group comments reflected a need for a more comprehensive review than is allowed by the current project charter. There was consent among the APC members that they would like the LTC to consider expanding the scope of the project charter, as well as review the project timeline and budget, to allow for possible changes to the OCP in addition to the LUB.

It was MOVED and SECONDED,

That the South Pender Advisory Planning Commission recommend expanding the scope of the Land Use By-Law Review Project Charter to allow for Official Community Plan amendments as identified in the focus group comments and also that the Local Trustee Committee review the project timeline and budget.

CARRIED

6. OTHER BUSINESS

None

7. PUBLIC COMMENT

None

8. COMMENT TO LTC

The APC members asked that the minutes reflect their recognition of the significant work already invested in the LUB review project and their belief that significant work is still required. The members agreed that they welcome the opportunity to receive further referrals from the incoming LTC.



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☒ *LETCLERK*

Shannon McConchie

Fwd: Dec 6 2014 APC meeting

1 message

Buffy Paterson

To: Shannon McConchie

Wed, Dec 10, 2014 at 1:43 PM

Begin forwarded message:

From: Ron Henshaw
Subject: Fw: Dec 6 2014 APC meeting
Date: December 6, 2014 at 9:34:17 AM PST
To:



Reply to: Ron Henshaw

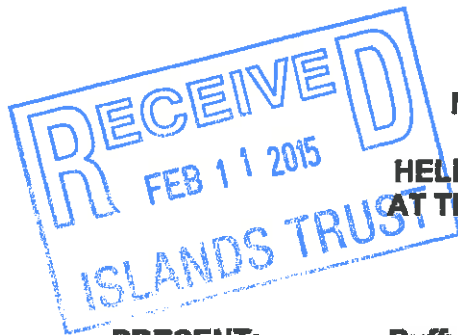
To my fellow APC members
South Pender Trustee Wendy Scholefield
South Pender Trustee Bruce McConchie

I would like this letter to be attached to and form part of the minutes.

I recommend the referral package be deferred.

Considering that the previous trustees advocated this referral, I think it is appropriate that the incoming Trustees have the opportunity to review the work done by the three focus groups during the previous term. Also I think it is in the best interests of the new Trustees to be able to review the content of comments made by staff before they make this referral as well.

Ron Henshaw



ADOPTED

**MINUTES OF THE SOUTH PENDER ISLAND
ADVISORY PLANNING COMMISSION
HELD ON TUESDAY, AUGUST 6, 2013, AT 10:00 AM
AT THE FIRE HALL, 8961 GOWLLAND POINT ROAD,
SOUTH PENDER ISLAND, BC**

PRESENT:	Buffy Paterson	APC Chair (part)
	Jane Perch	Vice-Chair (part)
	Bruce McConchie	APC Member
	Ron Henshaw	APC Member
	Liz Montague	Local Trustee
	Kathy Gilbert	Recording Secretary
REGRETS:	Donna Spalding	APC Member
PUBLIC:	Two (2)	

1. CALL TO ORDER

Kathy Gilbert called the meeting to order at 10:06 am, noting that since this was the first meeting since APC appointments were made, the first order of business was to hold elections for Chair and Vice-Chair.

2. ELECTION OF APC CHAIR AND VICE-CHAIR

Kathy Gilbert opened the floor for nominations.

Buffy Paterson was elected as APC Chair by acclamation.
Jane Perch was elected as Vice-Chair by acclamation.

Chair Paterson assumed the Chair.

3. CONFIRMATION OF REGULAR MONTHLY MEETING

By consensus, it was agreed to hold the monthly meeting of the South Pender Island Advisory Planning Commission at 10:30 am on the third Monday of each month.

4. APPROVAL OF AGENDA

a. Late agenda item

Three (3) submissions had been received from Cameron Thorn regarding Item 6, Review and Discuss South Pender Island Local Trustee Referral.

This item was discussed under Item 7, Public Comment. It was noted that the submissions had also been sent to South Pender Island (SPI) Trustees and staff.

The agenda, as amended, was approved by consensus.

5. APPROVAL OF MINUTES

It was Moved and Seconded that the Minutes of the South Pender Island Advisory Planning Commission Meeting of November 2, 2012 be deferred to the next Advisory Planning Commission meeting.

CARRIED

Chair Paterson will seek clarification as to how the referenced attachments are to be handled and will enquire as to the ramifications of the APC not adopting minutes.

6. REVIEW AND DISCUSS SOUTH PENDER ISLAND LOCAL TRUSTEE REFERRAL

Proposed Bylaw No 111 with amendments (a Bylaw to amend Land Use Bylaw No 98)

Chair Paterson read opening remarks as follows:

" This meeting is in response to a referral from the LTC for the APC to comment on Proposed Bylaw 111 prior to August 10, 2013.

The APC is advisory to the LTC and APC members are not decision makers; however a recent legal opinion obtained by the Islands Trust states that a recommendation maker may be held to the same standards as a decision maker with respect to conflict of interest grounds.

In an abundance of caution, I ask if any of you have conflict of interest grounds or perceived conflict of interest grounds with respect to this referral to say so before we proceed to discuss this referral.

There has been no expression of conflict of interest grounds or perceived conflict of interest grounds and I ask this to be reflected in the minutes of this meeting.

Public comments are part of the meeting but the APC does not conduct public hearings.

The APC recommendations are not binding on the LTC.

It is not necessary for the APC members to reach consensus on recommendations."

APC members noted that, in general, while there might be a conflict of interest, their experiences with using the Land Use Bylaw might better inform recommendations to the LTC.

Chair Paterson asked for general comments on the amending bylaw. APC members agreed that a more general review of the Land Use Bylaw (LUB) was desirable.

Points noted included:

- a need to look at wording beyond that in Proposed Bylaw No 111;

- possible unintended consequences of not looking at Bylaw No 111 in the context of the overall bylaw;
- a need to look at other parts of the bylaw, including principal and accessory uses.

APC members also noted at various points in the meeting, opportunities to use other Trust Area LUBs for common language, while recognizing the unique nature of South Pender Island.

APC members subsequently commented on specific sections of proposed Bylaw No 111.

Measurement of floor area from inside walls of buildings

This received general support for the reasons noted in staff reports, as well as comments by Trustees and the APC (generally not penalizing progressive building construction such as straw bale, which has thicker walls.) APC members noted that South Pender Island might be a model for other Trust Areas in this regard.

Changes proposed to pump/utility houses and solar collectors

APC members expressed concern that existing stand-alone pump/utility houses closer to the property line than was being suggested in the amendment (from no setback to 3.0 m) would be made non-conforming with respect to siting. The new setback could promote storage of "junk" within the setback area. Members noted that despite the change proposed to align with the BC Building Code, it was suggested that the building permit process would address the setback requirement.

APC members suggested that the definition of pump/utility houses requires work, in part because these facilities are not presently constructed as stand-alone buildings.

Members generally supported inclusion of a definition for solar collector. However, APC members generally did not support the proposed change to the setback requirement for pump/utility houses and solar collectors less than 4.6 m in height for the reasons noted above.

Change to the definition of structure to exempt utility lines

This proposed amendment was generally supported.

Proposal to allow for attached dwellings where two are permitted

APC members discussed the impact of attaching dwellings with respect to a lesser building footprint. However, the rationale for the proposed amendment was generally unclear and APC members did not support it.

Proposal to allow for storage buildings to be constructed on a vacant parcel of land

APC members discussed:

- whether this would allow for non-permanent residents to use their property for occasional use over a protracted period of time;

- the possibility of aggregating the floor area for all buildings aside from the principal dwelling on a parcel of land, rather than specifically restricting (eg) cottage size and accessory building size;
- nomenclature (storage building vs outbuilding;)
- whether to exclude the conditions of use, but allow for construction of a storage building.

APC members generally did not support changes as proposed to allow for construction of a storage building.

Increase in allowable height for accessory buildings to 7.3 m

APC members generally supported the increase.

7. PUBLIC COMMENT

Cameron Thorn spoke to his submissions to the APC, LTC and staff, dated 2013 08 01. He specifically questioned whether operators of home occupations should be required to be permanent residents of South Pender Island. He also spoke to the proposal for a storage building as a permitted use.

8. RECOMMENDATION TO SOUTH PENDER ISLAND LOCAL TRUST COMMITTEE

It was Moved and Seconded that the South Pender Island Advisory Planning Commission recommend to the Local Trust Committee that proposed Bylaw No 111 be not proceeded with until a full review of the Land Use Bylaw is undertaken.

CARRIED

APC members and Trustee Montague subsequently further discussed a wholesale review of the Land Use Bylaw. Points raised included:

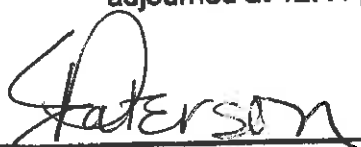
- the possibility of doing the review through a group of advisory committees of the LTC;
- a more informal approach to a review than discussing changes at a Local Trust Committee meeting;
- the need to budget for a whole review and establishment of a working group;
- resources that might be available through the Islands Trust, such as a legal review and a plain language review.

8. OTHER BUSINESS

None.

9. ADJOURNMENT

It was Moved that the South Pender Island Advisory Planning Commission be adjourned at 12:41 pm.



CHAIR

December 6, 2014
Date Adopted

CARRIED



**MINUTES OF THE SOUTH PENDER ISLAND
ADVISORY PLANNING COMMISSION
HELD ON FRIDAY, NOVEMBER 2, 2012, AT 10:15 AM
AT THE FIRE HALL, 8961 GOWLLAND POINT ROAD,
SOUTH PENDER ISLAND, BC**

PRESENT:	Buffy Paterson	Chair
	Cameron Thorn	APC Member
	Ron Henshaw	APC Member
	Liz Montague	Local Trustee
	Kathy Gilbert	Recording Secretary
REGRETS:	Paul Petrie	APC Member
	Jane Perch	APC Member
PUBLIC:	Three (3)	

1. CALL TO ORDER

Advisory Planning Commission (APC) Chair Paterson called the meeting to order at 10:30 am.

She acknowledged the time and effort that has been put forward by each of the APC members in considering this referral. She stated there is a significant amount of material to consider. She advised that initially the members of the APC were concerned about being asked to consider and make recommendations regarding draft amendments to the South Pender Land Use Bylaw (LUB) prior to any community discussion of revisions to the LUB. She brought these concerns to the attention of the Local Trust Committee (LTC) and was informed by the Chair of the LTC that this referral is simply a first step in the process of reviewing the LUB and that there will be public consultation on any amendments to the LUB before they are adopted.

2. APPROVAL OF AGENDA

Chair Paterson requested renumbering of the agenda to itemize the referrals from the South Pender Island Local Trust Committee (SPI LTC) under Item 4 of the agenda (see below.)

The agenda, as amended, was approved by consensus.

3. APPROVAL OF MINUTES

Prior to consideration of the June 1, 2012 minutes, comments received via email regarding the June 1, 2012 minutes from APC member Jane Perch were presented by Chair Paterson. Comments from APC member Jane Perch are appended to and form part of these minutes.

An email submission from APC Member Paul Petrie supported adoption of the June 1, 2012 minutes. (Two (2) email submissions from APC member Paul Petrie are appended to and form part of these minutes.)

It was Moved and Seconded that the minutes of the South Pender Island Advisory Planning Commission Meeting of June 1, 2012 be approved.

CARRIED

4. REVIEW AND DISCUSS SOUTH PENDER ISLAND LOCAL TRUSTEE REFERRAL

Prior to opening discussions on the referrals, Chair Paterson advised those present that the APC is an advisory body to the LTC; that while public input forms part of the meeting, the APC does not conduct formal hearings; that the APC's recommendations are non-binding to the LTC; and that the APC does not have to reach a consensus on their recommendations.

Chair Paterson also noted that email submissions were received from, and would be referred to during the meeting, from APC members Paul Petrie, Jane Perch and Cameron Thorn. All submissions from the APC members are attached to and form part of these minutes.

Note – Draft amending Bylaw 111 and supporting staff reports are also appended to these minutes for information.

4.1 Resolution SP-LTC-50-12

"It was Moved and Seconded that the South Pender Island Local Trust Committee direct staff to refer draft Bylaw No. 111 cited as South Pender Island Land Use Bylaw No. 92, 2003, Amendment No. 1, 2012 to the Advisory Planning Commission."

4.2 Resolution SP-LTC-51-12

"It was Moved and Seconded that the South Pender Island Local Trust Committee direct staff to provide a brief report summarizing accessory height issues and that the report be forwarded to the Advisory Planning Commission and November 13, 2012 Local Trust Committee meeting."

Both resolutions were considered concurrently during discussions at the APC meeting.

Chair Paterson noted that there were eight (8) significant amendments identified in Planner Andrea Pickard's September 21, 2012 staff report.

Measuring total floor area from the inside of walls, instead of the outside of walls

APC members generally agreed that this change lent support to environmentally-friendly construction styles allowing for greater wall thickness (eg – straw bale, cob construction.)

Ocean-based geoexchange systems in marine zones

APC member comments included a query about the need for such a regulation, but primarily focused on concern that geoexchange systems may be disruptive and damaging to the foreshore and sensitive ecosystems, both visually and environmentally. It was noted that geoexchange system technology is rapidly evolving and there may be opportunities for public education on the use of alternatives to ocean-based systems, such as ground-based systems.

Establish a setback for pump / utility houses – 3.0 m from property lines to coincide with Building Bylaw

APC members discussed:

- concern with respect to creating non-conforming siting situations for existing pump / utility structures;
- that such structures can be integrated into features such as fences along property lines, thus reducing overall building footprint and improving aesthetics on a site;
- whether there was a need for regulation within the Land Use Bylaw (LUB,) given the other government body requirements.

In general, APC members present did not support the amendment.

Reduce setback for ground level solar collectors less than 4.6 metres high to 3.0 metres from property lines

APC members discussed different circumstances where a solar collector could be mounted on a flagpole, thus not requiring a setback vs rooftop-mounted solar collectors, vs a free standing solar collector.

It was suggested that solar collectors may require a special section in the LUB.

Height restrictions - accessory buildings

APC members and members of the public noted the varying height restrictions for accessory buildings contained in the LUB.

It was noted that there is a need for flexibility, given the terrain / topography on South Pender.

Comments also included:

- support for an increase in accessory building height in order to accommodate living facilities above an accessory building, which provides for affordable housing and reducing the building footprint;
- a desire for a “made-on-South-Pender” regulation;
- the need to respect the impact on neighbouring property owners;

- that there have been several approved requests for an increase in height, suggesting a need to increase maximum height in the LUB.

Discussion also took place on the LUB review process and the need to engage the public as to terminology, principles and process. A suggestion was made to conduct focus group sessions on various issues in the LUB. Comment was made that this was not an endorsement of the LUB review, and there needs to be an overall review not influenced by the Islands Trust.

Allow construction of a storage building prior to a dwelling

APC members questioned the change in nomenclature from the term "out-building," as identified in the request to review this provision per the request from Trustees, to "storage building." Also of concern was the small size proposed for storage buildings, if allowed to be constructed prior to a dwelling on a property, noting that it might not be possible to store all required building materials, tools and perhaps a boat in the size (25 sq metres; 269 sq feet) as proposed in the bylaw amendment. APC members also noted possible building quality issues, given the small size proposed and potential tendency to use inferior building materials on such a small structure; and the resultant difficulty of integrating a small, poor quality building into future buildings.

Allow for attached dwellings where more than one is allowed

APC members present requested further information on this item.

Implement a maximum dwelling size – 375 sq metres (4037 sq feet)

APC members and the public discussed the merits of maintaining a smaller building footprint, keeping resource use lower with smaller buildings, the impact on neighbouring property owners and the possibility of the flexibility to consult with neighbours. However, it was also noted that the likelihood of having a very large home constructed was small. Some discussion about increasing the size limit or not including a size limit followed, with all APC members present not concurring on the merits of a size limit.

APC members did not specifically discuss the item in Planner Pickard's September 21, 2012 memo related to exempting utility lines from setbacks.

5. PUBLIC COMMENT

In addition to comments on the specific agenda items integrated into these minutes, public comments included requests and recommendations for the following:

- issues surrounding docks;
- further flexibility for accessory building size and height;
- a need to look at local conditions in the LUB; that the present provisions are too broad;
- further comment on the merits and downsides of ocean-based geotreatment systems and the need for future investigation of the technical issues and impacts of these systems;

- the need to engage the South Pender community in the LUB review process.

6. RECOMMENDATIONS TO THE LOCAL TRUST COMMITTEE

Chair Paterson noted that members Paul Petrie and Jane Perch were not able to be present, that there were many proposed changes to the LUB, and the APC was not able to reach consensus on all items. APC members present requested community consultation on the LUB amendments.

It was Moved and Seconded that the Advisory Planning Commission recommend to the South Pender Island Local Trust Committee that the Local Trust Committee review the comments, including the written submissions from the Advisory Planning Commission members and comments made by the public on November 2, 2012; but also recommends that the community be engaged in a discussion on the principles and objectives that should be contained in a South Pender Island Land Use Bylaw, rather than the Advisory Planning Commission coming forward with recommendations on the proposed amendments to the Land Use Bylaw.

CARRIED

7. OTHER BUSINESS

None.

8. ADJOURNMENT

It was Moved that the South Pender Island Advisory Planning Commission be adjourned at 1:20 pm.

CARRIED


CHAIR

December 6, 2014
Date Adopted

Hi Buffy,

I regret that I cannot give the referral the full attention that it **needs** as I have limited time and I do not have the resources that I need while I am away and find it difficult working with several documents on line. I also will not have the benefit of listening to input from my fellow APC members which may influence my opinions with the exception of Paul's comments which I appreciate. However, I do have a few initial comments to share with my fellow APC members at your meeting on November 2nd as follows and ask that these comments be submitted at your meeting.

Before doing so, I would also like to comment on the minutes of our last meeting and ask that that my comments be considered in relation to adoption of the meeting minutes. I have concerns regarding comments made by Zorah Star, our substitute recording secretary that form part of the minutes that are to be adopted at the upcoming meeting. In particular, I do not feel that it is the role of the recording secretary to provide instruction to the APC as to how it conducts its business, nor is it the role of staff. Our instructions come from our two South Pender Trustees. South Pender has always been quite open at meetings and allowed members of the public to comment on issues before the APC and to accept written submissions as well. I find this practice particularly helpful as it gives me (as an APC member) an opportunity to consider ideas and other points of view that I may not have thought of. This also holds true for listening to the comments of my fellow APC members. The more information I have to consider, the better recommendation I can make to our trustees. In the end, all information received, whether verbally at our meeting or by letter, becomes part of the record that is forwarded to our trustees. I would like to ask for clarification on this matter and perhaps have a discussion with our trustees on this matter.

Now to the referral we have been asked to comment on.

I started to go thru the various changes at face value but found myself questioning why some of the changes are being proposed and what is the purpose or need for the change.

Ocean based geothermal systems. I support this technology but I am not really sure why this regulation is being proposed and what it will accomplish and how it will be enforced. I wonder how a property owner would know to look in a land use bylaw for rules regarding heating a home. I would like to know if any other local governments (other than the trust area) have bylaws relating to this. I know that there are existing ocean based installations on South Pender. There was no issue previously in terms of our bylaws not permitting them so I wonder if this even has to be addressed.

Floor area calculation. This is forward thinking and I support it. I am glad to see that the thinking was broadened to include all buildings as that is the only way this change makes sense.

Storage Buildings. I have no idea as to the reasoning behind this change. What would be more practical is to allow construction of pump house/utility buildings and garages prior to a single family dwelling. I am confused as to whether our bylaw allows that. Rather than allowing a storage building as a

“principal use”, I think that that a more logical approach would be to change the definition of “building” to allow these uses prior to construction of a dwelling. Storage buildings are not normally considered a principal use and this only muddies the waters. I also wonder how temporary storage buildings (such as storage containers) would be considered?

I think that what is being proposed may also have an unintended consequence in relation to home occupations. I would expect that this storage building could be used in relation to a home occupation once a dwelling was constructed but proposed Section 3.5(e) restricts use of storage buildings for commercial storage.

Allow attached dwellings. I do not understand why this is being proposed. I would need more information before I can comment.

Changing the setback for pump/utility houses. I have great concerns with this proposed change as it could make many properties non-conforming. Other utilities that need to be considered are propane tanks as a source of heat for some homes as well as for generators. While staff have mentioned oil heat and stated that these would normally be near the home, this may not be the case for propane tanks which are more prevalent in our area. I think that there may be some requirements related to safety as to how close a large propane tank can be located to a building. Usually these tanks are set on a pad which would be considered a structure so there are a number of issues that need to be further considered here. Solar collectors may also fall into this category.

Limit the size of single family dwellings. How was the magic figure of 375 sq. metres arrived at and what is the reasoning? Considering that in our rural residential zones (which are our smallest lots) the minimum lot size is .4 ha. on the waterfront and .8 ha inland and much larger for forestry and agricultural lots, I do not see the need for such a restriction. To put it in perspective, the size being proposed would cover less than 1/10th of a .4 ha lot assuming that the construction is a one story dwelling and less if the dwelling is multiple stories. Considering that the majority of our lots have been developed, I think what is being proposed is reactionary and is perhaps being driven by one large dwelling that was recently constructed on North Pender on a large acreage. In any event, the issue should be foot print rather than dwelling size. This issue came up a number of years ago and was put to rest at that time and I think the same should be done now.

Height Restrictions for Accessory Buildings. I can see advantages to increasing the current height restrictions. For example, if a property owner were allowed to build on top of a garage, it may eliminate the need for an accessory building elsewhere on the property and hence reduce the developed footprint of a property. Accessory buildings might also be used as potential locations for solar panels so increased height may be useful for this purpose. I support increasing the height restrictions.

I started to look at the specific wording in the bylaw and in addition to the above comments, I think that there may need to be some clarification in proposed wording.

Section 1.1 (Definitions). I think it would be clearer if this read "storage building means a non-residential building for the storage of goods, materials and personal effects of the owner of the lot." I think that a better wording for Item 9 (Subsection 3.4(4)) would be "the height regulations for buildings and structures specified in this Bylaw do not apply to telecommunication antennas, This wording would cover radio and television and would also cover other types of communication such as satellite dishes which are not currently specified in this section.

Unfortunately I am not able to provide further input at this time but hope that these initial comments will be considered.

Jane Perch

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MEMORANDUM

To: South Pender Advisory Planning Commission

From: Cameron Thorn

Date: November 2, 2012

Re: South Pender Land Use Bylaw Review

General Comments & Key Dates:

A Land Use Bylaw is a very important document as it is a blueprint that shapes the built form of the community. Indeed more so than any other bylaw, the land use bylaw (LUB) impacts property owners and residents in a very tangible way. It is therefore critical to get it right, to be thoughtful and to engage the community. The South Pender land use bylaw must support the objective of preserving and protecting the island's unique amenities and environment but it must also respect private property rights and refrain from imposing excessively controlling or restrictive regulations that result in a uniform and banal landscape. As we now review and propose amendments to the land use bylaw we have a duty to think carefully and creatively to ensure the ensuring regulations protect the natural environment while encouraging innovation, good design and aesthetically pleasing buildings.

- June 4, 2011 community information meeting: Concern expressed by Trustees “ regarding timing of the OCP and LUB updates... noting the potential for possible confusion should there be a time lag between the changes to the OCP vs. the LUB.”
- June 5, 2011 Dennis Perch Letter to LTC: noted “concerns about a virtually complete OCP brought to the community before there is any public consultation”.
- October 4, 2011: Trustees amend Top Priorities List and add: Land Use Bylaw Review and Update
- April 10, 2012 LTC Minutes: Former Trustee Scholefield requests more time for a review of the Land Use Bylaw. Planner Pickard stated she was looking for direction on community consultation and a possible community information meeting regarding construction and use of accessory buildings. In response to Wendy Scholefield's comments regarding the timeline and

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process for the Land Use Bylaw update, it was noted that this process is less extensive and requires less public consultation than the OCP review required.

There are a number of themes to note here as we discuss the proposed amendments to the land use bylaw. One, the time lag between the OCP and a review of the LUB is indeed creating confusion, as there is at least one proposed amendment before us that is purportedly an OCP directive when in fact it is not. Two, in October 2011 our former Trustees made a review of the LUB a top priority and now, more than a year later the public is yet to be meaningfully engaged in a discussion on the bylaw. Three, instead of engaging the public on the *content* of the land use bylaw, we are asked to review bylaw amendments where the i's have been dotted and the t's crossed. Perhaps this approach to bylaw development is based on the perspective expressed at the April 10, 2012 LTC meeting that the LUB process "is less extensive and requires less public consultation than the OCP review." I could not disagree more.

Comments on proposed amendments:

1. Section 1.1 (Definitions) change to method of measuring floor area from outer surface of exterior walls to interior surface of interior walls. OK. Important to ensure a consistent method of measuring area of all buildings other than just straw bale, etc.
2. Section 1.1 (Definitions) change pump/utility house from "an accessory building" to "a building". OK
3. Section 1.1 (Definitions) change /clarification to exempt utility lines from the definition of a "structure". OK
4. Section 1.1 (Definitions) insert "marine geothermal loop" as a permitted use in all marine zones, except the National Park Marine zone. Looking at the solely from the perspective of "the environment" I support this as a permitted use. However, how do we ensure such systems are installed in a manner that does not aesthetically impact the beaches and shoreline? Will adjacent owners or members of the public walking the beach see permanent evidence of a marine geothermal loop?
5. Section 1.1 (Definitions) a proposal to insert "storage building" as a new definition of building with limited and restrictive uses. I strongly disagree with this new definition and the associated limited uses and maximum square footage. I will speak more fully on this topic and its deviation from OCP policy later in the meeting.
6. Part 3 (General Regulations) a new regulation that would allow attached dwellings on lots where two or more dwellings are permitted. Question: is there language in the existing LUB that prohibits the attaching of two buildings? I did not find any restrictions. I assume the intent behind this proposal is to allow walkways covered with a roof structure between two

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buildings. Would the covered walkway be calculated in site coverage, but not square footage? Is there a limit on the length of the covered walkway between two dwellings?

7. Section 3.3 (Siting and Setback Regulations) the September 10, 2012 staff report on the LUB notes this amendment “reduces setback requirement for pump houses and solar collectors to 3 metres.” The way I read Part 5 of the current LUB there is no minimum setback for a fence or a pump/utility house. This amendment actually increases the minimum setback for a pump/utility house to 3.0 metres. That said I appreciate staff’s comments about Building Code separation requirements and the effort of this amendment to respond to those code requirements. A 3.0 metre sideyard setback is supportable for the construction of new pump/utility houses. However I believe we could continue with no minimum setback requirements at the front and rear lot lines without running into conflict with the building code spatial separation requirements (between buildings). Often times wells and underground cisterns have been located just inside the front or rear lot lines as this is where the drilling equipment or crane could access. I would therefore recommend there be no minimum front and rear yard setbacks for pump/utility houses. I also disagree with requiring a Ministry of Transportation permit process if the building or structure is within 4.5 metres of a dedicated road. There is no logical basis for such a requirement on quiet, rural South Pender where there are no sidewalks, curbs or streetlight infrastructure.
8. Subsection 3.4(2) (Height Regulations) proposes to treat “storage buildings” the same as accessory structures with respect to height and to limit height to 4.6 metres or 15 feet. Given we are undertaking a broad review of the land use bylaw I am surprised there was no proposal to review the permitted height of accessory buildings. I reviewed the community survey report – and while there were only 28 respondents in total – I note that more than 1/3 of the respondents noted that the height limit on accessory buildings was too restrictive.

There are a good number of reasons for increasing the height of accessory buildings and I strongly recommend that as part of the community consultation /open house process that we engage architects, designers and builders in a discussion on height. I note the written comments of Steve Wright contained in the September 18, 2012 LTC Agenda package. He notes, “the height of 4.5 metres (15 feet) has long been difficult to comply with under most cases. There are a number of DVP’s issued as a result and it does not make for good planning in my opinion. It would be preferable to have an allowable height that is practical for most uses and fits in with the surroundings.”

I find it strange that a “cottage” with a maximum of 603 square feet may be up to 9.2 metres (30 feet) in height and yet an accessory building – which may range in size from 750 square feet up to 4,000 square feet, may only have a roof height of 15 feet! The consequence of this height regulation is that buildings, especially at the larger end of the scale, end up resembling industrial chicken barns or mushroom barns. It has been suggested that if the permitted

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height is increased – enabling two-storey accessory buildings – that people may start living in their accessory buildings. This is a silly argument. I know lots of folks who live in a two-storey building and I know lots of folks who live in a rancher! The key point is that the occupancy rules on accessory buildings need to be consistent regardless if the building is 1 level at 1,000 square feet or two levels at 500 square feet.

Allowing more height for accessory buildings would enable the same square footage to be achieved on a much smaller footprint. This is an important consideration when one is trying to deal with the dramatic topography of South Pender or minimize the number of trees that need to be removed to construct a structure. I know from discussions with a number of architects that a higher permissible height would provide for more varied design options including steeper roof pitches; by contrast, the current height restrictions result in flat or shallow roof pitches and squat, stocky looking buildings. The referral to the APC on the draft land use bylaw contained a memo regarding accessory buildings and height regulations. Of interest was the comparison between South Pender and other gulf island regarding accessory building height. All other islands with the exception of North Pender permitted higher roof heights than South Pender. Among the noted rationales for regulating height is loss of privacy between neighbouring properties and to ensure tall buildings do not detract from the rural character of the island.

I agree on the need for a defined height limit on accessory buildings but I know we can allow buildings taller than 15 feet without negatively impacting neighbours or detracting from the rural character of the island. As described in our OCP (section 1.2.3) we are “...one of the least populated and least developed of the... major islands.” We have a population density of 65.5 residents per square mile. Saltspring Island has a population density of 149 residents per square mile – more than double the population density of South Pender – and still allows for accessory building heights of 19.5 feet on small lots and 23 feet on larger lots. The City of Vancouver has a population density of 3,100 residents per square mile and has successfully implemented laneway housing – effectively a cottage – allowing for a second dwelling on 33-foot wide lots. The maximum roof height is 20 feet and the design guidelines for laneway housing ensure privacy is maintained for neighbouring properties. Given that even the smallest parcels on South Pender are 100 + feet wide I am certain we can allow for taller accessory buildings without impacting our neighbours. One option might be to allow accessory buildings up to 20 feet in height with an increase in the sideyard setback from the current 10 feet to 20 feet.

9. Subsection 3.4(4) (Height Regulations) an amendment to clarify that the height regulations for buildings and structures elsewhere in this bylaw do not apply to antennas, chimneys, flag poles, lighting poles, fire and hose towers, utility poles, roof top mounted solar collectors, farm silos and grain bins and water storage tanks. OK. However, there is a practical conflict

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between this amendment and its reference to “roof top mounted solar collectors” having no defined height and amendment 7 which states a solar collector less than 4.6 metres in height may be sited as close as 3.0 metres to a lot line. Under Part 5 of the bylaw a building or structure may be 3.1 metres from an interior lot line; if this building was a house it could be 30 feet high. So, under amendment 7 a solar collector may be as close as 3.0 metre to lot line if it is less than 4.6 metres, while at the same time pursuant to amendment 9, a roof-top solar collector could be well above 9.2 metres high so long as the building to which it is attached is 3.1 metres off an interior lot line.

10. Subsection 3.5(4) (Accessory Uses, Buildings and Structures) proposes to insert “including storage buildings” such that it reads: “Subject to the density and siting provisions in Part 5, the total floor area of all accessory buildings, including storage buildings, on a lot shall not exceed the following.” Aside from the fact that I disagree with a new term, “storage building” this proposed amendment is confusing. The current wording of section 3.5(4) and the associated table is very clear; based on the size of one’s property an accessory building of varying sizes may be constructed, from 750 square feet on small lots and up to 4,000 square feet on lots over 10 acres. Inserting “storage building” into the sentence suggests that based on lot size a “storage building” could range in size from 750 square feet up to 4,000 square feet. However, that is not the case, as the subsequent proposed amendment explicitly limits the size of all storage buildings to 269 square feet regardless of the size of the lot on which it is located.
11. Subsection 3.5 (Accessory Uses, Buildings and Structures) is amended by inserting a new subsection (6) that reads: “Where storage buildings are a permitted use in Part 5 of this Bylaw, they may be constructed prior to a single-family dwelling subject to:
 - a. The use is limited to the storage of goods and materials for use on the lot and personal effects of the owner of the lot;
 - b. Only one storage building is permitted on any lot;
 - c. The floor area is not to exceed 25 square metres (269 square feet);
 - d. The storage building is not to be used for human habitation; and
 - e. For certainty, the use of storage buildings as a commercial storage facility is prohibited.

I do not support this proposed amendment for two primary reasons. One, I believe it is an ill-conceived regulation that will provide no benefit to property owners, that it will encourage low quality, temporary type structures and that it will add to the overall costs of construction on a property. Two, although this regulation has been presented as “to implement OCP policy direction to consider non-residential buildings in advance of a

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dwelling”¹ this proposal bears no resemblance to the OCP policy approved by the community which states: “The Local Trust Committee may consider implementing regulations that would permit outbuildings as a permitted principal use prior to construction of a residential dwelling on Rural Residential designated lands.”²

How, over the course of the last 1-½ years did the discussion on this topic evolve from construction of “outbuildings” with accessory uses to “storage buildings” with an explicit and narrow definition of use and very limited size? Why, after clear direction from our previous trustees on using the term “outbuildings” and characterizing the uses of an outbuilding as akin to an accessory building, was the term, “storage building” instead inserted into the proposed regulations? The last LTC meeting for Trustees Scholefield and Greer was October 4, 2011 so I find it greatly concerning that at the very first LTC meeting of 2012, with two newly acclaimed trustees just getting their feet on the ground, the discussion is somehow directed such that the established term “outbuilding” was overridden with a new term “storage building” for inclusion in the land use bylaw review and, that it was presented as an OCP directive.

Below are key dates in the discussion of outbuildings and storage buildings:

- January 11, 2011: LTC Meeting Minutes: LTC directs staff to conduct a technical review of the current OCP and provide the Trustees with a draft incorporating corrections. It was also decided the LTC would decide on a list of particular subjects for potential amendments to the OCP.
- February 8, 2011: LTC Meeting: Staff provide Trustees with memo dated January 28, 2011 and a list of possible topics or sections for consideration in the OCP. One of the new topics is Permitted Uses of Land and “Consider policy to permit limited ‘utility or storage’ buildings as a permitted use prior to residential use”. Subsequent to a discussion on the matter it is agreed the item should be included in the OCP review and staff agree to bring an updated list to the March 2011 LTC meeting
- March 15, 2011 LTC Meeting: Staff present Trustees with a first draft of a technical review. Based on Trustee directives at the previous meeting, the text to “...permit limited ‘utility or storage’ buildings as a permitted use prior to residential use” is changed to, “The Local Trust Committee may consider implementing regulations that would permit outbuildings as a permitted principal use prior to construction of a residential

¹ March 16, 2012 Staff Report, page 3

² S. Pender OCP, October 28, 2011, 3.1.2(a)(iii)

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dwelling on Rural Residential designated lands.” This is in fact the same exact language on outbuildings as found in the adopted OCP (section 3.1.2(a)(iii)). The minutes of the March 15, 2011 LTC meeting, note among the proposed and approved amendments, “construction of accessory buildings is no longer prohibited prior to construction of a principal building”.

- June 4, 2011 LTC Community Information Meeting: OCP Review: Staff outline future regulations in the Land Use Bylaw, including, “Permitting construction of accessory buildings prior to construction of a principal building”.
- June 2011: Public Newsletter regarding proposed changes to the OCP and notification of a Public Hearing date. Among the OCP amendments that would require future implementing regulations is: “To allow an outbuilding as a permitted use on residential lands prior to construction of a dwelling. This would allow construction of a building usually permitted as an accessory to a dwelling (e.g. storage shed, pump houses, garage) on a property without requiring the dwelling to be constructed or a building permit for the dwelling to be issued.”
- October 6, 2011: C. Thorn correspondence to Trustee and Staff urging that regulations be prepared as soon as possible to give legal effect to section 3.1.2 a) iii regarding outbuildings as a permitted principal use prior to construction of a residential dwelling. Due to the upcoming Municipal and Island Trust elections, my letter could not be considered by the Trustees that had shepherded the OCP through policy development and adoption.
- February 14, 2012: LTC Meeting Minutes: The new Chair Ken Hancock noted the issue has been raised recently on several island and then, staff and trustees discussed (i.) the rare occasion of a storage building on a separate parcel; (ii.) storage building size; (iii.) use of storage building for residential purposes; (iv.) potential conversion of storage buildings to commercial use and, (v.) potential for degradation of the residential nature of neighbourhoods.
- April 10, 2012: LTC Meeting: Staff provide an overview of recommended LUB amendments. As noted in the report, significant amendments include: “permit and regulate storage buildings as a principal use on zones where a residential use is also permitted.” A new definition is created, ‘storage buildings’ means a non-residential building for the storage of goods and materials for use on the lot which it is located and personal effects of the owner of the lot.” The report notes this is to “implement OCP policy direction to consider non-residential buildings in advance of a dwelling”.

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Clearly, proceeding with “storage buildings” as a proposed amendment to the land use bylaw is not in keeping with an OCP policy direction. In keeping with the public discussion in 2011, the land use bylaw needs to be amended to use the term “outbuildings”, not “storage buildings”. It also makes sense to define the permitted uses of an outbuilding to be consistent with the broadly defined uses of an accessory building. An accessory building use permits all of the activities that the OCP states³ are compatible both in type and scale with rural residential living including home occupations, horticulture, small-scale greenhouse and nursery uses, the keeping of poultry and the sale of produce. If these uses are in fact compatible with residential living, then an outbuilding should be permitted to operate in a manner consistent with an accessory building.

Size of Outbuilding (prior to construction of single-family dwelling):

Clause 11(c) of the storage building amendment would restrict the floor area for a storage building to not exceed 25 square metres or 269 square feet. Notwithstanding that I disagree with the term “storage buildings”, consider the practical considerations of a structure of 269 square feet as the maximum size building to store all tools and equipment associated with the property. This size structure is simply too small to contain the a-sundry of tools, equipment and supplies associated with building on a rural property.

Island Trust staff have indicated that in the absence of the restrictive definition of “storage buildings” large buildings could start emerging on rural residential properties and that without the presence of a single-family dwelling on the same property, our rural residential neighbours may become dominated by non-residential buildings thereby changing the feel of the neighbourhood.

With respect, if you stop to consider this scenario it is highly unrealistic. Constructing a building of 1,000 square feet, would conservatively cost \$100,000. What is the incentive for property owners to spend such a large sum of money particularly if they have not yet built their single-family dwelling due to a lack of funds? Its not like South Pender has a thriving manufacturing industry that might otherwise demand such spaces. The economic rents achievable on South Pender for this type of building would not justify the cost of construction. Clearly then, there is not a financial incentive for landowners to build this type of building. Could there be an incentive for landowners to build these buildings as a means of low-cost housing? Possibly, but that incentive will disappear if some basic principles are adhered to.

The first principle is that outbuildings – just like accessory buildings - cannot be habitable. The second principle is that any buildings over 100 square feet must require a building permit and be subjected to a full and complete inspection process to ensure quality and safety of the building.

³ S. Pender OCP, October 28, 2011, 3.1.2(a)(ii)

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Constructing an outbuilding/accessory building cannot be seen as a 'shortcut' method to achieving a dwelling space.

At the same time continue to allow the construction of buildings 100 feet or less without requiring a building permit. This provides an avenue for landowners to still achieve basic shelter without incurring approvals, paperwork and the higher costs associated with larger buildings.

Quality and Aesthetics of Buildings:

I know that one goal we all share is that our regulations promote the construction of durable and quality structures that are aesthetically pleasing. I believe that staff had a concern about the aesthetics of outbuildings on un-occupied properties and felt that a small size limit would reduce the size and scale of unattractive buildings. Although not intended by staff, I believe the proposed building size limits would actually result in more unattractive buildings.

Consider the example of a property owner with a lot size between 1 to 5 acres and a permitted accessory building size of 1000 square feet. If the property owner is going to expend funds to build an outbuilding but it can only be 269 square feet, the owner would be inclined to pursue one of three scenarios.

Scenario one, spend the minimum amount of money necessary to build a structure to keep tools, equipment and supplies dry and then, tear the building down once the single-family dwelling was complete in order to construct a larger accessory building. This scenario most likely results in the construction of cheap, unattractive storage buildings.

Scenario two, build an outbuilding of 269 square feet – that will be permanent and not torn down – and subsequent to the construction of a single-family dwelling, build a second outbuilding on the property up to 831 square feet. This scenario suggests the initial structure will be of a higher quality than the building in scenario one but it also results in the establishment of multiple building sites on a property, and the disturbance of a greater area of a property, especially if services are going to be run to both of the outbuildings. The sloping topography on much of South Pender Island also limits the number of probable building site locations, which under this scenario there would be three: 1 single-family dwelling and 2 outbuildings.

Under Scenario three, the property owner would construct a building of 269 square feet but design it so in the future it could be expanded to the permitted accessory building size of 1000 square feet. The final design of the accessory building might include the allowable roof ridge height of 15 feet and a footprint of 25 feet x 40 feet, or smaller if the accessory building had a second floor. Accordingly the property owner would initially build a structure 25 feet x 10'-9" = 268.75 square feet with a roof ridge height of 15 feet. Aside from the unusual dimensions of such a building, phasing the construction from 269 square feet to 1000 square feet would

CAMERON A. THORN

involve additional foundation work, concrete dowelling to marry the two foundations together, the construction and removal of at least one exterior wall and a challenge on the roof design and construction sequence. This scenario creates a multitude of challenges and additional costs on the property owner, although the quality of the building would likely be superior to a building constructed under scenario one.

Significantly, none of the scenarios eliminates the possibility that a property owner is going to build an unattractive building. The best chance of achieving an attractive structure built of quality materials is to allow a property owner - at the outset - to design and build an outbuilding to the accessory building size as permitted under 3.5 (4)(a). Yes, there is the possibility that a property owner might build an unattractive building of 1000 square feet rather than an unattractive building of 269 square feet. Such a property owner is also likely to build an unattractive single-family dwelling. *Consequently making the construction of a single family dwelling as the trigger point when a structure is permitted to expand from 269 to 1000 square feet in no way increases the probability that an outbuilding is going to be aesthetically pleasing.* My view is that unless South Pender Island was to introduce a development permit system to regulate the form and character of buildings - which I am not proposing - then there is nothing to prevent property owners from constructing unattractive outbuildings and unattractive single-family dwellings.

I believe that the proposed “storage building” amendment and its use and size restrictions will unnecessarily add more complexity and regulations to the Land Use Bylaw, increase costs to property owners, increase administrative and enforcement costs to the Island Trust and the CRD building department and yet do nothing to promote aesthetically pleasing buildings. On the contrary the proposed amendments may actually result in a proliferation of unattractive structures.

12. Subsection 4.2(4) (Zone Boundaries). No comment

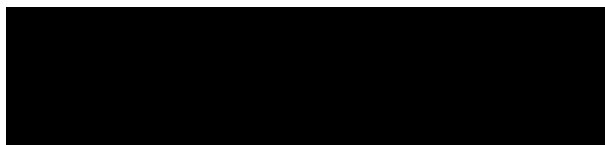
13. Subsection 5.1(1)(Rural Residential One (RR1) Permitted Uses)...amend to insert a new Article (f) “Storage Buildings subject to Subsection 3.5(6). I disagree.

14. No comment at this time

15. No comment at this time

16. Section 5.2 (Rural Residential One (RR1)) is amended by inserting under Siting and Size a new subsection (7) “The maximum floor area of a single-family dwelling is limited to 375 square metres (4,036 square feet)”. What was the genesis for this amendment? Although I do not want our LUB to promote large single-family dwellings, at face value this amendment is the equivalent of an arbitrary ‘down-zoning’ of all private property on South Pender. Perhaps, regardless of lot size or site coverage calculations, there should be a maximum size for single-family dwellings, but I disagree with making that maximum 4,036 square feet.

CAMERON A. THORN



Buffy and APC colleagues,

I have had an opportunity to review the proposed changes in draft bylaw 111 and would offer the following preliminary comments. I would welcome reviewing comments from other APC members if and when they are available. I will be in Winnipeg on Nov. 2nd and I won't know if I can join the meeting by conference call until after Oct. 30th.

My comments Draft Bylaw 111 key amendments are:

- Floor area would be measured from the interior side of the outside walls rather than the exterior side: the objective is to remove a barrier for owners considering cob, straw bale or low energy building using double walled, R-40 design. **I agree**
- Allowing ocean-based geoexchange (geothermal) systems in the marine zones, which would be limited to systems using only freshwater as the circulating heat transfer fluid. ***I understand the purpose is to allow geothermal energy systems outright. The definition specifies they only use freshwater as the circulating heat transfer fluid so proposed marine loops that do not use freshwater would require a site-specific rezoning application. I am concerned about disturbance of sensitive areas such as eelgrass beds or other habitat may be a concern. I am also concerned that work required to bury lines immediately upland or in the intertidal area could also result in alteration of existing shorelines or use of materials such as concrete. On-going maintenance and concerns over leaks is also an issue: the systems are complex and require regular inspection and maintenance by qualified professionals. I appreciate that the purpose is to promote efforts to reduce GHG emissions and increase resiliency which can now be achieved by land based heat pumps (we love ours!). The two primary concerns are to ensure that the systems are installed professionally and that any impacts on sensitive shoreline or foreshore ecosystems are addressed. To date CRD Building Inspection has not included these systems in the scope of the Building Bylaw. Changes to staffing and to the legislation for Fisheries and Oceans Canada, that previously reviewed foreshore applications for impacts on habitat, have reduced that agency's role and ability to respond to referrals. For the foregoing reasons I recommend that the LTC require a site-specific rezoning application for all ocean based geoexchange systems.***
- Permit and regulate storage buildings as a principal use in zones where a residential use is also permitted; this would allow one storage building to be legally constructed without a dwelling on the property. **no comment at this time**
- To change the required setback for pump/utility houses from 0 (currently exempt) to 3.0 metres to coincide with building code requirements. **No comment at this time**
- Reduce the setback for ground level solar collectors, less than 4.6 metres in height to 3.0 metres. **No comment at this time**
- Allow attached dwellings on those lots where two or more dwellings are permitted. **No comment at this time**
- Limit the maximum size of a single family dwelling to 375m² (4036ft²). **I agree**

- Exempt above or below ground utility lines from the definition of structure, setbacks would then not apply. ***I agree***

Paul Petrie

I vote to approve the minutes as recorded.

I found the comment by the recorder conveying information from the Trust about submitted letters to be most appropriate in the context of the meeting.

Paul



Follow Up Action Report w/ Target Date

South Pender Island Nov-04-2014

No.	Activity	Responsibility	Target Date	Status
1	PITPS coastal douglas-fir presentation - post notice on webpage and disseminate via email notice once schedule forwarded to staff by organizers	Robert Kojima	Feb-27-2015	Done
2	Canal Erosion and Boat Speed Sign- trustee Montague to pass file to in-coming trustees		Dec-02-2014	On Going
3	9.1 MAP correspondence: post correspondence as late agenda item. Amend projects list to include designated cycle / pedestrian routes on OCP schedule.	Lori Foster Robert Kojima	Nov-07-2014	Done
4	10.1 SP-DVP-2014.1 - permit approved	Sharon Lloyd-deRosario	Nov-07-2014	Done
5	11.1 LUB Review - refer focus group reports to APC, requesting response by February 2015, staff to attend if requested and available. PACKAGES EMAILED NOV 6, 2014 - add any outstanding APC minutes to webpage - REVIEWED, ALREADY POSTED - post notices of APC meetings once scheduled - DONE online, subscribers, and island notice boards via APC Secretary.	Lori Foster Robert Kojima Sharon Lloyd-deRosario	Nov-07-2014	Done
6	12.1.2 projects list - amend projects by -deleting items 1,2 6, 8 and 9 - consolidating items 3,4 and 5 - revise item 7 to climate change adaptation with specific reference to sea level rise and shoreline erosion	Robert Kojima	Nov-07-2014	Done



Subject: The Right to Live in a Healthy Environment

ISSUE:

The inextricable link between environmental and human health is now widely recognized. Nine out of 10 Canadians are concerned about the impact of environmental degradation on their health and the health of their children¹ - and with good reason. The World Health Organization estimates environmental contamination, including polluted air and water, causes as many as 36,000 premature deaths annually in Canada.² Preventable environmental hazards contribute up to 1.5 million days in hospital annually due to cardiovascular disease, respiratory illness, cancer, and birth defects alone.³ The environment has a tremendous influence on our health and well-being.⁴

Municipal governments make decisions that affect transportation, housing density, waste disposal and other issues related to the quality of the environment. Local governments also have the power to pass bylaws to protect residents from environmental harm. A municipal declaration recognizing the right to a healthy environment would show support for residents' rights to clean air, water and safe food, signal municipal leadership in building a healthy, sustainable community and draw attention to the Canadian Constitution's silence on environmental issues.

RECOMMENDATIONS:

The David Suzuki Foundation and partners recommend that the municipality:

1. Officially recognize the Right to a Healthy Environment, through a municipal declaration or equivalent measure;
2. Respect, protect and fulfill the right to a healthy environment within municipal boundaries; and
3. Encourage provincial and federal action to protect the right to a healthy environment for all Canadians.

BACKGROUND:

Over the past 50 years, the right to a healthy environment has gained recognition faster than any other human right. More than 110 governments around the world, including several cities, have already recognized their citizens' right to live in a healthy environment through bylaws, declarations, legislation, charters and constitutional provisions. In the United States, over 150 local governments have passed ordinances that recognize citizens' right to a healthy environment and protect them from a range of harmful practices.⁵ The rights protected by these legal instruments include breathing clean air, drinking clean water, consuming safe food, accessing nature and knowing about pollutants and contaminants released into the local environment. Evidence shows that most countries with environmental rights and responsibilities in their constitutions:

- Enjoy stronger and better enforced environmental laws;
- Demonstrate enhanced government and corporate accountability;
- Have smaller per capita ecological footprints;
- Rank higher on environmental performance in over a dozen key areas;

- Are more likely to have ratified international environmental agreements; and
- Have been more successful in reducing greenhouse gas emissions.⁶

Today, Canada's Charter of Rights and Freedoms presently does not explicitly protect or even address environmental rights, leaving Canada among a minority of countries that do not yet recognize the right to a healthy environment. Just as the Charter guarantees us freedom of expression and protects us from discrimination, environmental rights would ensure that our laws and policies protect the basic elements of our survival, such as clean air, safe water and unpolluted land.

While five provinces and territories have some modest form of environmental rights legislation, even in these jurisdictions (Quebec, Ontario, the Yukon, Northwest Territories, and Nunavut) the laws have significant weaknesses that undermine their effectiveness and need to be substantially strengthened.

Municipal governments can help move toward developing an overarching environmental legal framework in Canada. Yellowknife became the sixth city in Canada to pass an environmental rights declaration in December 2014, following other municipalities like Montreal and Vancouver.

CONCLUSION:

Most of us understand that the environment is a key factor in sustaining healthy communities. Environmental rights support many issues Canadians care about – healthy food, land use and development, water and air quality, climate change, habitat and biodiversity protection, parks creation, children's access to nature, social justice and more. Yet Canada lacks important legal protection for environmental rights. All levels of government must take action to address this oversight. Municipal adoption of a declaration respecting all residents' right to a healthy environment will set an important precedent and can inspire action at other levels of government, ultimately resulting in better environmental performance and a healthier population in Canada.⁷

CONTACT:

Alaya Boisvert, Project Lead Right to a Healthy Environment

aboisvert@davidsuzuki.org

604-732-4228 x1263 | 604-562-2779

DRAFT December 2014

¹ McAllister, A. 2010a. A Backyard Field Guide to Canadians. Vancouver: McAllister Opinion Research; Hoggan and Associates. 2009. Sustainability Research Initiative. Vancouver: James Hoggan and Associates.

² World Health Organization. 2008. National Estimates of Environmental Burden of Disease – Canada. Geneva: World Health Organization.

³ Boyd, D. R. and S. Genuis. 2008. "The Environmental Burden of Disease in Canada: Respiratory Disease, Cardiovascular Disease, Cancer, and Congenital Affliction." Environmental Research 106: 240-49.

⁴ Boyd, D. 2012. The Right to a Healthy Environment. Vancouver: UBC Press.

⁵ Community Environmental Legal Defense Fund. Community Rights. <http://www.celdf.org/section.php?id=423>

⁶ Boyd, D. R. 2013. "The Importance of Constitutional Recognition of the Right to a Healthy Environment" <http://davidsuzuki.org/publications/2013/11/DSF%20White%20Paper%201--2013.pdf>

⁷ Boyd, D. 2012. The Right to a Healthy Environment. Vancouver: UBC Press.



STAFF REPORT

Date: February 5, 2015

File No.: 6500-20-Work
Program

To: South Pender Island Local Trust Committee
For the meeting of February 24, 2015

From: Robert Kojima
Regional Planning Manager

CC: Kim Ferris
A/Planner 2

Re: Local Trust Committee Work Program 2015

The purpose of this report is to provide the Local Trust Committee (LTC) with an overview of top priorities, projects, budgets and options at the start of the new term of office. The start of a new term is the opportunity for the LTC to establish its work program and set objectives for the term.

LTC Top Priorities

The Top Priorities list defines the LTC's work program. An LTC can identify up to three top priorities at any given time, however given limited resources it is unlikely that three significant projects can be managed and delivered simultaneously. It is more effective for an LTC to focus on one or two projects. When proposing new Top Priorities the LTC must consider available resources, including budget and staff, and relevance of the project. Resources may not be available for all projects, budget requests are submitted in the fall and the annual budget is adopted by Trust Council in March for the fiscal year beginning April 1st. Once a project is proposed as a Top Priority, direction should be given to staff to draft a project charter. The draft project charter must be endorsed by the LTC and Regional Planning Manager prior to the project proceeding.

The following is the current top priority from the previous term:

Table 1: South Pender Island Local Trust Committee Top Priorities

Description	Activity	Staff Comments
1. LUB Review and Update	1. Focus Group review and reports 2. Preliminary review of focus group reports 3. APC review of focus group reports 4. Community information meeting(s) 5. Draft bylaws 6. Bylaw process	A significant amount of work has been done by previous LTC, focus groups, APC and staff. Focus group reports were received and reviewed.

The previous LTC was considering amendments to the LUB since 2011. In February 2014, following a community information meeting, the LTC of the day determined that it wished to undertake comprehensive community consultation on potential amendments to the LUB rather than proceed with the then proposed amendments (Bylaw 111). At the April meeting, the LTC endorsed terms of reference for Focus Groups and requested that the three Focus Groups provide preliminary reports in June. At the June meeting the LTC endorsed a project charter and received reports from two of the Focus Groups, along with some preliminary comments from the third. The LTC requested that (1) staff review and provide comments on the recommendations received from Focus Groups 1 and 2; and (2) that a new Chair re-convene Focus Group 3 and provide recommendations to the LTC. The staff comments of Focus Group 1 and 2 reports were received at the September 18th meeting. Focus Group 3 report and staff comments were received at the November 4, 2014 meeting. Further background on the project, including the focus group and staff reports, is available on the [webpage](#). A project charter was adopted and is attached.

As of the end of the last term, the issues that had been identified by the Focus Groups were categorized as follows in the tables attached to the staff reports:

1. Substantive issues for further consideration, which would require additional analysis and deliberation. These include:
 - review of the issue of non-residential buildings permitted prior to construction of a dwelling
 - review of accessory building regulations generally, including floor area and height
 - the home occupation provision requiring the operator of a home occupation to be a permanent resident
 - provisions relating to height of farm buildings
 - regulations relating to temporary use of RVs
 - review of cottage floor area (would require OCP amendment)
 - groundwater protection (OCP amendment)
 - farmworker housing (potential OCP amendment)
 - review of parking regulations
 - review of sign regulations

2. Various technical amendments that would add clarity, reduce uncertainty or correct errors
3. Some recommendations suggested changing specific wording that would require further technical / legal review of implications
4. Some recommendations were unclear and would require further information defining the specific problem or concern
5. Some changes were not recommended either because of unintended consequences, are not necessary, or would not address the problem or issue
6. Answers to questions raised of the Focus Group reports are noted in the tables.

Potential options on proceeding are discussed below.

Projects List

The purpose of the projects list is to keep a record of topics raised for future work by the LTC. The Projects list also provides a basis for budget requests for the next fiscal year. Before any work beyond basic scoping or preliminary discussion with other agencies begins, the item should be moved to the Top Priorities list to ensure that staff resources are not diverted from other top priorities. An LTC can have any number of projects on a projects list; however staff recommends this list be reviewed periodically to ensure the projects can be feasibly initiated in the term. The project list was reviewed and changes were made to consolidate and simplify the list by the LTC at the end of the last term. The current list is as follows:

Table 2: South Island Local Trust Committee Projects List

Description	Activity	Staff Comments
Development Permit Areas	consider implementation of DPA for protection of sensitive ecosystems, raptor nests, and protection of development from geological hazards	Mapping is available to support designations of DPA, standard DPA provisions are available; however mapping may need to be reviewed and updated, significant community consultation would be expected.
Climate Change Adaptation	consider measures to address impacts of sea level rise and shoreline erosion	New provincial guidelines for local governments are being considered, CRD mapping of Sea Level Rise impacts in the region underway.
APC Bylaw	consider amending the APC bylaw (draft bylaw no. 112) and consider adopting related terms of reference	Draft bylaw has been prepared
Marine Geo-exchange systems	consider alternative options to permit/ regulate ocean loops ie: OCP policies or development permit areas	Currently not permitted, would require a rezoning.
Pedestrian and Cycle Routes	Consider amending OCP map schedule and policies to designate future cycle / pedestrian routes	

Other potential projects include:

- Land use options for Waste Transfer stations: the North Pender Island LTC has recently identified this project as a Top Priority, and the CRD is currently developing a solid waste management plan for the region, which could result in regulatory options for the southern gulf islands. Assuming the SPILTC does not wish to consider options for locations for waste transfer operations on South Pender, the formal role of the SPILTC would likely be limited to commenting on referrals from the NPILTC and providing comment and input on the CRD plan.

Budget

The following are LTC Project budgets and balances for the 2014-15 fiscal year (ending March 31, 2015):

1. LUB Review - \$4376.00

This balance is available to support this project until March 31st.

The following are LTC Project budgets and requests submitted for the 2015-16 fiscal year (beginning April 1, 2015):

1. LUB Review completion - \$3000.00
2. OCP Updates - \$2000.00

These budgets need to be approved by Trust Council and would be available starting April 1st. These amounts could be re-allocated to different projects, subject to approval by the RPM and Director of Local Planning Services and briefing the Financial Planning Committee.

Next Steps

Top Priorities

The LTC should identify its Top Priority Projects. In identifying its Top Priorities the LTC has a number of options:

1. The LTC focuses on completing the LUB review. This is a significant project and would absorb a significant amount of staff, community and trustee time and attention if the LTC wishes to complete the project in a timely manner. Potentially one other smaller project could be undertaken simultaneously.
2. The LTC identifies new or additional projects as Top Priorities. These may be from the existing projects list or new issues identified by the LTC. Once these are prioritized staff should be requested to report back with background information, options and recommendations. Additional or new projects can also be identified on the projects list for future consideration.
3. The LTC initiates a consultation process in the community in order to identify concerns, issues or priorities. A variety of methods could be used to do this, and this would represent a project itself, requiring funding, and should be expected to take at least

several months. Early in the previous term, the LTC used an on-line questionnaire to solicit input on community priorities to inform its priorities.

If new initiatives are identified, staff should be requested to report back with an outline of issues and options.

LUB Review

The following comments and options are based on the assumption that the LTC wishes to continue with the LUB as its Top Priority Project.

The intent of the LUB Review project is to undertake a comprehensive review of the LUB and obtain widespread community input. The project was not intended to include any changes that would require significant OCP policy amendments, although consequential OCP amendments were included in-scope. As summarized above, the LTC received three focus group reports, along with staff comments on the focus group recommendations. The LTC also forwarded the project to the APC for comment; the APC responded that they wished to defer the referral pending the new LTC's review of the project scope and that the LTC consider expanding the scope of the project to include potential OCP amendments.

The current project charter timeline identifies a review of the Focus Group report and staff report by the new LTC as the next step, followed by a community information meeting and then direction from the LTC to proceed with draft bylaws. At the very least, this timeline will need to be revised.

The LTC should give some general consideration to how it wishes to proceed. Staff can subsequently bring back revisions to the project charter, along with options and recommendations specific to the LUB review.

Options include:

1. Proceed with the project as outlined in the current project charter, with an adjusted timeline and inclusion of consequential OCP amendments arising from the issues identified by focus groups. The next step would be an LTC review of the existing reports and information at a subsequent meeting.
2. Re-consider the whole scope and approach to the project. In this option, the LTC could provide some direction itself or ask staff to come back with options.
3. Choose to proceed no further with the project.

If the LTC wishes to amend the Work Program the following provide resolution wording:

RESOLUTIONS:

1. THAT the South Pender Island Local Trust Committee amend its Work Program by designating the following Top Priorities . . . and request staff to bring new and/or amended project charters forward for consideration of endorsement;
2. THAT the South Pender Island Local Trust Committee amend the work program Long List included with the following amendments . . .

Prepared and Submitted by:



Robert Kojima, RPM

February 12, 2015

Date

Attachments:

1. LUB Review Project Charter (v2)

Project Charter

Project Name: South Pender Island Land Use Bylaw Review

Creation Date: June 3, 2014

Last Updated: June 24, 2014

Version: 2

Purpose

This project is intended to provide an opportunity for comprehensive community consultation on potential amendments to the Land Use Bylaw

Background

This project has been initiated by the South Pender Island Local Trust Committee in order to provide for comprehensive community consultation on which elements of the Land Use Bylaw should be considered for amendment. The LTC considered a number of amendments (Bylaw 111) in 2013, leading up to and including a public hearing, before deciding in January 2014 to proceed no further in the formal bylaw process and to provide further opportunity for community consultation. In April 2014 the LTC appointed three persons to Chair focus groups, each tasked with reviewing different sections of the LUB and reporting back to the LTC and the community. Following the chairs' reports, the LTC will make further decisions on how to proceed which may result in revisions to the project timeline.

Project Objectives

- To provide an opportunity for comprehensive and holistic community input on the Land Use Bylaw
- To consider amendments to the LUB based on the widest possible community consultation

Project Scope

In Scope	Out of Scope
▪ Community consultation in the form of focus group meetings, community information meetings, APC comments, written submissions and informal comment ▪ Consideration of amendments to regulations in the Land Use Bylaw ▪ Legislative process to amend the LUB	▪ LUB Amendments that would require amendments to OCP Goals or Objectives, or significant changes to OCP policies

Project Deliverables

- Community consultation in the form of reports from the three focus group chairs
- APC comment on focus group recommendations
- One or more community information meetings for community comment on focus group input
- Staff report(s) on feasibility of implementing focus group recommendations
- Draft amending bylaw(s)
- One or more community information meetings to consult on potential amendments
- Legislative process to amend LUB

Stakeholders

Stakeholder	Represented by	Interests, expectations, concerns
<i>Owners and residents generally</i>	<i>Individually and /or through Focus Groups</i>	• Potential impact of regulatory changes on property, development, environment, quality of life, neighbourhood character and amenities
<i>Development community</i>	<i>Contractors, designers, surveyors, architects, etc</i>	• Potential impact of regulatory changes on practices
<i>Agencies and NGOs</i>	<i>Building Inspection, Parks and Recreation Commission, Conservancy, etc.</i>	• Various – potential impacts of changes on areas of interest or jurisdiction
<i>Businesses</i>	<i>Poet's Cove, home-based businesses</i>	• Potential impact of regulatory changes on business
<i>Advisory Planning Commission</i>	<i>APC</i>	• To provide advice to the LTC on potential amendments to the Land Use Bylaw

First Nations: As with all LTC projects, First Nations with asserted aboriginal rights in the subject area will be contacted early to inform them of the project and ask them to identify any aboriginal rights that may be impacted by the proposed change.

Project Team Resources

Name	Role	Responsibility
<i>SPILTC</i>	<i>Project Sponsor</i>	Provides direction through maintaining the project as a work program priority, giving direction and approvals as required
<i>Robert Kojima, Regional Planning Manager</i>	<i>Project Champion</i>	Provides adequate project resources, strategic direction and oversight, and ensures project remains aligned with overall goals and objectives
<i>Robert Kojima, Regional Planning Manager</i>	<i>Project Manager</i>	Day-to-day management of the project, and undertakes or directs all project work
<i>TBD</i>	<i>Planner</i>	Planning support in the form of research, bylaw drafting, meeting attendance and support for legislative processes as required
<i>Barb Dashwood</i>	<i>GIS/Mapping Support</i>	Mapping as required
<i>Sharon Lloyd-deRosario and Lori Foster</i>	<i>Administrative support</i>	General administrative support, including advertising, booking meetings, preparing notices, updating website, etc

Project Budget

Item	Details	Fiscal Yr 2014-15	Fiscal Yr 2015-16
Communications	Mail out	\$500	
Meetings and Workshops	Focus Groups - \$500 APC - \$500 CIM - \$500	\$1500	
Public Hearing	Notice, Hall, Minute-taker, mail-out		\$2000
Contingency		\$1000	\$1000
Totals		\$3000	\$3000

Project Timeline

Deliverable / Milestone	Target Completion Date
Focus Group Preliminary Reports delivered	June 16, 2014
LTC receipt of Preliminary Reports, Consideration of Project Charter, preliminary feedback to Focus Group Chairs	June 24, 2014
Preliminary Review of Focus Group Reports	September 16, 2014
Review of Final Focus Group Reports	November 2, 2015
Focus Group Reports Referred to APC for comment	November 2, 2014
Local Government Elections	November 15, 2014
Review of Focus Group reports, APC recommendations and staff comments by new LTC.	February 2015
Community Information Meeting to present Focus Group Reports	March 2015
LTC direction to prepare draft bylaw(s)	April 2015
Review of draft bylaw(s) by LTC	June 2015
Draft bylaw(s) referred to agencies for comment	July 2015
Community Information meeting, on-line comments, mail-out	July - August 2015
First Reading	September 2015
Public Hearing	October 2015
Second, Third Readings, EC Approval	November 2015
Adoption	December 2015

Endorsements

Name	Endorsement Date
Project Sponsor	Local Trust Committee
Project Champion/Manager	Robert Kojima

Lori Foster

To: Robert Kojima
Subject: Late Agenda Items SP-LTC-ADD-2104-11-04

From: John Chapman

Sent: October 31, 2014 11:55 AM
To: Liz Montague; Mike Jones; Justine Starke
Cc: Niall Parker; Barry Mathias; David Grey; Lisa Baile; Dean Mills; 'Peter Pare PCT'; Garth Anderson; Peter Easthope
Subject: South Pender Designated Route request

Hi Liz, Mike, and Justine

Attached is a request from MAP (Moving Around Pender--An Alternative Transportation Society) to initiate the processes necessary to make the South Pender road from the bridge to Gowlland Point a 'designated roadway'.

Designation is the official request to MOTI that residents of South Pender would like safer roads for pedestrians and bicyclists. When our roadways are maintained or upgraded, in due course, consideration is be made to include a roadside path for cyclists and pedestrians.

MAP's request and justification is attached, as is a map of South Pender showing the main danger areas on our roads. Also attached is a copy of the 1992 agreement between Islands Trust and MOTI specifying regular consultation, regular joint committee meetings, and meetings to address concerns. MAP suggests that our current request also serve to initiate meaningful discussions with MOTI on the issues described.

MAP would like your endorsement of this request as well as your help to facilitate completion of this request by yourselves and the next Trust Committee.

Regards,

Barry Mathias, MAP Vice-Chair
John Chapman, MAP Board Member

To: South Pender Island Local Trust Committee

Oct 31/14

From: MAP (Moving Around Pender—An Alternative Transportation Society)

Regarding: Request to designate a cycle/pedestrian route on South Pender Island

Given that there is a high use by pedestrians and by cyclists on the roads on SPI together with periods of substantial vehicular traffic, MAP asks the Local Trust Committee to formally designate a desired cycle/pedestrian route the length of South Pender Island from the Bridge to Gowlland Point*. This would take advantage of an existing agreement** between Islands Trust and MOTI which will not apply unless there is such a designation. Not only would designating a cycle/pedestrian route eventually lead to safer travel by cyclists and pedestrians, but once in place and completed, would make cycling/walking more attractive, thus lowering the carbon footprint of our Island.

*Appendix 1: Map of South Pender Island

* Appendix 2: *Road Standards, Classification and MOTI/IT Consultative Process in the Islands Trust Area, Oct 20, 1992*

MAP recognises that the term of our present SPI LTC is nearly over. We would like an endorsement of this proposal, and a formal recommendation to the newly elected 2015 committee to actively continue the processes needed to complete this initiative.

We know that South Pender Island is not only a major destination for Pender Islanders (ie Greenburn Lake-Gulf Islands National Park, Brooks Point Regional Park, Poets Cove, FireHall #3, art galleries, and local park trails and view points) but also for visitors and tourists from off-island. The present roadway, in places, is particularly narrow and unsuitable for high vehicular traffic in addition to walkers and cyclists.

It is important to recognise that the present arrangements of roadways, parks, and lot subdivisions were not made with trans-island bicycle/walking/hiking routes in mind. Thus we encourage GINPR, Local Parks, land-owners, MOTI, the CRD, and Islands Trust (Planners, Trustees) to seriously and actively engage in a correction phase where these serious deficiencies of Island transportation can be reasonably and thoughtfully corrected for the benefit of future generations.

The agreement between the Ministry of Transportation and Infrastructure and the Islands Trust (Appendix 2) provides that during upgrading of designated roads, paved bicycle paths, separated from the vehicle lanes with painted lines, will be constructed on both sides of the road. This applies to routes that have been designated for a cycling route by the Local Trust Committee within an official community plan. At present, no such designation for a cycling route exists for South Pender Island.

MAP suggests that the concept of designation for cycling be extended to include use by pedestrians. Map recommends a distinct separation of the cycling/pedestrian path from the road wherever possible, and practically, it would be on one side of the road only. The particularly dangerous sections of road would be the target for providing a cycling/pedestrian paths. These 'side-of-the-road' paths would be used by pedestrians, strollers, walkers, and bicyclists.

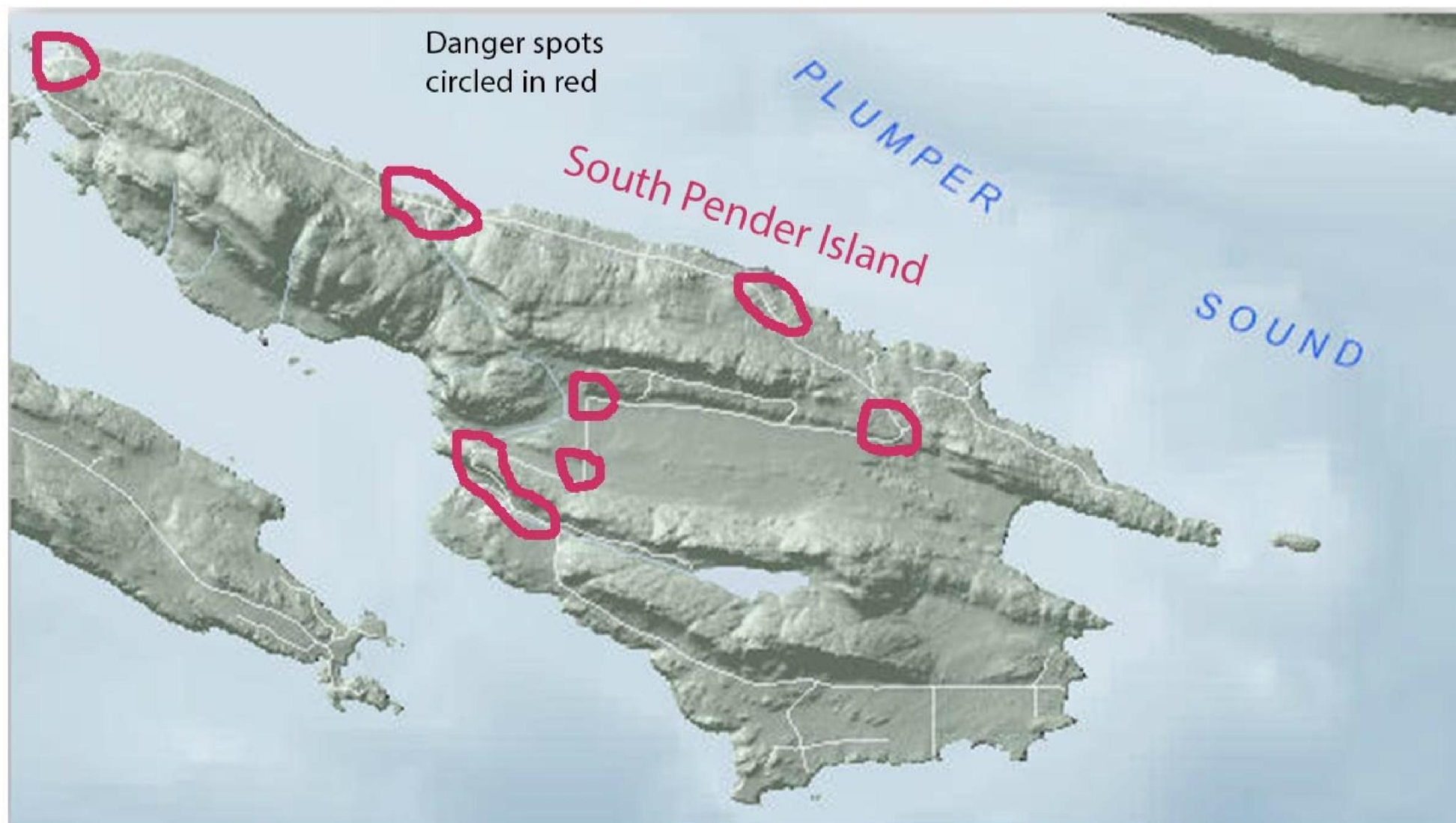
On South Pender Island there are segments of road where visibility is fair (in the Spalding Valley and from Bidgood Road Ocean Access to Gowlland Point) and no additional path is really needed at this

time. However there are a number of dangerous pinch points where curves, hills, and narrow roads combine to present significant hazards to cyclists and pedestrians--first corner after the bridge on Canal Road, the entire Mt Norman shoulder, some curvy-hilly spots in the East Road-Little Bay area, the Boundary Pass/Spalding/Canal Road intersection, both edges of the upper Spalding valley, rounding the Oxbow Ridge shoulder above Poets Cove, and the bend by the Bidgood Road Beach Access all marked on the map in Appendix 1. MAP will work with the National Park people, MOTI, the CRD, and local landowners through the new society GITS (Gulf Island Trail Society which will provide liability insurance to private landowners permitting/desiring a trail on their properties) to explore off-road trail opportunities in the most difficult spots. The present SPI OCP encourages cooperation from GINPR, PIPRC, and landowners to provide alternate routes not on roadside. Dialogue with MOTI is essential to identify appropriate routing and road-side trail design.

Open consultation with MOTI seems to be the most logical place to start the planning processes. The MOTI/Islands Trust agreement (Appendix 2) outlines a comprehensive consultative process in Section C, including annual meetings, routine exchanges of information regarding specific concerns, the establishment of Local Trust committees to make recommendations to the LTC and MOTIto assist in the development of bicycle route and Heritage/Scenic route plans, the calling of special meetings as needed, and, every five years, jointly reviewing the road classification networks and road standards.

MAP suggests taking this broad proposal to the South Pender Residents and in due course adding to the OCP. We also encourage Local Parks (PIPRC) to strengthen its Master Plan to include language supporting trans-island bicycle/pedestrian/hiking routes where and when they could be developed.

Summary: MAP is asking the SPI LTC to designate the main South Pender Road from the bridge to Gowlland Point. This would formally notify MOTI via existing agreements between MOTI and Islands Trust that South Pender residents would like a roadside cycling/pedestrian route. This would then initiate a serious planning process to find solutions for the particularly hazardous sections of roadway. Because of the challenging terrain the final trail route might deviate from the roadway in various places with cooperation of GINPR, PIPRC, MOTI, and landowners.



LETTER OF AGREEMENT

between

THE MINISTRY OF TRANSPORTATION & HIGHWAYS (MOTH)

and

THE ISLANDS TRUST (IT)

SUBJECT:

**ROAD STANDARDS, CLASSIFICATION
AND MOTH/IT CONSULTATIVE
PROCESS IN THE ISLANDS TRUST AREA**

October 20, 1992

WHEREAS, pursuant to Section 8(2)(a) of the *Islands Trust Act*, for the purpose of carrying out the object of the trust, the Islands Trust Council may, subject to the approval by the Minister of Municipal Affairs, Recreation and Housing, enter into agreements with the Province and agents of the Province respecting the coordination of administrative activities within the trust area;

WHEREAS, roads in the Trust Area form part of the unique amenities of the Trust Area and require extraordinary measures to protect their unique character and to encourage safe use, both the Islands Trust Council and the Minister of Transportation and Highways are desirous of entering into an agreement for ongoing consultation respecting road standards, road classification, and posted speed limits;

THEREFORE, both parties commit to respect the attached Letter of Agreement, dated October 20th, 1992.

1. ASSENTED TO THIS 12th DAY OF November, 1992 BY:


The Honourable Art Charbonneau
Minister of Transportation
and Highways


Carol Martin, Chairperson
Islands Trust Council

2. APPROVED, PURSUANT TO SECTION 8(2)(a) OF THE *ISLANDS TRUST ACT*,
THIS 24th DAY OF DECEMBER, 1992 BY:

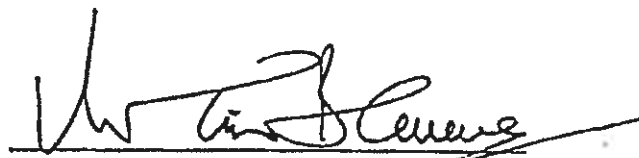

The Honourable Robin Blencoe
Minister of Municipal Affairs,
Recreation and Housing

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A. PURPOSE

The purpose of this agreement is:

1. To establish an ongoing consultative process between the agencies.
2. To establish an agreement on road standards and road classification in the Trust Area and;
3. To establish a procedure for the designation of scenic/heritage roads and bicycle route plans in the Trust Area.

B. OBJECTIVES

1. To establish a functional classification of rural roadways which:
 - a) classifies rural Island roads recognizing the relative importance of their role in servicing traffic between ferry linkages and major destinations on an island, and relates the classification to the road's importance and role in serving through traffic or providing access to land;
 - b) ensures all rural settlement areas, resource areas, recreational areas, commercial areas and other activity areas are provided with safe rural road service based on the level of traffic generating activity and rural traffic volumes;
 - c) classifies routes to maintain a safe and efficient relationship between the needs of road users and the users of adjacent land;
 - d) ensures that appropriate planning and design standards are used as agreed upon.
2. To establish the road standards for new roads, including new subdivision roads, and for existing roads when upgrading is required.
3. To establish scenic/heritage road designations for unique and valued roadways which recognize the objectives of the Islands Trust, and the process to be followed when improvements are to be undertaken.
4. To establish cycle route plans and roadway standards to accommodate safe cycling.
5. To establish a regular consultative process between the agencies on issues of common interest such as rehabilitation and maintenance programs and new road site-specific consultation.

6. To develop and agree upon cycle route plans and scenic/heritage designations to be in place by September 1993 to supplement this agreement.

C. CONSULTATIVE PROCESS

The Ministry of Transportation and Highways and the Islands Trust agree to the establishment of a consultative process to foster common understanding and hereby agree to facilitate the process by arranging meetings between respective staff and Local Trust Committees as required.

To facilitate ongoing dialogue the consultative process will be fostered through:

- An annual meeting of Ministry of Transportation and Highways staff and Islands Trust planning staff held in the fall at the call of the Manager of Local Planning of the Islands Trust to review with Ministry of Transportation and Highway staff any current issues such as proposed upgrading and maintenance programs and classification of proposed new subdivision roads.
- Routine exchange of information regarding specific concerns between the Islands Trust as represented by its local planning staff and Ministry of Transportation and Highways local staff as represented by the District's Highways Manager and/or their Area Managers.
- The establishment by the Trust of Local/Island Advisory Transportation Committees appointed by each Local Trust Committee to make recommendations to the Trust Committee and MoTH as specific issues arise and to assist in the development of bicycle route and Heritage/Scenic route plans. Special meetings may be called by either the Islands Trust or the Ministry of Transportation and Highways, as specific issues arise.
- Jointly reviewing the road classification networks and road standards every five years (effective in 1997.)
- Discussion in 1992 and 1993 of bicycle routes and Scenic/Heritage route designations.
- Ministry of Transportation and Highways routinely consulting with the Islands Trust prior to upgrading of designated scenic/historic routes.

D. ROAD CLASSIFICATIONS AND BICYCLE AND SCENIC/HERITAGE ROUTE DESIGNATION

1. Road Classifications of Island Roads

A hierarchy of road classes for the designated islands is set out in the Island-specific maps attached to the document (Appendix A). The Islands Trust will facilitate a timely process for each local trust committee to review, negotiate, revise or approve the maps attached in Appendix A. Until such time as the local trust committee approves the road classification map for their island, the Appendix A map will be used within the context of the consultative process.

The designated islands for purposes of road classification and standards are:

- Saltspring
- Gabriola
- North and South Pender
- Saturna
- Galiano
- Denman
- Hornby
- Mayne
- Lasqueti
- Thetis
- Keats
- Bowen
- Gambier
- Thormanby

The nomenclature used for road classes in this document is terminology suggested by the Islands Trust. The equivalent terminology normally used by the Ministry for functional classification is:

Islands Trust Nomenclature

Major Rural
Main Rural
Minor Rural
Residential Rural/Local

Ministry of Transportation and Highways Nomenclature

Secondary Highway
Major road
Minor Road
Local Road

The road standard for the applicable classifications as set out in Section E will be applied for new roads, including subdivisions, and to existing roads when being upgraded.

2. Cycle Route Plans

The Islands Trust will prepare proposals for cycle route plans on the islands. Consultation on these proposals will occur with the Ministry of Transportation and Highways.

A negotiated agreement on the cycle route plan for the Islands Trust area is to be achieved between the Islands Trust and Ministry of Transportation and Highways by September 1993 and will subsequently form a component of this letter of understanding (Proposed Appendix B).

The agreed-to cycle route plan, when adopted by resolution or bylaw by the Local Trust Committee, may be forwarded to the Ministry of Highways and Transportation for registration.

The approved plan, for the designated cycle routes, will trigger adjustment of the shoulder standards for new roads and for existing roads when they are to be upgraded as indicated in section E. The requirements for safely accommodating cyclists will be recognized when prioritizing roads for upgrading.

3. Scenic Heritage Designation

The Islands Trust will prepare proposals for scenic/heritage designation to recognize roadways having unique and significant scenic and/or heritage value. Only a limited portion of roadways on an island will qualify for such designation.

3. Scenic Heritage Designation Continued

Consultation will occur between the Ministry of Transportation and Highways and the Islands Trust on the criteria for evaluation of scenic and heritage values and the proposals for scenic/heritage road designations. The agreed upon criteria shall be incorporated as part of this agreement.

A negotiated agreement on scenic/heritage designation of roads in the Island Trust area is to be achieved between the Islands Trust and Ministry of Transportation and Highways by September 1993 and will subsequently form a component of this letter of understanding (Proposed Appendix C).

The Ministry of Transportation and Highways will be consulted, and its agreement obtained, on a proposed scenic/heritage road designation plan for an island prior to adoption of the plan, by resolution or bylaw, by the Local Trust Committee.

Planned work on roads designated as Scenic/Heritage will trigger a consultative process between the Islands Trust and the Ministry of Transportation and Highways prior to the initiation of upgrading.

E. ROAD STANDARDS FOR ISLAND ROADS

It is recognized that road standards in the Islands Trust Areas have been lowered in response to the Trust objective to maintain the Rural character of the islands and in recognition of the size of Islands and their unique character and the need for a gentler approach in harmony with the land. With the exceptions of Denman, North Pender and Saltspring in the Trust Area, island roads do not carry travellers to any points beyond.

However, the standards must recognize a requirement for safe transportation facilities.

The standards to be utilized for construction on each of the road classifications are outlined in the following paragraphs and table.

Figure 1

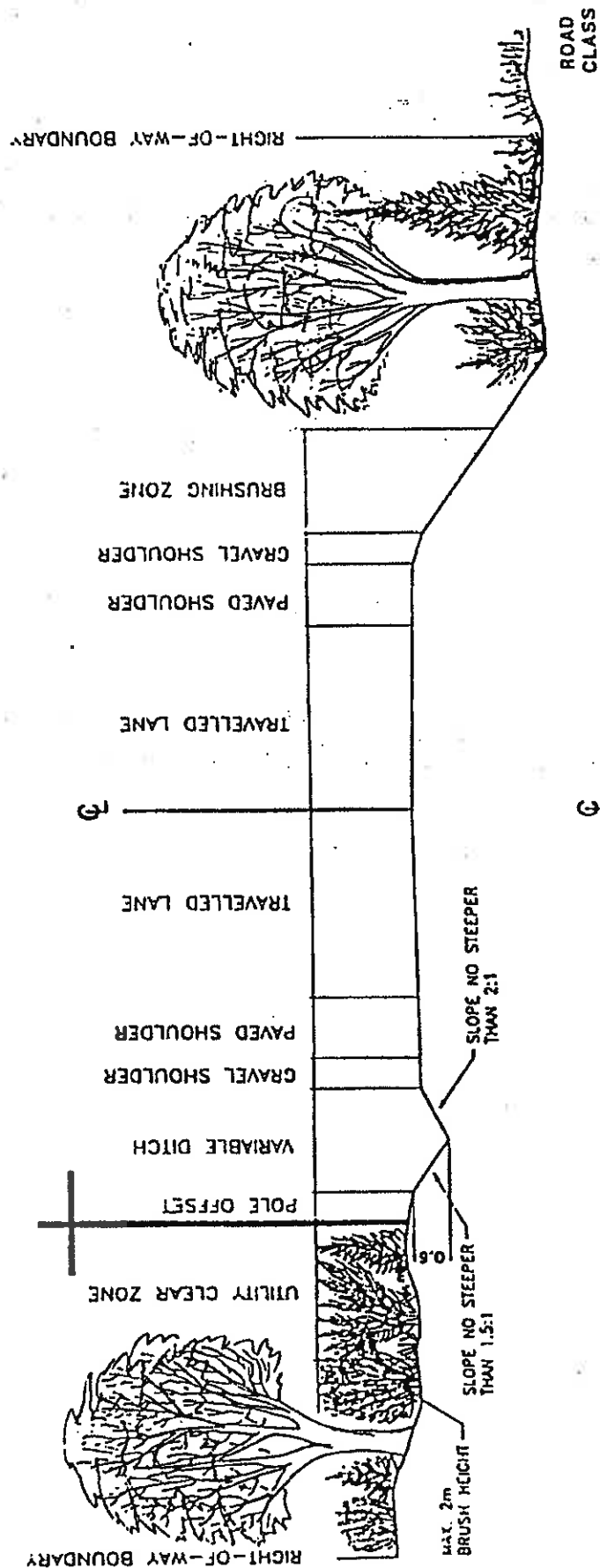
ISLAND ROAD STANDARDS

Islands Trust Nomenclature	R/W Width	Design Speed	Cleared Width	Driving Lanes	Constructed (Top) Width	Surfaced Shoulder Standard	Gravel Shoulder	Cycle Lanes
Residential Rural/Local	20m(66')	50km/hr	13.9m(45.6')	5.5m(18.0')	6.7m(22')	not required	0.6m	No lanes
Minor Rural	20m(66')	50km/hr	14.5m(47.6')	6.1m(20')	7.3m(24')	not required	0.6m	2 lanes *
Main Rural	20m(66')	60 km/hr	15.6m(51.1')	6.7m(22') 7.3m(24') crest/curve	9.1m(29.8') or 9.7m crest/curve	0.6m/lane	0.6m	2 lanes **
Major Rural	25m/80'	80km/hr	18.1m(59.4')	6.7m(22') 7.3m(24') crest/curve	10.3m(34.8') or 10.9m crest/curve	1.2m/lane (3.9')	0.6m	2 lanes

* Constructed top width for each bicycle shoulder lane can range from 0 to 1.2 meters on both sides for each section as designated in an Island Specific Cycle route plan.

** Constructed top width for each bicycle shoulder lane can range from 0.6 to 1.2 meters on both sides for each section as designated in an Island Specific Cycle route plan.

Figure 2
Typical Cross Section (Metric)

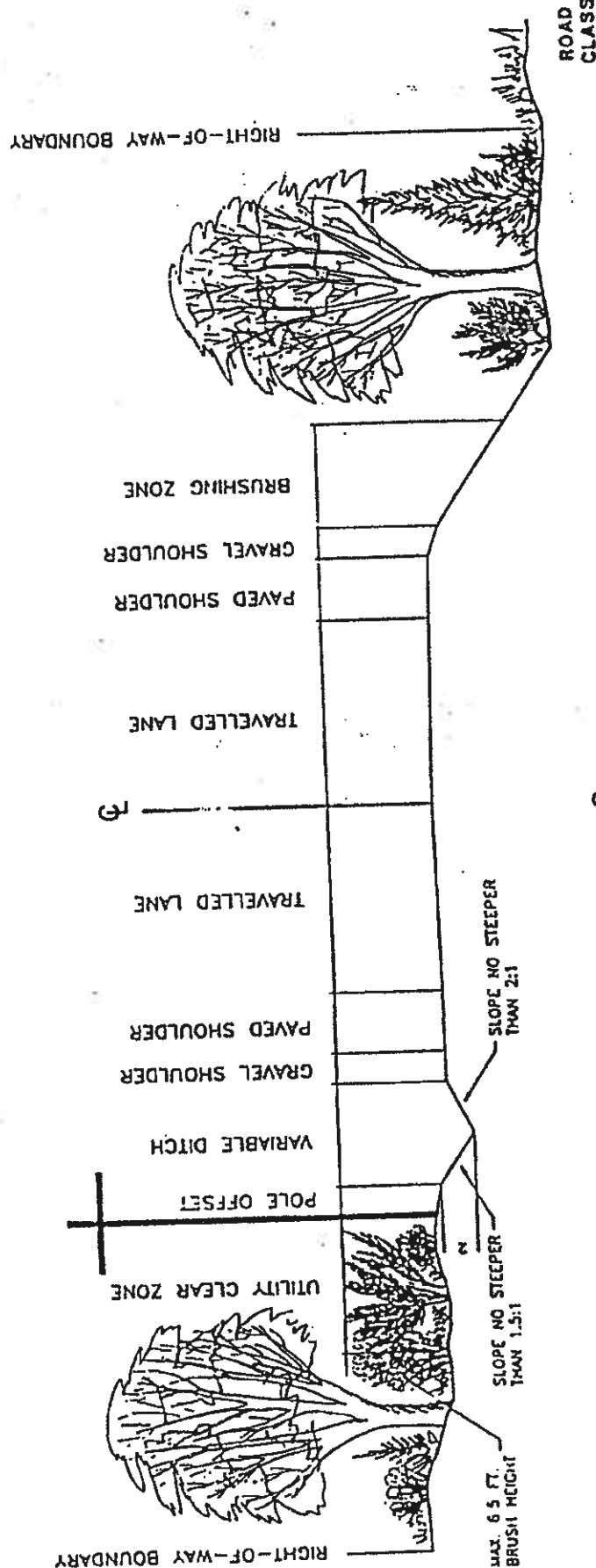


ROAD CLASS	RESIDENTIAL	MINOR RURAL	MAIN RURAL	MAJOR RURAL
2.75	0.6	0.6	0.6	0.6
2.75	0.6	0.6	0.6	0.6
2.75	0.6	0.6	0.6	0.6
2.75	0.6	0.6	0.6	0.6

NOTE:
- DIMENSIONS IN METRES
- REQUIRED DITCH WIDTH VARIES DEPENDING UPON THE DEPTH OF DITCH REQUIRED FOR DRAINAGE.
- * DESIGNATION AS CYCLE ROUTE INCREASES SHOULDER WIDTH TO 1.2m
- R.O.W. WIDTH 20m FOR ALL CLASSES EXCEPT MAJOR RURAL WITH A WIDTH OF 25m.

Figure 2b

Typical Cross Section (Imperial)



3

	2	MIN. WIDTH 6.9	2	0	9	9	0	2	6.5	ROAD CLASS
3	2	MIN. WIDTH 6.9	2	0	9	9	0	2	6.5	RESIDENTIAL
9	2	MIN. WIDTH 6.9	2	0	10	10	0	2	6.5	MINOR RURAL
9	2	MIN. WIDTH 6.9	2	2	11 CURVES 12	11 CURVES 12	2	2	6.5	MAIN RURAL
9	2	MIN. WIDTH 6.9	2	4	11 CURVES 12	11 CURVES 12	4	2	6.5	MAJOR RURAL

NOTE:

- DIMENSIONS IN FEET.
- REQUIRED DITCH WIDTH VARIES DEPENDING UPON THE DEPTH OF DITCH REQUIRED FOR DRAINAGE.
- * DESIGNATION AS CYCLE ROUTE INCREASES SHOULDER WIDTH TO 4 FT.
- R.O.W. WIDTH 65.6 FT. FOR ALL CLASSES EXCEPT MAJOR RURAL WITH A WIDTH OF 82 FT.

NOTE: Where the Islands Trust and the Ministry of Transportation and Highways identify a need for cycling facilities, as established by the agreed to cycle route plan, the standards for shoulders shall be adjusted as noted in the footnotes in the road standards table which follows. (See Figure 1, page 8).

1a) Major Rural

This classification of road applies only to a limited section of road on Salt Spring Island.

The road in this class typically carries substantially higher volumes of traffic at higher speeds than a Main Rural road.

This classification will have a paved travel-way width of 6.7 m except on crest and horizontal curves where a 7.3 m width will apply.

A 1.2 m paved width on each side of the travel way will provide for cycling, pedestrian and emergency parking use.

The bicycle route plan will incorporate all sections classified as Major Rural road as an element in the cycle plan.

Posted speed shall not exceed 80 km/hr.

1b) Main Rural

This classification of road applies to all designated islands within the Islands Trust except for South Pender, Gambier, Lasqueti, Keats, Thormanby and the undesignated Islands.

This classification of road will have a paved travel-way width of 6.7 m except on crest and horizontal curves where a 7.3 m top paved width will apply.

A 0.6m paved shoulder on each side will be provided.

The bicycle route plan will designate road sections requiring adjustment of the shoulder width to safely accommodate cycling demands. The constructed top width for each bicycle shoulder lane can range from 0.6 to 1.2 metres on both

sides in recognition of safety and travel demand requirements, as designated in Island specific cycle route plans.

The posted speed shall not exceed 60 km/hr.

1c) Minor Rural

This classification of road applies to all designated Islands within the Islands Trust, but does not include the undesignated islands.

This classification of road will have a paved top width of 6.1m.

Paved shoulders are not required unless identified in the cycle route plan. The bicycle route plan will designate road sections requiring adjustment of the shoulder width to safely accommodate cycling demands. Constructed top width for each bicycle shoulder lane can range from 0 to 1.2 metres on both sides in recognition of safety and travel demand requirements, as designated in Island specific cycle route plans.

The posted speed shall not exceed 50 km/hr.

1d) Residential Rural/Local

This classification applies to all designated Islands and the undesignated Islands within the Islands Trust.

This classification applies to most new roads in small subdivisions.

This classification of road will have a paved top width of 5.5 m.

The posted speed may be in the range of 30 to 50 km/hr

2a) Illustrative Cross-Sections by Road Standard

The Island Road standards and illustrative cross-sections are shown on the following pages.

2b) Heights and Clearance Zone

Height of vegetation within the brushing and utility zone shall be controlled to maintain sight distance on curves and intersection sight triangles for traffic safety reasons.

APPENDICES

APPENDIX A: ROAD CLASSIFICATION BY ISLAND

Salt Spring
Gabriola
North and South Pender
Saturna
Galiano
Denman
Hornby
Mayne
Lasqueti
Thetis
Keats
Bowen
Gambler
Thormanby

APPENDIX B: CYCLE ROUTE PLAN (to be developed in 1992/93)

APPENDIX C: SCENIC/HERITAGE ROUTE PLAN (to be developed in 1992/93)

**Amending Agreement
to the
Letter of Agreement**

between

The Ministry of Transportation and Highways

and

The Islands Trust

Subject:

**Road Standards, Classification and
The Consultative Process in the Islands Trust Area**

Dated July 18, 1996

WHEREAS, the Ministry of Transportation and Highways and the Islands Trust Council (the Parties) signed a Letter of Understanding on November 12, 1992, respecting road standards in the Islands Trust Area; and

WHEREAS, the Parties wish to amend this agreement in the following areas only:

- Principles;
- Gravel Road Classification;
- Access-By-Water Only Classification;
- Variance Referral Process within the Subdivision Approval Process; and
- Road System Planning

NOW THEREFORE, the parties agree as follows:

PRINCIPLES *(addition to Section A - Purpose)*

The authorities of MOT and the Islands Trust involve the planning and development of road systems in the Trust Area as provided for through:

- the object of the Islands Trust is "to preserve and protect the Trust Area and its unique amenities and environment for the benefit of the residents of the Trust Area and of the Province generally, in cooperation with municipalities, regional districts, improvement districts, other persons and organizations and the government of the Province". (*Islands Trust Act, Section 3*);
- the mandate of the Ministry of Transportation and Highways is: "To facilitate the safe and efficient movement of people and goods, and the realization of government objectives by planning, delivering and operating British Columbia's highways infrastructure, and, by licensing and regulating its users."
- the Islands Trust is comprised of the following corporate entities:
 - **Trust Council** is responsible for managing the resources of the Islands Trust and providing general policies to guide land use planning throughout the Trust Area [Islands Trust Act Section 5];
 - **Local Trust Committees** are responsible for regulating the development and use of land within each local trust area [Islands Trust Act Section 22]; and

- **Islands Trust Fund Board** is responsible for acquiring, holding and managing lands and assets to preserve and protect significant sites and features of the environment within the Trust Area [Islands Trust Act Section 37]; and

- the parties agree that the following principles shall form the basis for cooperation and consultation among the Parties.

- **SAFETY**

Safety for road system users and the public safety shall be given significant importance in the evaluation of road location, design and construction proposals and activities.

- **ENVIRONMENTAL PROTECTION**

The parties are committed to respond to environmental matters arising from road system design and construction activities within their exclusive areas of jurisdiction, while respecting the jurisdiction of the other, to protect, and conserve the environment for use by present and future generations.

- **AFFORDABILITY**

Either party proposing a significant change in road location, design or construction practices that affects the other party, the developer and the community will ensure that overall road costs, including capital, rehabilitation and maintenance will be taken into consideration.

- **PUBLIC/APPLICANT INPUT**

To ensure that a broad range of views regarding the community's future is heard, MOTI and the Islands Trust will provide the applicant and the public with appropriate opportunities to provide input to decisions which have significant road system impact.

- **SUSTAINABILITY**

Both parties are committed to integrating the environmental, economic and social values of an island community in evaluating road system proposals.

- **COMMUNITY ASSET**

Effective evaluation of road design and construction proposals will consistently consider:

- the rural character of an Island;
- impact on the environment;
- maintaining roads as a safe and affordable asset; and
- provision of equitable levels of mobility and accessibility for Island residents and visitors.

- **COOPERATION**

Effective cooperation between MOTH and the Islands Trust will lead to certainty in road system planning and development, coordinated responses from the parties, and the harmonization of relevant legislation, bylaws, policies and programs.

ROAD CLASSIFICATIONS

(Addition to Section E - Road Standards for Island Roads)

E.3 GRAVEL ROADS

1. The intent of allowing gravel road standards is to balance road safety and development/maintenance costs with preservation of the rural atmosphere of Trust Area islands.
2. To deal equitably with minor developments where the cost of utilizing the usual pavement standard would be disproportionate, the Ministry of Transportation and Highways allows the developer the option of using a crushed gravel surface for construction of local (residential) road class, rather than the usual provision of pavement when the number of lots to be created is fewer than four and when all lot sizes are more than two hectares and there is no potential for the future connection to a further subdivision. This will be applicable for the local road class on all islands in the Trust Area.
3. As well, on islands not served by car ferries, the lower level of car usage and the presence of gravel roads makes the use of gravel roads possible. For clarity these include islands such as Lasqueti, Gambier, Keats, Coal, DeCourcy, Moresby, Mudge, Piers, Valdes, Portland, Reid, Ruxton, Sidney, Thormanby, Wallace, and other lesser islands.

4. The Ministry of Transportation and Highways will consult with the appropriate local trust committee prior to the change of any gravel road to a pavement surface, preferably through the annual consultation process.

E.4 ACCESS-BY-WATER ONLY

The required minimum standard for a water access only road with ditches is a road having a 3.6 metre top width, and gravel or crushed granular surfacing acceptable to the District Highways Manager.

This standard for access-by-water only will be applicable only where a limited number of lots are to be served, and there is no potential for the future connection to an existing public road in the foreseeable future. The normal road standards established by the Memorandum of Understanding will be applicable otherwise.

VARIANCE REFERRAL PROCESS

(New Section G)

G. VARIANCE REFERRAL PROCESS

The variance referral process within the subdivision approval process provides for Islands Trust input on road system proposals, road designs and road construction within MOTH's approval and monitoring process to enable both agencies to achieve the stated principles for road standards in the Trust Area.

1.0 REFERRAL PROCESS

- 1.1 Within the MOTH's Road System Proposal Review process, variances will be noted and referred to the Islands Trust prior to: 1) Preliminary Layout Conditions being established; 2) Road Design Approval; and 3) during the monitoring of construction (See Display G.1).
- 1.2 The Islands Trust and MOTH will prepare and distribute applicant guidelines for road construction in the Trust Area.
- 1.3 MOTH will encourage applicants to consult with the Islands Trust to deal with variances prior to submitting their application.

2.0 VARIANCES

2.1 Road standards within the agreement are to be considered as providing the maximum right of way width for the following road classifications:

- 20 meters for Residential Rural/Local, Minor Rural and Main Rural Classifications; and
- 25 meters for the Major Rural Classification.

2.2 Right of way widths which exceed those in the road standards for a distance greater than 20% of the total proposed road length; and/or a continuous road length greater than 75 meters will be considered as a variance, unless otherwise mutually agreed to by way of an agreed addendum to this agreement.

3.0 PLA CONDITIONS

3.1 MOTH will note any anticipated variances to the Islands Trust in its referral of the Subdivision Application.

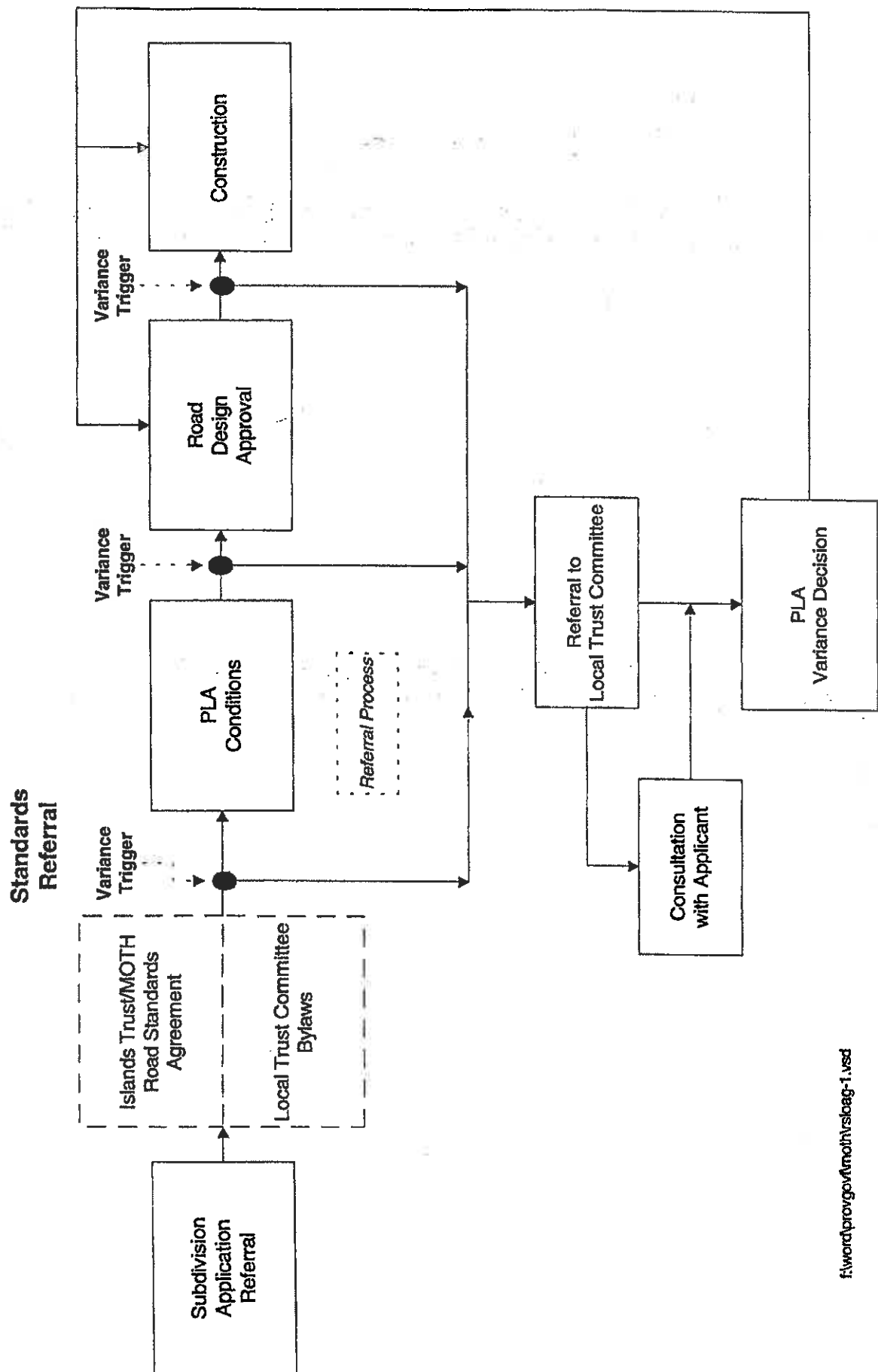
3.2 MOTH will request the applicant to meet with the Islands Trust to discuss the anticipated variances.

3.3 The Islands Trust and/or the applicant may put forth options to MOTH to deal with variances such as:

- accept the variance and ensure the public is aware of the proposal and reasons for the variance;
- utilize landscaping techniques to repair the impact of road clearing activities;
- employ different construction techniques which do not compromise safety;
- relocate the proposed road which may require modification of subdivision layout requirements; and
- request MOTH to modify the road standards.

3.4 MOTH, unless otherwise mutually agreed to by the applicant and Islands Trust, will provide 30 working days for the applicant/Islands Trust to meet and prepare a joint submission to deal with variances.

ISLANDS TRUST AND MINISTRY OF TRANSPORTATION AND HIGHWAYS ROAD STANDARDS VARIANCE REFERRAL PROCESS



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- 3.5 Within 5 working days following the above deadline, the applicant and/or Islands Trust may submit their own proposals in writing and request a meeting with MOTH to present their views.
- 3.6 Both parties acknowledge that MOTH retains the authority to make all final road construction decisions and that the Ministry's role in any applicant/Islands Trust consultations will be to provide access to information.

4.0 ROAD DESIGN APPROVAL

- 4.1 MOTH will require the applicant to notify MOTH of any variances to the standards or variances stated in the Preliminary Layout Approval (PLA) which arise during the road design approval stage.
- 4.2 MOTH will refer any variances to the Islands Trust which arise during the road design approval stage.
- 4.3 The parameters outlined in Section 2.0 will apply to applicant/Islands Trust consultations within 10 working days for a joint applicant/Islands Trust submission or 15 working days for individual submissions by the applicant and/or the Islands Trust.

5.0 ROAD CONSTRUCTION MONITORING

- 5.1 MOTH will require the applicant to notify MOTH of any variances which arise during the construction stage to standards and/or variances stated in the Road Design Approval.
- 5.2 MOTH will refer any variances to the Islands Trust which arise during the road construction stage.
- 5.3 MOTH may request the applicant to halt construction and it may conduct a meeting of the applicant/Islands Trust to deal with unresolved variances.

H. ROAD SYSTEM PLANNING

(New Section H)

1. MOTH will assist, subject to the availability of resources, local trust committees in developing Road System Plans as a component of the Official Community Plan.
2. The Road System work program will be established at the annual interagency meeting.

C. INTERAGENCY LIAISON

(addition to section C - Consultative Process)

The parties agree to maintain an Interagency Task Force for the purposes of:

- dealing with arising issues;
- establishing an annual work program to: ensure staff liaison; develop further the road standards agreement; and review agency initiatives - legislation, bylaws, and programs of mutual interest; and
- meet at least twice annually for the above purposes.

THEREFORE, both parties commit to respect the above terms of the Amending Agreement,
dated 18 day of July, 1996.

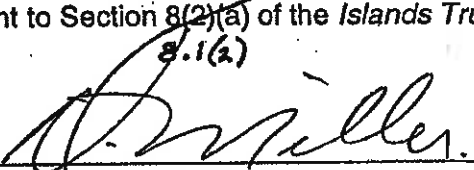
1. Approved by the Islands Trust Council on this 7 day of June, 1996.
-

2. Assented to this 4 day of October, 1996.


Honourable Lois Boone
Minister of Transportation and Highways


Graeme Dinsdale
Chairperson, Islands Trust Council

3. Approved, pursuant to Section 8(2)(a) of the *Islands Trust Act*, this 9 ^{Dec} day of 1996.
8.1(2)


Honourable Dan Miller
Minister of Municipal Affairs and Housing



Islands Trust

Print Date: Feb-17-2015

Top Priorities

South Pender Island

No.	Description	Activity	Received/Initiated	Responsibility	Target Date	Status
1	LUB Review and Update	1. Focus Group review and reports 2. Preliminary review of focus group reports 3. APC review of focus group reports 4. Community information meeting(s) 5. Draft bylaws 6. Bylaw process	Oct-04-2011	Robert Kojima	Dec-31-2015	On Going



Projects

South Pender Island

No.	Description	Activity	Received/Initiated	Status
1	Development Permit Areas	consider implementation of DPA for protection of sensitive ecosystems, raptor nests, and protection of development from geological hazards	Nov-04-2014	On Going
2	Climate Change Adaptation	consider measures to address impacts of sea level rise and shoreline erosion	Nov-04-2014	On Going
3	APC bylaw	consider amending the APC bylaw (draft bylaw no. 112) and consider adopting related terms of reference	Sep-06-2013	On Going
4	Marine Geoexchange Systems	consider alternative options to permit/ regulate ocean loops ie: OCP policies or development permit areas	Nov-05-2013	On Going
5	Pedestrian and Cycle Routes	Consider amending OCP map schedule and policies to designate future cycle / pedestrian routes	Nov-04-2014	On Going

Islands Trust
LTC EXP SUMMARY REPORT F2015
Invoices posted to Month ending January 2015

665 South Pender	Invoices posted to Month ending January 2015	<u>Budget</u>	<u>Spent</u>	<u>Balance</u>
65000-665	LTC "Trustee Expenses"	700.00	552.24	147.76
LTC Local				
65200-665	LTC - Local Exp - LTC Meeting Expenses	1,000.00	600.96	399.04
65210-665	LTC - Local Exp - APC Meeting Expenses	500.00	175.74	324.26
65220-665	LTC - Local Exp - Communications	300.00	0.00	300.00
65230-665	LTC - Local Exp - Special Projects	750.00	139.53	610.47
TOTAL LTC Local Expense		<u>2,550.00</u>	<u>916.23</u>	<u>1,633.77</u>
Projects				
73001-665-2011	South Pender OCP/LUB	5,000.00	623.91	4,376.09
TOTAL Project Expenses		<u>5,000.00</u>	<u>623.91</u>	<u>4,376.09</u>

South Pender Island Local Trust Committee

POLICIES AND STANDING RESOLUTIONS

Revised: February 14, 2012

No	Meeting Date	Resolution No.	Issue	Policy
1.	May 23, 2006	SP-LTC-12-06	Adoption of Minutes	That staff prepare draft of meeting minutes for Local Trust Committee reading, correction and amendment as soon as possible following meetings. The South Pender Island Local Trust Committee will adopt these minutes by Resolution without Meeting within fourteen business days, if possible, of each meeting. [The adopted minutes will be posted to the website as soon as possible and a copy will also be included in the next meeting's agenda package].
2.	April 14, 2009	SP-LTC-19-09	Website	It was Moved and Seconded that the South Pender Island Local Trust Committee request that the "latest news" section of the South Pender Island webpage be updated monthly with the addition of the South Pender Island Local Trust Committee Report to the Pender Post.
3.	October 5, 2010		Follow up action list	Send FUAL to trustees once drafted following the meeting.

Trust Fund Board Report to Local Trust Committees and BIM

– January 2015

Chair and FPC representative

At its first meeting of the term, the Trust Fund Board (TFB) re-elected Tony Law as chair and appointed Dereck Atha as TFB's representative on the Financial Planning Committee.

Regional Conservation Plan extended

The Board voted to extend our 2011-15 Regional Conservation Plan (RCP) to 2017. The RCP contains strategic goals and objectives which guide our work. Rather than preparing a new plan, the extension will allow us to focus resources on other priorities, including completing some outstanding actions in the RCP. The Board also felt that it would be more efficient and effective to develop a revised RCP alongside preparing our 2017-22 Five Year Plan, which is required by legislation.

Conservation Strategy for Coastal Douglas-fir and Associated Ecosystems

Islands Trust Fund (ITF) staff are participating in the multi-agency Coastal Douglas-fir and Associated Ecosystem Conservation Partnership (CDFCP) which is in the process of developing a Conservation Strategy. TFB has asked staff to look at integrating the completed strategy into our Regional Conservation Plan and report back to the board.

Eelgrass Mapping Complete

We are excited that our Eelgrass Mapping Project –covering the whole Trust Area – is now complete. This addresses one of the goals in our Regional Conservation Plan: to work with partners to conserve marine environments and habitat. Eelgrass is a critical near-shore habitat for numerous birds, mammals, invertebrates and commercial and non-commercial fish. Eelgrass beds are also an important carbon sink.

The mapping of eelgrass beds will help local trust committees, the Trust Fund Board and others to make science-based decisions around land use and conservation to prevent further habitat loss. We understand that the Ministry of Forests, Lands and Natural Resource Operations is welcoming this mapping as a tool to help assess dock and other shoreline applications. The report accompanying the mapping includes recommendations for restoring eelgrass habitat. The full report is available on ITF's website. The mapped data is also available on *MapIT [Shorelines](#)*. If your local trust committee would like to post the maps and recommendations relevant to your local trust area on your web page, please direct your planner to do so.

Eelgrass mapping was done by boat with the aid of a towed underwater camera. The Islands Trust area was mapped over three years through a partnership with SeaChange Marine Conservation Society. The Islands Trust contributed just over half of the total budget of this project with the remainder of the funds being secured by our project partner.

Conservation Planning and Official Community Plans

One of our Regional Conservation Plan goals is to work with the Islands Trust Council, local trust committees and island municipalities to implement conservation goals in Official Community Plans (OCPs). As your local trust committee strategizes your priorities for the term, you may want to consider how to advance conservation provisions in your OCPs, including using sensitive and nearshore

ecosystem mapping. One focus of attention might be Council's policy to establish protected area networks.

From the Policy Statement:

3.1.2 It is Trust Council's policy to work towards the establishment of a network of protected areas that preserves representative ecosystems in their natural state and in sufficient size and distribution to sustain their ecological¹⁴ integrity

3.1.3 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the identification and protection of the environmentally sensitive areas and significant natural sites, features and landforms in their planning area.

3.1.4 Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the planning, establishment, and maintenance of a network of protected areas that preserve the representative ecosystems of their planning area and maintain their ecological integrity.

Updates Specific to Local Trust Areas

Hornby

ITF's Ecosystem Protection Specialist, Kate Emmings, continues to work with Hornby Island property owner Karin Fischer and Conservancy Hornby Island to establish a conservation covenant to protect Garry oak and Douglas-fir ecosystems on her property.

Denman

ITF's manager, Jennifer Eliason, is contacting Ministry of Environment staff to pursue an inter-agency meeting to address the disposition of Crown land with conservation values on Denman Island. ITF's Property Management Specialist, Nuala Murphy, is working with Denman Conservancy Association to address management issues on Denman's nature reserves, including rerouting of a trail at Morrison Marsh Nature Reserve in coordination communication with BC Parks , and planning a restoration project at Lindsay Dickson Nature Reserve.

Gabriola

ITF's Property Management Specialist, Nuala Murphy, is reviewing workable options to address safety issues on the Coats Millstone Nature Reserve.

Lasqueti

TFB has signed a covenant with Lasqueti Island Nature Conservancy and Nanaimo and Area Land Trust Society to ensure the continued protection of ecological values on the John Osland Nature Reserve.

TFB received a request to consider placement of a 911 relay installation on Mount Trematon. The Board has noted that such a request cannot be considered under existing land use regulations. TFB would also need to consult with the donors, and seek the approval of the covenant holders and Environment Canada because of their roles in protecting the values of this nature reserve.

Gambier

The board formally established the Gambier Island Acquisition Fund, created with funds from a significant bequest received in 2011. Restoration continues at Long Bay Wetlands Nature Reserve with work to protect naturally regenerating conifers by caging them from browsing deer.

Staff are currently working to develop a new nature reserve on Keats island, after the TFB approved a conservation proposal from the Convention of Baptist Churches in November.

Thetis

A special Thetis Island Acquisition Fund has been established following a significant donation provided to support land acquisition on Thetis Island.

Salt Spring

In November 2014, TFB approved a conservation proposal on Salt Spring Island and has directed staff to negotiate a conservation covenant on private land in the Reginald Hill area.

North Pender

Staff continue to work on two conservation covenants on North Pender Island, one for Wallace Point and one for the Clam Bay Farm property.

South Pender

ITF's Ecosystem Specialist, Kate Emmings, continues to work with partners to secure a new covenant over Brooks Point Regional Park, to include the recent acquisition. The covenant will be co-held with Habitat Acquisition Trust.

Mayne

A revised management plan for Horton Bayviary has begun which will involve public consultation for the property.

Galiano

TFB approved a new conservation covenant on Galiano Island and directed staff to negotiate a conservation covenant. ITF had provided a contribution from the "Opportunity Fund" to assist the Galiano Conservancy Association with appraisal costs associated with the acquisition of this property and approved funds to cover some necessary survey costs. Staff have also indicated a willingness to accept a conservation covenant for the Crystal Mountain property should the local trust committee choose to proceed with the Crystal Mountain rezoning application.

Bowen

Bowen Island Municipal Council have renewed discussions about the expansion of the NAPTEP program onto Bowen Island. Staff are providing information as requested to support decision making.

Ongoing property management activities, carried out in partnership with the Bowen Island Conservancy, include installing additional signage at the David Otter Nature Reserve, upgrading trails, removing invasive plant species, and planting and caging trees to protect them from browsing at Singing Woods Nature Reserve and continuing to monitor and work with the Ministry of Forests, Lands and Natural Resource Operations to address off-road vehicle use at Fairy Fen Nature Reserve.



Memorandum

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Date: February 16, 2015

To: South Pender Island Local Trust Committee

From: Kate Emmings, Ecosystem Protection Specialist, Islands Trust Fund

Re: Islands Trust/Islands Trust Fund Eelgrass Mapping

Eelgrass Mapping in the South Pender Island Local Trust Area

Eelgrass Mapping for the South Pender Island Local Trust Area was completed in December, 2012 by SeaChange Marine Conservation Society under contract with the Islands Trust (see attached report). Findings for the South Pender Island Local Trust Area found that:

- Eelgrass comprises 8.5% of the shoreline of the South Pender Local Trust Area
- Less eelgrass was found along the South Pender Local Trust Area shoreline than in other areas, likely due to the high exposure of many of the shorelines
- Eelgrass beds that were identified were fairly evenly split between flat beds, which are found where shoreline drop-offs are gradual, and fringing beds, which are found where shorelines drop off steeply.

About Eelgrass

Eelgrass is a critical nearshore habitat for birds, mammals, invertebrates and commercial and non commercial fish. Eelgrass beds are also an important carbon sink. Contaminants, shading from docks and overwater structures, increased sedimentation, marine traffic and development pressures from shoreline land use threaten eelgrass ecosystems and the species they support.

Report Recommendations

The 2012-2014 Nearshore Eelgrass Inventory Report contains several recommendations. Some of the relevant recommendations for local trust committees are:

- Create setbacks from the shoreline in regulatory bylaws.
- Prevent construction of docks in eelgrass beds. Where dock construction cannot be avoided, ensure that docks are built to allow light to pass through to eelgrass beds below and that they are constructed from materials that have a minimum impact on water quality.
- Require removal of illegal shoreline modifications and habitat restoration where appropriate.
- Support education of the boating community and shoreline landowners regarding the importance of eelgrass beds and natural shorelines.
- Encourage the boating community not to locate mooring buoys in eelgrass beds and not to anchor in eelgrass beds. Where mooring buoys are located in eelgrass beds, encourage the use of line floats to

keep chains and lines off of the sea floor where they can drag and scour the bottom, removing eelgrass habitat and killing species.

- Encourage dock owners to replace dock materials with light penetrable materials.

Next Steps

The Islands Trust Fund has placed the eelgrass mapping and the associated report on its website at <http://www.islandstrustfund.bc.ca/initiatives/marineconservation/eelgrass-mapping.aspx> and has added eelgrass mapping to the MapIT public mapping site at <http://www.islandstrust.bc.ca/maps/mapit.aspx> (Shorelines Application). Local trust committees are encouraged to provide links to the mapping on their websites and consider actions within their local trust areas to include eelgrass protection in their official community plans and regulatory bylaws as per the Islands Trust Policy Statement, section 3.4.4 (see background below). Local trust committees may wish to direct staff to highlight maps and recommendations specific to their local trust area on their own webpage.

Attachment Report: 2012-2014 Nearshore Eelgrass Inventory
 Map 2: Eelgrass Presence South Pender Island

Background

The Islands Trust Policy Statement, section 3.4.4, states:

Local trust committees and island municipalities shall, in their official community plans and regulatory bylaws, address the protection of sensitive coastal areas.

The 2013 Audit of Biodiversity in B.C. (Office of the Auditor General of B.C., www.bcauditor.com/pubs/2013/report10/audit-biodiversity-bc-assessing-effectiveness-key-tools) highlighted the importance of collecting sufficient and reliable information on species distribution in order to make well-informed decisions about conserving biodiversity. With sensitive ecosystem mapping completed in the Islands Trust Area (2008-2010), the Bowen Island Municipality (BIM) and local trust committees have access to ecosystem data for terrestrial species. The Islands Trust and Islands Trust Fund are now working to acquire mapping of sensitive coastal areas to help island governments meet the requirements of the Islands Trust Policy Statement.

In 2012, the Islands Trust and Islands Trust Fund launched a project to map eelgrass as a partnership with the Seagrass Conservation Working Group and SeaChange Marine Conservation Society. The arrangement between the partners resulted in shared funding of the program between the Islands Trust, the Islands Trust Fund and the Seagrass Conservation Working Group (through grants acquired by its member group, SeaChange Marine Conservation Society).

Eelgrass mapping is intended to assist BIM, local trust committees and the Trust Fund Board in making science-based decisions about land use and conservation to preserve coastal ecosystems in the Islands Trust Area. Eelgrass mapping will serve as a baseline inventory to monitor the effects of conservation activities, such as Marine Protected Areas, as well as human impacts, such as potential increased tanker traffic, marine industrial activities (e.g. log dumping and booms) and foreshore use (e.g. wharves and docks). It will also enable marine conservation groups to identify areas ideal for eelgrass restoration.

Mapping Partnership:

Mapping was completed by SeaChange Marine Conservation Society through a partnership with the Seagrass Conservation Working Group and the Islands Trust Fund. The Mayne Island Conservation Society provided eelgrass mapping for Mayne Island free of charge. The total project budget was \$155,610 (over three years) and the Islands Trust, primarily through Islands Trust Fund budgets, contributed 54% of the total amount.

Mapping is now complete for the entire Islands Trust Area. Islands were mapped over three years as follows:

2012:

- Gambier Island
- Lasqueti Island
- Mayne Island Local Trust Area (information courtesy of Mayne Island Conservation Society)
- North Pender Island
- South Pender Island
- Thetis Island Local Trust Area (excluding Valdes)

2013:

- Ballenas-Winchelsea (Executive Islands) Local Trust Area
- Bowen Municipality
- Denman Island Local Trust Area
- Gabriola Island Local Trust Area
- Galiano Island Local Trust Area
- Hornby Island Local Trust Area
- Gambier Associated Islands except those off of the Sunshine Coast (e.g. the Thormanbys)
- Valdes Island
- Cufra Inlet (Thetis Island)

2014:

- North Pender Associated Islands
- Islands off the Sunshine Coast (e.g. the Thormanby Islands)
- Lasqueti Associated Islands
- Saturna Island Local Trust Area
- Salt Spring Island Local Trust Area

Resources for local trust committees

The following are some resources for local trust committees. Please see references in the attached report for a more complete list.

Hutton, K. E. and S. C. Samis. 2000. Guidelines to protect fish and fish habitat from treated wood used in aquatic environments in the Pacific Region. Can. Tech. Rep. Fish. Aquat. Sci. 2314: vi + 34 p. Available at <http://www.dfo-mpo.gc.ca/Library/245973.pdf> .

Fisheries and Oceans Canada. Projects Near Water. Available at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html> .

Province of BC. 2011 (amended August 2013). Land Use Operational Policy: Private Moorage. Available at http://www.for.gov.bc.ca/Land_Tenures/documents/policies/private_moorage.pdf .

EnviroVision, Herrera Environmental, and Aquatic Habitat Guidelines Program. October 2007 (revised June 2010). Protecting Nearshore Habitats and Functions in Puget Sound. Available at <http://wdfw.wa.gov/publications/00047/>.

2012 - 2014

Final Report Nearshore Eelgrass Inventory



**Prepared for the Islands Trust and
Islands Trust Fund by:**

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Acknowledgements

SeaChange acknowledges the Mayne Island Conservancy Society for the use of its software and computer for data management. SeaChange would also like to acknowledge funding from the following sources, which has made this project possible: Islands Trust, Islands Trust Fund, the Capital Regional District, the Comox Valley Regional District, Metro Vancouver, the Greater Victoria Savings and Credit Union Legacy Foundation, Vancouver City Savings (Vancity), the Public Conservation Assistance Fund, Moonstone Enterprise, the Pacific Salmon Foundation and the Victoria Foundation.

Thank you.

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1 Introduction

Land use developments within watersheds have led to a loss of natural estuarine and nearshore marine habitats in British Columbia - the receiving waters of land based activities. Agriculture, forestry, and dredging for commercial and residential development have all contributed to the loss (Durance, 2002). The pressure to modify natural marine features and habitat for the development of commercial facilities and residential units within coastal areas is intensifying. To prepare for the increase in populations on the BC coast and concurrent shoreline developments, it is necessary to identify and quantify nearshore habitats to protect and maintain these valuable nearshore environments.

As part of a conservation strategy to protect and conserve critical nearshore areas, the Islands Trust and the Islands Trust Fund initiated an inventory of the presence of native eelgrass (*Zostera marina*) surrounding islands within the Islands Trust Area. The 2012-2014 Nearshore Eelgrass Inventory Report provides background information for future eelgrass inventories and adds value to the Islands Trust Shoreline Mapping Project. The goal is to support sound decisions that will affect the natural ecological health of the marine nearshores within the Islands Trust Area. The Islands Trust and Islands Trust Fund have limited jurisdiction over marine areas; however, they can have an impact on long term development and protection of the shoreline. This report and the mapping information that forms its basis are designed to assist Islands Trust and Islands Trust Fund planners and elected officials to make science-based decisions when planning for nearshore areas.

ShoreZone maps of coastal habitats within the Islands Trust Area were created over the past decade. ShoreZone is a mapping and classification system that produces an inventory of geomorphic and biological features of the intertidal and nearshore zones from low altitude aerial images of the coastal environment (Harper 2011). These maps provided the groundwork for identifying suitable physical components for eelgrass on the islands mapped during 2012-2014. Eelgrass biobands are not shown for First Nations Reserves on the maps.

The presence/absence of *Zostera marina* was determined according to the methodology of Cynthia Durance, R.P. Bio., Precision Identification (Appendix A). A more detailed description of the methods used can be found in Section 6.

2 Importance of Eelgrass

Seagrasses are rooted aquatic plants that grow in estuaries and along low wave energy shorelines throughout the world. They have important influences on biogeochemical cycling, sediment stability, and food web support (McGlathery et al. 2007; Orth et al., 2006). Seagrasses can form extensive meadows supporting high biodiversity. The global species diversity of

seagrasses is low (~60 species). Across the globe, however, seagrass meadows cover about 177,000 square kilometers of coastal waters – larger than the combined area of the Maritime Provinces. (Short et al, 2007) British Columbia has about 400 km² of saltmarsh and eelgrass habitats (Campbell 2010).

2.1 Biodiversity

The complex and intricate food webs of an eelgrass (*Zostera marina*) meadow provide food and shelter for numerous fish and invertebrates. Meadows also serve as a nursery habitat and as a refuge from predation for juvenile fishes (Orth et al., 1984; Bostrom and Bonsdorff 2000; Duarte 2000). The productivity of native seagrasses rivals the world's richest farmlands and tropical rainforests. From an unstructured muddy/sandy bottom grows a myriad pattern of leaves that supply nutrients to salmonids and other fish, shellfish, waterfowl and about 124 species of faunal invertebrates. The plants offer surface area for over 350 species of macroalgae and 91 species of epiphytic microalgae – the basis of the food web for juvenile salmon in marine waters (Phillips 1994). Often referred to as “salmon highways”, nearshore marine environments containing eelgrass beds (*Zostera marina*) are home to over 80% of commercially important fish and shellfish species, including all species of salmon, at some point in their life histories (Durance 2002).

2.2 Blue Carbon

Like terrestrial forests, eelgrass habitats capture and store large amounts of carbon but at much more efficient rates - up to ninety times the uptake provided by equivalent areas of forest. This “Blue Carbon” is stored in sediments where it is stable for thousands of years. In B.C., roughly 400 km² of salt marsh and seagrass meadows sequester as much carbon as B.C.'s portion of the boreal forest, and the equivalent of the emissions of some 200,000 passenger cars (Campbell 2010).

When eelgrass beds are restored, the rate of carbon sequestration appears to be rapid over the first few years and up to 40 years following restoration. The natural transport of eelgrass by currents and wave action to deeper waters in estuaries and the coastal ocean may further sequester more carbon (Thom 2011).

As ocean waters warm as a result of climate change (up to 5 C° during the spring), greater flowering as well as faster growth of eelgrass shoots has been observed. Both of these changes result in greater biomass. Like marshes, much of the eelgrass biomass is under the substrate, indicating that a warming environment may result in greater carbon accumulation rates (Thom 2011).

2.3 Ecosystem Services

Ecosystem services are the benefits provided by the land, air, water and subsurface materials of the earth (Molnar et al 2012). Eelgrass habitats within the lower reaches of the Salish Sea provide

carbon sequestration and storage, habitat refugia and nursery and nutrient cycling benefits to an approximated natural capital cost of \$80,929 per hectare per year (Molnar et al., 2012). Within the Islands Trust Area, eelgrass habitats also provide revenue for commercial fisheries, recreational fishery, and revenue from tourism.

Another ecosystem service eelgrass habitats provide is shoreline stability. Established eelgrass beds reduce currents, leading to increased sediment and organic detritus deposition (Durance 2002). Continuous dense eelgrass beds provide a buffer for incoming wave energy. The more the bed is fragmented by physical structures (e.g. boats, wharves, docks and overwater play structures), the less eelgrass beds function as an erosion buffer. Where shorelines are constrained by development or structures to prevent erosion (e.g. rip rap, sea walls), natural coastal features will be squeezed out and maintaining shoreline infrastructure and development will require increasingly expensive engineering measures (Mumford 2007). Pre-emptive planning for these changing conditions is necessary to protect settlement areas and shore features recognized for their natural and ecosystem services.

Protecting and conserving, and in some instances restoring these critical habitats is a recommendation of the Islands Trust Fund's Regional Conservation Plan. Mapping eelgrass is identified as a priority to meet the goal of conserving marine ecosystems and habitats. As well, accounting for these benefits in economic dollars and cents and factoring them into decision making policies would emphasize the economic, cultural and ecological values of nearshore habitats.

3 Eelgrass Habitat Characteristics

Eelgrass meadows are found in most of the world's coastal temperate regions except at extremely high latitudes. Physical and chemical factors affecting *Zostera marina* include temperature, light attenuation, elevation, substratum, wave action, salinity and pH. Worldwide, the plants survive under a wide range of water temperatures, from 0° to greater than 30°C. The optimum temperature for growth lies between 10° - 20° C in most areas (Phillips 1984). Eelgrass grows best within the Salish Sea in salinity ranges of 20 ppt - 32 ppt. Eelgrass can tolerate periods of freshwater inundation on a seasonal or daily basis (Durance 2002).

Of all the above factors, light availability and elevation may be the most crucial. Light availability seems to be the primary factor limiting depth, distribution, density, and productivity of eelgrass meadows within their salinity and temperature ranges. For example, when the Coal Port was expanded in 1982-1983 in Roberts Bank, the range of both native eelgrass (*Z. marina*) and introduced eelgrass (*Z. japonica*) expanded. The construction of causeways across a broad intertidal zone directed the turbid Fraser River water offshore, improving the light regime and initiating higher productivity in the eelgrass beds (Harrison and Dunn 1999).

3.1 Wildlife Corridors

Seagrasses are in decline throughout much of the world, with rates of loss accelerating from a median of 0.9% per year before 1940 to 7% per year since 1990 (Waycott et al., 2009). It has been estimated that 18% of coastal marine and nearshore wildlife habitat, including eelgrass habitats, in the Salish Sea has been destroyed (British Columbia/Washington Marine Science Panel 1994). A large percentage of this decline is attributed to human impacts, including filling of shallow waters, dredging, and eutrophication (Short and Wyllie-Echeverria 1996).

Often referred to as “salmon highways”, nearshore marine environments containing *Z. marina* beds are home to more than 80% of commercially important fish and shellfish species, including all species of salmon, at some point in their life histories (Durance 2002). *Zostera marina* beds are highways for Chinook, Coho, Pink, Chum, and Sockeye salmonid stocks (Thompson 1994). Great Blue Herons have been observed to feed in eelgrass beds within 3 km of their nesting colonies. Other important bird species using these habitats include Brant geese, Rhinoceros Auklets, cormorants and Western Grebes.

E.O. Wilson proposed the importance of habitat corridors in the 1960s (MacArthur and Wilson 1967). Habitat reduction and fragmentation at a variety of spatial scales has been widely acknowledged as a primary cause of the decline of many species worldwide (Thompson 1994). Habitat fragmentation generally leads to smaller and more isolated animal populations. Smaller populations are more vulnerable to local extinction. To reduce the isolation of habitat fragments, many conservation biologists have recommended maintaining landscape “connectivity” - preserving habitat for movement of species between remaining fragments (BC/Washington Marine Science Panel 1994).

Many nearshore environments on the islands inventoried in 2012 and 2013 indicated continuous fringing eelgrass beds. These beds are the connectivity for salmon and other marine wildlife for shelter, food and refugia. Although they may contain less biomass than continuous flat beds of eelgrass plants, they serve an important function and should be protected.

4 Impacts from Human Activities

The majority of the earth’s population now lives within 10% of land defined as “coastal”. One of the results of this increased pressure on coastal shorelines has been the destruction of approximately 215,000,000 acres of estuarine habitat worldwide (BC/Washington Marine Science Panel 1994). With the population of the Georgia Basin/Puget Sound forecasted to exceed nine million people by 2020, nearshore critical habitat loss is likely to increase.

The following is a description of some of the major impacts human coastal settlements have on eelgrass habitats and their functions.

4.1 Removal and Burial

Dredging and filling associated with the construction of harbors and ports have been the major cause of the decline in eelgrass beds (Levings and Thom 1994). The plants themselves are removed and then the physical, chemical and biological composition of the system is altered. Sediments raised by dredging can also bury plants growing nearby and alter eelgrass density by affecting water clarity. The reduction in plant density can further increase silt load because it reduces the capacity of eelgrass beds to trap sediments. It can also increase the erosion of bottom sediments because of the reduced root mass available to hold sediments together. The ultimate result is the reversal of the entire nutrient-flow mechanics of the ecosystem. Dredging activities include hydraulic clam harvesting, bay scallop raking, oyster harvesting and maintenance dredging of harbors. Filling in shallow wetland areas with the debris from wood processing (e.g. log dumps and log booms), sediment runoff from agricultural land and logging severely impact eelgrass habitats as well (Phillips 1984).

4.2 Pollution and Changes to Freshwater Input

Since estuaries are extremely vulnerable to changes in salinity and temperature, human activities affecting freshwater flows from streams heavily affect eelgrass meadows. Pristine watersheds surrounding estuaries provide steady supplies of fresh water and clean sediments to seagrass communities in the estuary. The opposite holds true as well: unhealthy watersheds increase the problems for seagrass distribution and productivity. Activities that cause increased nutrient loads in streams and rivers can result in overgrowth of algae that then die and deplete the oxygen from the bottom of poorly flushed bays. Chemical contaminants, such as fertilizers, pesticides and household hazardous wastes, runoff from streets and roads and runoff from industrial activities also add to the toxic composition of muddy bottoms of eelgrass meadows (BC /Washington Science Panel 1994).

Quiescent waters are more susceptible to chronic contamination than areas with high energy water flows (Harrison and Dunn 1999). In the Salish Sea, more than 540 sq. kilometers of intertidal gravel, sand and mud habitat are closed for shellfish harvesting because of bacterial contamination. More than 730 sq. kilometers of shallow water habitat are unusable for crab and shrimp because of dioxin contamination from pulp mills. More than 32% of classified commercial shellfish growing areas in Puget Sound and Juan de Fuca Strait are either restricted or prohibited for harvesting due to water quality issues (Levings and Thom 1994). The same activities that impact shellfish, crab and shrimp harvesting also impact the health of eelgrass meadows.

Most toxic chemicals that accumulate in sediments in an inland sea such as the Salish Sea reside there for long periods of time unless they are physically removed. There is evidence that the roots of eelgrass take up a significant amount of heavy metals for long periods of time (e.g. lead, cadmium, zinc and chromium), thereby making up a large pool of heavy metals in coastal systems (Lyngby and Brix 1989). The consequences of toxic chemicals may have long term effects on eelgrass consumers, especially waterfowl and marine invertebrates.

4.3 Forestry Activities

Logging may cause scouring of stream channels and thereby increase sedimentation in estuaries, limiting the light available for photosynthesis. Bark chips from log booms smother eelgrass beds and form a blanket on the substrate, which leads to anaerobic sediment devoid of life (BC/Washington Marine Science Panel 1994).

4.4 Oil Spills

Oil spills pose serious threats to eelgrass communities growing in sheltered bays that are poorly flushed. These areas will tend to retain oil for long periods of time, becoming chronically contaminated. If spills happen in late summer or winter when leaf sloughing is at its peak, mats of drift blades will tend to catch and retain oil for later decomposition in the intertidal zone. Seed production and viability could be affected if a spill occurs in the spring (Beak Consultants 1975).

4.5 Shading by Overwater Structures

Increase in demand for overwater structures in the islands can have deleterious and cumulative impacts on the nearshore system. Shading, disruption of nearshore marine water movement, damage to the shore and subtidal habitat and operational pollution from boats can be some of the impacts (Van der Slagt et al., 2003).

4.6 Effects of Boating

Boat propeller cuts disturb eelgrass beds in shallow waters, both when boats are travelling through shallow areas and when they are approaching the shore to debark passengers, moor or anchor. The impacts from boating activities in eelgrass beds may be affecting waterfowl such as Black Brant, direct grazers on eelgrass. The Brant have been steadily decreasing in the Pacific Northwest since the 1940's (Phillips 1994).

Conserving eelgrass habitats enhances the amount of high quality rearing habitat as well as increases the ecological services for human communities, including erosion control, sediment settling and food production (shellfish and fish). With the population of the Georgia Basin/Puget Sound forecasted to exceed nine million people by 2020, nearshore critical habitat loss is likely to increase.

5 Eelgrass and Rising Sea Levels

Sea level rise and increased frequency and intensity of extreme weather are two expected and observed effects of climate change (IPCC, 2007, IPCC 2012). The Intergovernmental Panel on Climate Change warns that on small islands in particular, sea level rise is expected to exacerbate coastal hazards such as storm surges, floods and erosion (IPCC 2007).

Impacts of rising sea level on the coastline of the Salish Sea will be more complicated than the inundation of low-lying areas. The effects will differ significantly between different shoreline features. Inland movement of sea water (Titus and Strange 2008), as well as erosion and re-deposition of sediment will reshape the coastal landscape where there is room for the shoreline to shift and sufficient sediment is available (Mumford 2007). Increasing sea levels are expected to shift the zone in which sunlight is available to eelgrass beds. As a result, eelgrass beds are expected to shift inland unless barriers impede this shift (Titus and Strange 2008).

6 Mapping Methodology

Identifying and monitoring the distribution of native eelgrass habitats supplies much needed information for regional planning. Maps and associated outreach activities may also lead to improvements in land use practices from increased knowledge and awareness about the habitat. Locating areas suitable for eelgrass restoration will lead to rehabilitation of eelgrass meadows as funding opportunities become available.

The eelgrass inventory for this project entailed determining the presence or absence of *Zostera marina* with an underwater towed camera and a boat, except in the Cufra Inlet (Thetis Island) where mapping was done by kayak without a towed camera due to shallow tides. GPS hand held units were used to record waypoints at approximately 10 m intervals in 2012. Accuracy of the GPS readings was on average ± 2.4 metres. In 2013, a Trimble Pathfinder ProXR GPS was used, except in the Cufra Inlet where a handheld GPS unit was used. A detailed description of the methods used to map eelgrass habitats can be found in Appendix A.

The terms used to map eelgrass habitats are described below.

6.1 Distribution

The distribution of eelgrass within the bed is described for this inventory as either patchy or continuous. Patchy beds are those that contain isolated groups or patches of plants. Beds which are not patchy are classified as continuous; a bed that contains bare patches surrounded by eelgrass is classified as continuous. The boundary of a bed is determined by a shoot density of less than 1 shoot per square meter (Durance, 2002).

6.2 Form

There are two basic forms of eelgrass beds in the Pacific Northwest: fringing beds that occur as relatively narrow bands usually on gentle slopes, and more expansive beds that cover large areas such as tidal flats known as “flat” beds (Durance, 2002). Inter-annual variation within a bed is not well known, but appears to be less than ten percent (Dowty et al, 2005). Fringing beds are generally linear. Flat beds are areas of large eelgrass beds in embayments that extend deeper than fringing and more linear beds found along shorelines (Dowty et al. 2005). Distribution is

often, but not solely, determined by aspect to dominant winds. Eelgrass distribution across a bathymetric gradient is limited at the upper boundary by the degree of exposure at low tide (desiccation) and by light limitations at the lower boundary.

6.3 Sediment Types

When possible, field observers rated the primary, secondary and tertiary occurrence of substrate types: sand, mud, pebble and cobble. A subtidal environment dominated by cobble might indicate a habitat more suitable for large kelps, which would shade any eelgrass shoots growing between the cobble during the summer months. A predominately sandy muddy bottom would support continuous eelgrass meadows in most cases, unless other factors are present, such as exposure to strong waves or the interruption of habitat by boat mooring buoys. In some cases substrate characteristics change with increasing depth (e.g. cobble to sand or mud to cobble).

6.4 Percent of Cover

Percent cover was estimated in broad categories to increase accuracy of observation (<25%, 26-75%, >75%). The coverage of an eelgrass meadow reflects both the substrate and the flow of water through it. A calm environment with a sandy mud substrate generally supports a dense, continuous eelgrass bed with virtually 100% cover. The cover of eelgrass in areas subjected to strong currents is typically patchy. Areas with heterogeneous substrate (mixture of fine and coarse) also tend to be patchy (Durance 2002). The percent of cover data collected from this inventory is based on subjective approximations as observed through the lens of an underwater camera. The approximate percent of cover does give important information on the density and productivity of a bed.

6.5 Tidal Fluctuations

It was important to note whether the tide was running or slack at the time of the inventory. Eelgrass shoots will tend to bend towards the substrate during running tides; the accuracy of percent of cover is then very approximate.

6.6 Presence of Other Vegetation

Other types of algae were documented as broad or tuft. Broad algae, such as kelps, sea lettuce and *Sargassum muticum* can blanket the ocean floor and make it difficult to characterize substrate. They can also shade eelgrass in mixed substrates as they anchor to hard surfaces. Tuft algae, such as brown and red algae do not shade eelgrass but indicate presence of hard surfaces for attachment. The presence of kelps, predominately large brown kelps, was noted, as was the presence of other types of smaller algae and *Sargassum muticum*. *Sargassum* is an exotic species of algae that can overshadow eelgrass if the substrate is a mix of sand and cobble. The presence of *Sargassum* was noted especially off the shores of Thetis and North and South Pender Islands.

6.7 Visibility

Visibility was a subjective observation and was rated low, medium and high. The amount of visibility could impact in some instances the accuracy of the observations, namely characterization of substrate. For example, Gambier Island often had low visibility. This can be caused by winds, sediment flows from the lower reaches of watersheds, inputs from nearby streams and tidal/current movements. Low tide periods make for the best visibility.

7 Survey Limitations

The range of accuracy for all the islands surveyed in 2012 was within ± 2.4 metres. Visibility at times was poor, due to tidal influences, sedimentation in the water column from stream outflows, summer plankton blooms and wind. During the last day of mapping Gambier Island in August, 2012 the wind was too high to continue the inventory. The survey team returned to complete the inventory in September 2012. During the 2013 survey of islands within Howe Sound, the winds were often a factor in scheduling the inventories. The average horizontal precision for the GPS unit used for the 2013 and 2014 eelgrass inventories was ± 0.814 metres.

Shorelines within the Gulf Islands National Park Reserve were not included as part of this survey. However, eelgrass that occurs along shorelines within the Gulf Islands National Park Reserve are represented by BC Shorezone eelgrass biobands on maps included with this report.

Percent of cover of eelgrass shoots is difficult to assess accurately with an underwater camera but was deemed important to characterize. Areas of particular interest (e.g., impact of shoreline modifications, restoration potential) should be surveyed by SCUBA divers. Overall, this inventory is an indication of the presence or absence of eelgrass habitat and does not represent maps of the outer or shoreward edges of each bed, with the exception of Bowen, Passage and Bowyer Islands. Polygons were mapped for these islands where possible in 2013.

8 2012 Inventory Findings

Eelgrass inventories were conducted using ShoreZone inventory maps which include presence of eelgrass where available and the ShoreZone shoreline classification types (available for all islands) as a reference.

The Islands Trust eelgrass inventory is important, particularly on islands such as Gambier and Lasqueti, as the ShoreZone data was based on Orthophoto images alone. Valdes, Cufra Inlet (Thetis Island), Passage and Bowyer Islands were mapped in 2013, but are included in the 2012 inventory, as they are within the Thetis and Gambier Island Local Trust Areas which were

surveyed in 2012. Similarly, the Associated Islands of Lasqueti Island and North Pender Islands were mapped in 2014 and are included here.

8.1 Gambier Island Local Trust Area

Gambier Island was surveyed on August 21st-23rd and September 11th, 2012. This island has rugged shorelines, with steep slopes leading to the subtidal zone. Eelgrass habitat comprises approximately 8.3% of the island's linear subtidal shoreline. The majority of the eelgrass beds are fringing, the significance of which has been described earlier in this report as important to wildlife corridors.

Gambier Island has been highly impacted by historical log storage practices. Eight sites were identified as possible restoration areas starting with small eelgrass test plots (approximately 800 to 1000 shoots). Larger eelgrass restoration might occur if these test plots increase in shoot density and coverage and as funding opportunities arise. In some of these sites, backshore lands have been placed on the real estate market, which may impact future restoration efforts if docks and wharves are permitted as additions to upland development.

Boat mooring buoys and recreational equipment on the water over eelgrass beds as well as derelict log booming cables and booms were observed. There were numerous docks and wharves within eelgrass habitats. Several large shoreline modifications were also noted. These changes to the shore can have long term impacts on nearshore environments, including wave scouring, shading and interruptions to sediment transport. With the presence of active and retired log leases, the island would greatly benefit from an eelgrass restoration strategy plan to increase value for both biological diversity and ecological services.

Bowyer Island was surveyed on October 11-12th, 2013 using the polygon mapping methodology. The west, north and east coasts of Bowyer Island are largely steep and rocky. The south shore is characterized by several coves, varying in substrate. Eelgrass was estimated to extend along 11.35% of the Bowyer Island shoreline, observed only in particular coves along the southern portion of the island. The area of polygons containing eelgrass was observed to total 3690 m² and the length of mapped line features was observed to total 70 m. In addition to continuous beds, 4 individual patches of eelgrass were recorded, noted on the map as points. Eelgrass around Bowyer Island was similar in appearance and percent cover to that surrounding Bowen Island, i.e. patchy and sparse. Percent cover within the polygons was less than 25%.

Docks were located in eelgrass depth in the bay on the central southern shore of Bowyer Island, within zone W2/W1a. Eelgrass beds in that bay were observed to extend as far as the docks. Several chains were located on the ocean floor in zone W2 on the southeast shore of the island, and a large dock is within or adjacent to the eelgrass bed.

Large schools of small fish were frequently observed while circumnavigating Bowyer Island, particularly on the west, north and east coasts. Also observed were large numbers of pile perch (*Rhacochilus vacca*) and rockfish. Harbour seals were observed in several locations.

Passage Island was surveyed on October 5th, 2103 using the polygon methodology. One of the most exposed islands of Howe Sound, this island is a good example of how people and eelgrass tend to occur within similar, sheltered environments. Most of the island is characterized by rocky cliffs, with a few beaches. Eelgrass was observed in sections of the east coast of the island, along 15.7% of the total shoreline of the island. The area of polygons containing eelgrass was observed to total 3718 m² and the length of mapped line features was observed to total 40 m. Percent cover within the polygons was less than 25%. Ropes were observed on the sea floor in eelgrass depth in an area of the southeast coast of the island in the presence of patchy eelgrass. In this area was also located a floating dock within eelgrass depth and approximately 12 moorings in the eastern part of the area, where the eelgrass was very sparse and patchy. A floating dock and mooring was located at the south end of the more northerly eelgrass polygon on the east coast of the island.

The islands west of Bowen Island were inventoried between August 4th - 6th, 2013. The linear shoreline extent of eelgrass habitat surrounding the associated islands within the Gambier Island Local Trust Area totals approximately 13.3%.

Most of **Keats Island** contains flat or fringing beds of continuous eelgrass habitat on sandy/mud substrates, especially on the north and west facing shores. Patchy eelgrass beds were observed on the southeast shores, most likely due to exposure to predominant winds.

A high preponderance of single eelgrass patches lie on the southern tip of Keats Island, which may be caused by exposure to southerly winds, but also to the multiple locations of docks, especially on the southwestern shore.

There is potential for eelgrass restoration on the northern end of the island at the eastern point of a log booming area if the log lease is retired in the future. This area has a rocky/cobble foreshore, forested backshore and water park with overwater floats. There are also many docks on the southwestern portion of the island, which may cause fragmentation of eelgrass beds. Where there were low rock/cobble substrates, no eelgrass was present.

Anthropogenic Impacts include the construction of docks, presence of moored boats in eelgrass beds, removal of native backshore vegetation and recreational use of the nearshore (water park overwater play structures).

Continuous flat eelgrass habitat was observed in the southeast and western shores of **Shelter Island** directly west of Keats Island. No eelgrass was found near **Home Island** south west of Keats Island. **Preston Island** south of Keats Island contains a small continuous eelgrass bed on the southeast shore. The backshore is forested. **Ragged Islets** contain mostly patchy eelgrass beds throughout most of the subtidal areas, except for the west facing side of the islets. Mooring buoys and docks were observed on the eastern shore and a float on the northern side of the islets. Most of the islets are forested and contain rocky substrate. The small islet to the northeast contains a fringing continuous eelgrass bed.

The majority of eelgrass surrounding **Pasley Island** south of Ragged Islets is flat and continuous in

sandy/shell hash substrate. Vegetation along the foreshore has been cleared near many residences. Retaining walls, docks and mooring buoy chains interrupt eelgrass continuity along the south and southeastern facing shores. There is potential for eelgrass restoration on the southeastern facing shore almost at the midpoint of the island where there is a gap in an otherwise flat continuous eelgrass bed. On the northeastern shore of Pasley there is a dense eelgrass bed that could serve as a possible harvesting site for restoration of lost or damaged eelgrass habitat.

No eelgrass was noted off of **Worlcombe Island** southeast of Pasley Island.

Mickey Island northeast of Pasley Island is surrounded on its western, southern and northern shores by mostly fringing patchy beds of eelgrass in sandy/shell substrate. Eelgrass is mostly likely limited on the eastern shores by low rock/boulder substrates. The rocky shores are surrounded by natural forests. Minimal anthropogenic impacts were observed.

To the west lies **Hermit Island**. The majority of eelgrass habitat is flat and continuous in sandy/shell hash substrates. Most of the habitat is located on the east facing shoreline, though the foreshore is cobble or low rock. The majority of the backshore is forested. In some areas, dock construction interrupts eelgrass beds. Harlequin ducks were observed within an eelgrass area on the southwestern side of the island.

Little Popham Island south of Hermit Island has mostly continuous flat beds of eelgrass to the southwest and northeast next to rocky shores and forested backshores. It is very likely eelgrass is limited by the subtidal low rock/boulder substrate surrounding the remaining areas of the island. Most of the eelgrass around **Popham Island** lives on the northeastern portion of the island in sandy/shell substrate and consists mostly of continuous and flat beds along steep rocky shores.

Grace Island southwest of Gambier Island contains mostly fringing continuous eelgrass habitats in shell/sand substrates next to steep rocky foreshores and forested backshores. A large school of fish was observed. **Woolridge Island** to the northwest of Gambier Island contains mostly flat continuous beds of eelgrass on its north facing shores. The beds are very robust, with a possible harvesting site on the east shore if restoration is undertaken in this area. There is woody debris noted near a breakwater on the north western facing shore of the island.

The majority of eelgrass habitat surrounding **Anvil Island** northeast of Gambier Island lives on the southeastern shores and is characterized as fringing. Most of the island is classified as cliff or low rock/boulder which is limiting for eelgrass growth. The presence of numerous mooring buoys and retaining walls impact the habitat. One potential restoration site was identified on the eastern shore.

Near the Sunshine Coast, the shorelines of **North Thormanby Island** are composed of sediment accreted from nearby large sandy bluffs, as compared with the shores of **South Thormanby Island**, which are dominated by sea cliffs, low rock boulders and exposure to wind and strong wave forces from the south and northwest. Eelgrass composes 19.6% of the combined linear shorelines of both North and South Thormanby Islands.

Eelgrass distribution on North Thormanby Island reflects this predominately sandy sediment, as most of the eelgrass surveyed was continuous flat habitats completely surrounding the island, broken only by a change in sediment from sand to gravel. Rockfish, perch, seastars and Dungeness crabs were observed in the continuous flat eelgrass habitats.

Fringing continuous beds in **Buccaneer Bay** are the exception to the flat eelgrass habitats on the southwestern side of North Thormanby, where a steep drop off in depth prevents a flat contour for eelgrass growth. The eastern shore of Buccaneer Bay on South Thormanby Island had a paucity of eelgrass, but an abundance of sea urchins was noted.

No eelgrass habitat was noted off of **Surrey Island**. Very small eelgrass patches and two small continuous beds were located on the eastern shores of South Thormanby Island, most likely due to their exposure to high wave energy. No eelgrass was noted on **Bertha** and **Merry Islands** on the south end of South Thormanby Island. The furthest eastern island of the **Trail Islands** group contained patchy continuous eelgrass on its northwestern shoreline and continuous eelgrass flats on northeastern facing shores. An active log booming business operates on the north side of the island. An abundance of fish populations were observed in the waters on the eastern side of this island. Patchy eelgrass was also surveyed on the western-most island on the west side.

Turnagain, Echo and **Tikki Islands** contained very small patches of eelgrass. Within **Secret Cove**, on the northeast side of Turnagain Island log booming debris showed evidence of a former log storage site

8.2 Lasqueti Island Local Trust Area

Lasqueti Island was surveyed from July 17th to July 19th 2012. This island's shoreline is composed of substrate formed from shallow stony deposits over bedrock. Shallow sandy/muddy benches extend into the subtidal zones. Eelgrass comprises approximately 13.8% of the island's linear intertidal and subtidal shoreline. The majority of the eelgrass habitat is flat, dense and continuous. Most of the backshore lands were naturalized with little development.

Possible impacts that could be occurring would be from boat mooring buoys anchored within eelgrass habitats, grazing by Canada geese, historical damage from log booming practices, hardened shoreline modifications and site locations of some aquaculture enterprises. False Bay could benefit from more detailed eelgrass mapping, as the multiple mooring buoys might be impacting eelgrass habitats.

Lasqueti Associated Islands' eelgrass habitats were surveyed between August 19th and October 8th, 2014. Eelgrass beds cover 16.5% of the shorelines.

Small continuous eelgrass beds were observed in the more protected northern sides of **Higgins** and **Olsen Islands** within False Bay. The backshore was forested with some residences. Backshore was composed of steep rocky cliffs descending to the shore. Most of the eelgrass beds on **Finnerty Island** are on the northeast side between islets in a narrow channel. Shores are characterized as rocky cobble with steep slopes. Oyster catchers were noted feeding within the mussel beds there.

The Fegan Islands have dense continuous beds between islets, although there was citing of many boats anchored in areas where substrate would have been suitable for eelgrass growth and none was observed. Lindbergh Island in Scottie's Bay contains small continuous flat eelgrass beds on its eastern shores. Marine Island to the north contains small continuous and patchy eelgrass on its south facing shores. Jelina Island's extensive continuous flat eelgrass beds lie south facing Lasqueti Island and on the southwest shore. One house is constructed on this island. One small continuous eelgrass bed was located on the western shore of Jervis Island. Two small patches less than 10m² were noted on the two islets north west of Jervis. Rocky substrate is most likely the cause of the absence of subtidal eelgrass. Steep drop offs down to the shore characterized Paul Island where no eelgrass was observed. On Jedidiah Island, designated as a BC Provincial Marine Park, there were small continuous and patchy eelgrass beds observed on the western and eastern rocky shores.

An abundance of green sea urchins were observed off the south side of Bull Island, which had eelgrass in patches and small continuous beds on the north side. Green urchins have been observed eating eelgrass in other locations within British Columbia (pers. comm. Cynthia Durance). Eelgrass was absent surrounding Circle Island southeast of Jedidiah Island, where green urchin barrens were also noted. No kelps were present, although pelagic cormorants, oyster catchers, gulls and a colony of stellar sea lions were cited.

No eelgrass was noted off of Bo Ho, Rabbit or Sheer Islands, although eelgrass was expected to be noted on Rabbit Island because of the sandy substrate. The presence of green urchin barrens was noted however. Rocky islets prevented the surveyors from travelling closer to shore on Rabbit Island, so there is a possibility eelgrass was present in shallower waters if sea urchins were absent. Stellar sea lions were hauled out near Sheer islands.

No eelgrass was observed off of Sangster Island to the southeast of Lasqueti Island. A sea urchin barren was noted on this island's northeast side.

To the south of Lasqueti Island no eelgrass was noted on Sea Egg Rocks. Two small continuous beds were located on the northwest shore of Jenkins Island.

Lasqueti and its associated islands may contain the least impacted eelgrass habitat of all the southern Gulf Islands in the Islands Trust Area, as land development and marine activities are at a minimum compared to more populated islands in the southern Salish Sea.

8.3 North Pender Island Local Trust Area

North Pender was inventoried on July 3rd, 4th and 6th 2012. Eelgrass comprises approximately 11.6% of the island's linear intertidal and subtidal shoreline. The majority of the eelgrass beds are flat and continuous. The protected nature of North Pender results in a relatively high proportion of soft substrate in shallower areas.

Impacts include housing developments with accompanying tree and shrub clearings, rip rap and rock wall modifications, some of which were constructed below the high water line, direct raw

sewage outfall at Port Washington which would directly affect the water quality for eelgrass productivity, the presence of Canada geese, direct grazers on eelgrass shoots during low tides, and mooring buoys within eelgrass beds. Port Browning might be an appropriate site for eelgrass restoration as the substrate is suitable and there is a small bed on the northeast side.

The **Associated Islands of North Pender Island** were surveyed between June 5th and 17th 2014. Only shorelines outside the Gulf Islands National Park Reserve were mapped. Eelgrass grows on 17.5 % of these islands' shores, excluding areas within the National Park Reserve. The maps associated with this report show BC Shorezone eelgrass bioband coverage for shorelines within the Gulf Islands National Park Reserve. Impacts on eelgrass beds include derelict fishing gear, removal of native shoreline vegetation, shading by docks and shoreline modifications. Two potential restoration sites were identified: one off of Knapp Island and one off of Sidney Island.

Extensive eelgrass beds surround the west and east shores of **Knapp Island**. One restoration site was located between two continuous beds on the eastern shore near a constructed breakwater. Rocky substrate limits eelgrass extent on the southeastern shore. **Pym Island** to the east has small fringing patchy beds on its west facing shoreline. The western shore of this island has a 70 metre retaining wall in back of beds of fringing patch surf grass (*Phyllospadix* sp.), a plant that is an indicator of high wave energy in the intertidal zone.

The major distribution of **Coal Island's** eelgrass lies near its southern shores. In a bay on the northwestern side of the island sheltered by a breakwater lies a continuous flat bed of eelgrass. A large dock and several large boats are situated within eelgrass depth range.

Goudge Island has two small continuous flat beds on its northern shore, characterized by natural vegetation and a forested backshore. South of Canoe Cove is **Kolb Island** where a continuous flat eelgrass bed grows on its western shore. **Fernie Island** has no eelgrass present. **Ker Island** has a continuous flat bed of eelgrass below a backshore of Garry Oaks on its south shore and another small continuous bed on the north shore in front of a rocky shore.

Forrest, Sheep, Domville, Brethour, Comet and **Gooch Islands** have small continuous flat eelgrass habitats where suitable substrates allow for their growth. The islands are mostly cobble rocky beaches as indicated by an abundance of kelp beds and rocky slopes. A 50 metre rip rap wall has been erected on the southern shore of Brethour Island below the High Water Mark (HWM). On the northern side of Brethour shoreline modifications such as a rock wall and rip rap were also observed.

Between Sheep Island and Domville Islands a derelict trap was noted. An extensive kelp bed was also noted on the north end of Comet Island. There was no eelgrass habitat observed off of **Ruby Island** to the south east of Domville Island.

Small continuous flat and fringing eelgrass beds were located on the northwest and eastern coasts of **Moresby Island**. Possible impacts to the habitat on the west facing shore are cleared

landscaped and agricultural areas close to shore and some dock construction. Most of the shoreline of Moresby is characterized as rock/cobble. Kelp beds were abundant near the east and south shorelines, where some continuous flat beds were located. Most of the backshore in these areas was forested.

James Island was surveyed June 25th, 2014. Because of its eroding sandy bluffs on the northeast end of the island and relative lack of backshore activities, extensive continuous flat eelgrass habitats were located along the west and eastern sides of the island, at times in deeper water (-5 to -7.6 m). Percent of cover was between 26-75%. On the southwestern shore, a dense kelp bed interrupted the eelgrass survey, but eelgrass seemed to be growing around the kelp. Most likely, since this is a depositional area for the sandy sediment eroding from nearby sandy bluffs, cobbles and boulders are providing anchors for kelp holdfasts amidst an otherwise sandy substrate. An extensive patchy flat eelgrass habitat was located here. High wave energy arriving from the southwest most likely prevents stable sediment for eelgrass growth.

Eelgrass surrounding **Sidney Island** was surveyed June 26-27th, 2014. Continuous and patchy flat eelgrass habitats were located on the west facing shores and south of the Parks Canada National Park boundary on the east side. Percent of cover on the western side ranged from continuous beds of <25% to 75%. The backshore on this side of the island is characterized as steep high sandy bluffs, which create sandy sediment for abundant eelgrass habitat. Anthropogenic backshore activities that would lead to damage of these beds are minimal. Kelp beds were dense on the southwest shore. *Sargassum* was also noted in this area. Eelgrass was growing at depths of - 8.6 metres. Though not directly surveyed, it is worth noting that the shoreline of the northern spit on Sidney Island is shown to have significant eelgrass coverage by the BC Shorezone eelgrass bioband.

The most southern part of Sidney Island had surfgrass appearing to be growing out of the rock outcroppings. High wave energy might explain the scarcity of eelgrass on this side. Patchy surfgrass was also observed on the south eastern shoreline. Patchy eelgrass beds on the eastern side were less dense (<25%) and growing in shallower depths (-2.5 to -3.6 m). One potential eelgrass restoration site was indicated in this area. Continuous flat eelgrass beds were surveyed on the west side of **Little D'Arcy Island**.

8.4 South Pender Island Local Trust Area

South Pender was surveyed on July 6th 2012. Eelgrass comprises approximately 8.5% of the island's linear intertidal and subtidal shoreline. South Pender has more exposed shoreline therefore less eelgrass is to be expected. Roughly the same proportion of flat and fringing beds are present with slightly more than half of them being continuous.

8.5 Mayne Island Local Trust Area

Mayne Island was surveyed from 2009-2012 using two methodologies on a variety of platforms including: 1) delineation and creation of polygons (with towed underwater camera, on foot, by kayak, by free diver), 2) linear presence/absence (by kayak). Data was converted to

presence/absence line format for incorporation into the 2012 Islands Trust Eelgrass Inventory.

Mayne Island is mostly protected except on the Northeast side which is exposed to winds from the Strait of Georgia. Eelgrass comprises approximately 22% of the island's linear intertidal and subtidal shoreline. Mayne Associated Islands, Georgeson and Curlew contain 15.7% and 24.8% respectively.

Evidence from the Mayne Island Conservancy's eelgrass monitoring program and historical anecdotal evidence has shown loss in intertidal eelgrass in Miners Bay and two Southeast facing bays on the Southeast side of Mayne. Reasons for loss are unknown, but ongoing monitoring will indicate natural variability in these eelgrass beds. Potential impacts include grazing from Canada geese, anchoring, mooring buoys, trampling by kayakers and damage from boats and propellers. Winter heavy rain events could be introducing increased sediment loads into eelgrass beds, but this would need to be studied.

Gallagher Bay (on Navy Channel) and Conconi Reef Park are potential eelgrass restoration sites. They both have large bare areas adjacent to continuous eelgrass beds and have suitable substrate.

8.6 Thetis Island Local Trust Area

Thetis and its associated islands were surveyed July 31st through August 3rd, 2012, except for the inside of Cufra Inlet which was inaccessible because of low tides, and Valdes Island. The Cufra Inlet survey was completed in the summer of 2013. Valdes Island was surveyed July 29th, and 30th, 2013.

Approximately 26.6% of the linear subtidal shoreline on Thetis Island is composed of eelgrass habitat, 72% of which is continuous. Fringing continuous eelgrass beds were observed off the western shore of Thetis where the ShoreZone map indicates a preponderance of low rock and boulder (not a typical shoreline type for eelgrass). North Cove is also rich with an abundance of eelgrass, except where it is shaded by overwater structures.

Cufra Inlet contains dense (26-75% cover) flat continuous eelgrass beds. The inside of the inlet was surveyed during the summer of 2013 by local residents using kayaks and hand held GPS units but without the use of an underwater camera, as the water was shallow enough for eelgrass to be observed from the kayaks. Low tides in 2012 prevented an aluminum boat from approaching close to shore during the low tides occurring during the survey. The continuous bed begins on the western shore of Cufra Inlet as a narrow 1 m wide swath on the shoreward side and then widens out. An abundance of drifting sea lettuce (*Ulva* spp.) was observed within this area. Eelgrass became denser seaward in the muddy/shell hatch substrate. The substrate became sandier as the mappers traveled towards the mouth of the channel. Patches of sand dollars were noted as the inlet widens and the eelgrass extends towards the eastern shore. Diatoms were noted growing on the eelgrass blades. At the western edge of the mouth of the inlet eelgrass is patchy and sparse despite its ShoreZone classification of 'cliff'.

Clam Bay eelgrass was dense and continuous.

Telegraph Harbour on Thetis Island had a preponderance of algae (*Ulva* spp.), *Sargassum muticum* and filamentous algae growth. Visibility was poor. Upland and shoreline development (rip rap, retaining walls and cement ramps) with accompanying vegetation clearing most probably has led to higher sedimentation in the nearshore waters.

Understory kelps were observed at most sites, although no fish or crab species were present at the time of the survey in the majority of the survey area. Possible impacts from boat moorings within eelgrass beds (e.g. **Ruxton Island** had >15 boats moored off shore in one small area), recreational overwater play structures, shoreline modifications and nutrient run-off could be impacting nearshore habitats. Where there was suitable substrate for eelgrass as indicated by the ShoreZone data, eelgrass was present, with the exception of the narrow channel between Thetis and Penelakut Islands. However a long-time resident remembers eelgrass presence there approximately 40-50 years ago. Islets and small islands are important refugia for wildlife and often are less impacted than the surrounding larger islands.

A short description of the smaller islands and islets associated with Thetis Island are described below.

Percentages of eelgrass for each associated islet are:

Island	Eelgrass % Cover
Ruxton	11.6%
Pylades	0%
Bute	50.3%
Dunsmuir Islands (2)	34.7%
Hudson	30.9%
Reid	3.9%
Dayman & Scott Islands	39.6%
Valdes	12.7%

Hudson Island west of Thetis is rich with continuous fringing beds of eelgrass (26-75% cover) on both its eastern and western subtidal areas. **Dayman Island** has just under approximately 25% coverage of patchy eelgrass habitat mostly on its eastern facing side. **Reid Island** to the east has dense patches of fringing eelgrass on its northeast facing shore.

Ruxton Island to the north of Thetis has flat, continuous (less than 25% cover) eelgrass beds

within sheltered sites on the western facing area; an abundance of nudibranchs was observed on eelgrass blades. The eastern shore, with the exceptions of some sites with fringing patchy beds, is too deep for eelgrass growth.

Whaleboat Island to the east of Thetis had too steep a drop off to be suitable for shallow eelgrass habitats. **Tree Island** contained 100% cover of understory kelps, which is an indication of a dominance of cobble/pebble substrate. As well, the subtidal area is too deep for eelgrass production.

Bute Island off of Ladysmith Harbour contained dense continuous beds because it is surrounded by a shallow bay with sandy substrate. There is a potential eelgrass restoration site on the northeast side of **Dunsmuir Island**, as it is composed of clean sandy substrate in a protected site. The narrow channel between Dunsmuir Island and Ladysmith Harbour contains continuous dense flat eelgrass beds.

Valdes Island was surveyed between July 29th and 30th, 2013. Eelgrass covers 12.69 % of its linear subtidal shores. The majority of the habitat is flat and continuous, with most of the locations cited on the northeastern and southwestern shorelines. Although the majority of the shorelines on the western portion of Valdes are ShoreZone classified as low rock/boulder or cliff, the presence of flat continuous beds with bare patches was noted on the north and south western shores. Three potential restoration sites were identified; one on the central western side of the island, the second site on the northern tip of the island containing a small degraded eelgrass bed adjacent to the BC Parks dock, and the third is located on the southwestern shore which might have been historically impacted by log storage. The substrate at this site is suitable for a transplant; however *Ulva* spp. is present, which might be an indication of a high level of nutrient inputs.

The location of mooring buoys in eelgrass habitats with fifty-one buoys observed within beds and the interruption of eelgrass continuity by the construction of docks are the major anthropogenic impacts affecting eelgrass habitats on Valdes. The majority of the shoreline is naturally vegetated.

9 2013 Inventory Findings

Areas mapped in 2013 for eelgrass (*Zostera marina*) within the Islands Trust Area include:

- Denman Island Local Trust Area,
- Hornby Island Local Trust Area,
- Winchelsea - Ballenas (Executive Islands) Local Trust Area,
- Gabriola Island Local Trust Area,
- Galiano Island Local Trust Area,
- Valdes Island and Cufra Inlet in the Thetis Island Local Trust Area (Findings included in Section 8.6 above)

- Bowen Island Municipality
- Gambier Island Local Trust Area Associated Island in the Howe Sound excluding the islands off of the Sunshine Coast. (Findings included in Section 8.1 above)

The characteristics and locations of eelgrass habitats for each island are described below in order of the beginning dates eelgrass inventories occurred. Note that Valdes and Cufra Inlet are described in Section 8 above as they are in the Thetis Island Local Trust Area. Similarly the Gambier Island Local Trust Area Associated islands are also described in Section 8 as they are in the Gambier Local Trust Area. Both Thetis and Gambier Islands were mapped in 2012.

9.1 Galiano Island Local Trust Area

Galiano and its associated islands were inventoried over seven days between June 26th and November 25th, 2013. Approximately 16.7 % of the linear subtidal shoreline of Galiano Island is eelgrass habitat.

ShoreZone maps indicate that most of the southwestern and northeastern shorelines of Galiano Island are not suitable substrates (coastal bluffs and low rock/boulder respectively), except where there are sheltered embayments. However there are notable exceptions over the north, south west, south and eastern areas of the entire island.

The eelgrass distribution on Galiano is 88% continuous; 12% patchy. The placement of mooring buoys (at least 14 were noted within eelgrass beds, especially on the southwestern shores of the island), private docks (at least 12) and log storage have damaging effects on the habitat's continuity and function as a wildlife corridor. The construction of retaining walls (rip rap, rock and wooden) and the removal of backshore vegetation (at least 10 sites were observed) are obstacles for eelgrass to flourish in certain sites.

Most of the backshore on Galiano Island remains naturalized, with notable exceptions where trees and understory vegetation surrounding residences are removed and where shores are modified with retaining walls. Exotic invasive plants include English ivy, St John's Wort and gorse. Heavy epiphytic algae growth on eelgrass blades were noted within **Montague Harbour**, a possible indication of a high level of non-point source pollution. Another site for pollution is the public dock in **Whaler Bay** where boats are worked upon. Best management practices are recommended for boat sewage disposal and using tarps for collection of boat paint chips at each location.

There is the potential for eelgrass restoration within Whaler Bay, as the channel in front of the public dock contains a narrow band of eelgrass that could be expanded shoreward if log leases were retired in the future. In November, bufflehead and Barrow's Goldeneye as well as schooling forage fish were observed. Patchy eelgrass beds were noted off the eastern shores of Galiano Island. This area is ShoreZone classified as low rock/boulder. Four mooring buoys were located with these beds.

The eelgrass habitats covering the associated islands of Galiano comprise approximately 19.98% of the islands' linear shorelines. **Parker Island** has extensive eelgrass on its northeastern shores (96% continuous). The construction of docks and the placement of mooring buoys within eelgrass beds, however, may be impacting the habitat. Most of the eelgrass surrounding **Gossip Island** lives on the island's east facing shores is continuous (95%); however docks (7 were noted within the eelgrass beds) interrupt their form and function. Mooring buoys (3 observed) are situated within the existing beds on the south-western facing shores also disrupt the connectivity of eelgrass habitats.

No eelgrass was observed on **Ballingall** and **Lion Islets**, **Wise**, **Charles**, **Sphinx** or **Julia Islands**.

9.2 Gabriola Island Local Trust Area

Gabriola Island and associated islands were surveyed between July 8th and 21st, 2013. Gabriola Island's linear shores are comprised of 24.8 % eelgrass, with 89% continuous distribution. Two potential eelgrass restoration sites were identified on this island. The first is on the southwestern shore facing **Mudge Island** near an active log booming site. When the log lease is retired at this site, a small eelgrass transplant (100-500 shoots) could indicate whether the area is suitable for a larger transplant. The second site is on the northeast tip of Gabriola Island where a small existing bed could be expanded.

Wildlife in some areas abound, including Canada geese, an abundance of fish species, Great Blue Herons (22 at the southern channel entrance between Gabriola and Mudge Islands), sand dollars and Bald Eagles. Beaches that have suitable substrate for sand lance and surf smelt spawning were also noted. Healthy eelgrass beds near the **Malaspina Galleries** in Gabriola Sands Provincial Park are not surrounded by mooring buoys and docks and are thriving in in 4-5 metres water depth, although the area also contains rocky substrates.

Possibly the biggest impacts to marine wildlife habitats on Gabriola and its associated islands are the locations of floats and mooring buoys (in one embayment on the northwestern shore of Gabriola, over 12 floats – moorings and/or crab traps – and 14 buoys were observed in a continuous eelgrass bed); construction of retaining walls (nine riprap or rock walls identified); and, the removal of native backshore vegetation (13 sites). Numerous moorings are located in an otherwise robust eelgrass bed in **Degnen Bay**.

The eelgrass coverage for the Gabriola associated islands' linear shorelines totals 19.98%. Near the eastern shore of **DeCourcey Island** south of a marine park there are many docks and boats. Poor water quality was noted, and there are no washroom facilities at this location. No marine life was observed growing on the seafloor. North of the marine park there is a potential restoration site facing a steep rock ramp foreshore and a steep grassy conifer backshore near a former log booming site.

Snake Island has the potential for eelgrass restoration on its southern tip where there is a protected area with suitable subtidal sandy mud substrate, although this location may be too

close to active boating. Seal pups and oyster catchers were cited near a large mussel bed.

There was no eelgrass habitat observed on **Hudson Rocks**. Marine life there included seal pups hauled out, bird habitats, cormorants and oyster catchers. The shell hash substrate off of **Five Finger Island** was noted to be situated too deep for eelgrass growth.

Mudge Island also has a potential eelgrass restoration site on its southeastern shore. Kelps are mixed with sandy/muddy/shell substrate. Most of the backshores are naturally vegetated, with exceptions near residential developments where mooring buoys are situated within eelgrass beds (4 observed). The eelgrass habitat observed on Mudge was a mix of patchy/ continuous and flat / fringing beds on the eastern shores of the island. One bed in particular, located mid- island on the eastern side extended 100 metres shoreward beyond the waypoint, but the water depth was too shallow to delineate the bed.

Eelgrass on **Link Island** is characterized as flat continuous beds on its eastern shores. On the south shore of Link Island there are multiple docks (4) and mooring buoys (6).

Continuous fringing beds lie next to the northwest shores of **Breakwater Island**. Near **Saturnina Island** there are fringing continuous beds of eelgrass habitat on the western and northern shores.

Bath Island has a wide rock ramp in front of a windblown forest with a patchy bed with two larger patches surrounded by kelp and *Sargassum muticum* on its northwestern shore, while on its western shore there was a flat continuous bed.

Eelgrass habitat on **Tugboat Island** is characterized as narrow beds tucked between shore and wharf floats on the eastern side of the island and between the Tugboat Island and **Sear Island** to the south, which has flat continuous beds on its western shores. Continuous flat beds lie at the entrance to a marina on **Vance Island**. A rock/boulder shoreline with a, private dwelling with floating dock and several moorings are near flat continuous eelgrass habitat on **Acorn Island**.

9.3 Denman Island Local Trust Area

Denman Island and its associated islands were inventoried on several boat expeditions between August 20th and September 15th, 2013. In the Denman Island Local Trust Area 33.24% of the linear shore contains eelgrass. In some areas, especially in eastern subtidal areas, patchy eelgrass was observed amongst broad leaf kelps and *Sargassum muticum*, where the substrate is classified as low rock/boulder. A potential restoration site is located on the southwest area of the island near **Metcalf Bay** and is close to a site that could be used for harvesting transplants. The substrate south of this site gradually changes to cobble and gravel. Most of the beds surrounding the island are fringing, most likely due to coarser substrate changes at depth.

Eelgrass habitat is situated on the north eastern shores, classified by ShoreZone as sand/cobble and where numerous overwater structures are located and associated with industrial aquaculture activities. The eelgrass here was predominately patchy; most likely there are more patchy beds both shoreward and seaward of the mapped area. This area is the second most

patchy eelgrass habitat observed, second only to areas in Howe Sound.

The majority of the backshore is not heavily impacted by development; most of the residences had either forested or grassy areas between them, with a minimum of landscaping. Abundant species of birds including black legged kittiwakes, surf scoters, marbled murrelets, grebes, harlequin ducks, surf scoters, herring gulls, and other marine wildlife species such as hooded nudibranchs, sand dollars, sand lance juveniles and abundant schooling fish were observed.

Sandy Island north of Denman Island contains continuous (99%) eelgrass habitats although the southern shores are ShoreZone classified as sand/cobble and the northern areas are classified as altered. Sand dollars were observed on both eastern and western sides of the island. **Seal Islets** were surrounded by fringing continuous (81%) eelgrass habitats. Associated with these beds were observed marbled murrelets and rafts of harlequin ducks and surf scoters, kittiwakes, gulls and seals. The backshore consisted of flat shrub, herbaceous and grassy slopes. . No eelgrass habitat was observed near **Chrome Island** due to unsuitable rocky substrates.

9.4 Hornby Island Local Trust Area

Eelgrass beds on Hornby Island were mapped over several days between August 21st and September 12th, 2013. The linear shoreline of the Hornby Island Local Trust Area is composed 31.70 % of eelgrass habitat. Large areas on both the western and northeastern shores of Hornby have continuous (90%) flat beds, although the classification by ShoreZone of these shorelines is low rock/boulder. The small areas of eelgrass found in these otherwise rocky cobble areas are valuable as critical habitat and corridors for marine life.

Most of the backshore is naturalized, even where residential houses are situated. Suitable substrate for spawning sites for forage fish was identified on the north eastern shores. Three potential restoration sites were also noted; one near this area for potential forage fish spawning, the second within a sandy embayment on the eastern shore (if boat anchoring pressures were decreased), and the third near the Hornby Island ferry terminal on the western side of the island (eelgrass was noted just north of the terminal growing in pebbles). There is also an opportunity for a community clean-up of underwater debris near a breakwater and marina on the southern end of the island. On **Toby Island** dozens of seals were hauled out.

9.5 Winchelsea-Ballenas (Executive Islands) Local Trust Area

The islands within the Winchelsea-Ballenas Local Trust Area were surveyed for eelgrass habitat between November 21st and 23rd, 2013. The total linear shoreline coverage of the Local Trust Area is 1.4%.

Mistaken Island west of Parksville has two eelgrass sites, one fringing patchy bed and the second within a cove with a dock, both on the southwestern shore. A flat continuous bed lies between the channel separating the **Ballenas Islands**. A continuous bed also lives on the north shore of the south island, punctuated with rock substrate. A school of forage fish, possibly sand lance was observed at the time of the survey in the shallow subtidal zone.

A small flat continuous bed on the west facing shores of the Ada Islands also may serve as suitable habitat for forage fish, prey for ancient murrelets, of which one was cited by field staff (unconfirmed). A second eelgrass bed is situated on the western shore of the west Ada Islands. The substrate at this location is primarily sandy with a secondary substrate of bedrock with associated intermixing rockweed and detritus. A seal haul out with 61 seals was noted near this site.

A small flat continuous eelgrass bed is located on the northeastern side of Southey Island. No eelgrass habitats were observed on Gerald, Yeo, Amelia, Ruth or Winchelsea Islands.

9.6 Bowen Island Municipality

Bowen Island was surveyed between Aug 6th - 11th and Oct 4th, 5th and 12th, 2013 using the polygon mapping methodology. The island is characterized by a mix of sandy bays and steep shorelines. Large homes are common, with docks constructed both in the bays and on the steep cliffs. Bays, which are areas in which eelgrass is expected to grow, were also the location of waterfront homes and associated docks (both land-based and floating), moorings and anchored boats.

Eelgrass was estimated to extend along 11.6% of the shoreline of Bowen Island. The area of mapped eelgrass polygons was observed to total 41,917 m² and the length of mapped line features was observed to total 958 meters. Percent cover was low, however, and in addition to continuous beds, 84 individual patches of eelgrass were recorded and noted on the map as points. Eelgrass was observed within bays and straight sections of coastline on the southwest, northwest, northeast tip, east (Mannion Bay and north) and southeast coasts.

Around much of the island eelgrass was characterized by frequent individual patches, with each patch often consisting of very few shoots. Patches on the west coast were observed in areas that, from the shoreline or ShoreZone analyses, would not have been predicted, as the plants occurred seemingly opportunistically in patches of soft substrate located amid boulders and other coarser substrate. Percent cover even in continuous beds was consistently far less than 25% and noticeably sparser than other islands within the Islands Trust areas also surveyed during the 2013 mapping season.

Docks in areas such as in Tunstall Bay were located in depths suitable for eelgrass growth. Distances between some points on the polygon mapped in Tunstall Bay are longer than 20 meters as the eelgrass field surveyors needed to navigate around swimmers, docks and moored boats. Large clusters of sunflower stars (*Pycnopodia helianthoides*) were observed in the bay on sandy bottoms that did not contain eelgrass. Docks and moorings were also located in eelgrass depth elsewhere on the west coast of Bowen Island (e.g. the relatively straight shoreline north of Bowen Bay, King Edward Bay, the shoreline north of King Edward Bay and Galbraith Bay).

In some sites such as Galbraith Bay and Columbine Bay, eelgrass was only observed on one side of the bay despite suitable sandy substrate on the other side. For example, the substrate on the

north side of Galbraith Bay was bare sand. There were several moorings in that bay. Eelgrass in Columbine Bay was sparse and appeared unhealthy; individual clumps were surrounded by bare sand. One hypothesis for this is that eelgrass may be impacted by boat wakes in the area. Boats were moored throughout eelgrass depth in **Cates Bay**.

Multiple beds of continuous eelgrass were identified throughout **Mannion Bay** between zero and more than 5 meter depth relative to chart datum. These beds, however, were not as dense as would be predicted given the soft substrate and sheltered environment. In the northeast side of the bay bare sandy fringing beds are interrupted by the construction of docks.

Mannion Bay is heavily used for boat anchoring, mooring and docking within depths suitable for eelgrass growth. The construction of docks and floats and their associated chains are impediments for eelgrass productivity in this area. Multiple adjacent docks have been constructed within eelgrass depth. Ropes and chains from docks, moorings or anchors had dragged on the sea floor, apparent due to the patterns they had created in the sand. The motion of the chains due to waves and currents can damage or uproot eelgrass.

Eelgrass otherwise appeared healthy in Mannion Bay and there are opportunities to restore lost eelgrass habitat if boat anchoring were restricted to a defined area outside of the depth range for eelgrass growth, i.e. if they were limited to 6 m depth or deeper. Schools of fish were observed within the existing sparse eelgrass; therefore, restoring the eelgrass in the area would serve to enhance fish habitat. Although it was not included in the project deliverables, the research team had been requested to look for evidence of litter on the sea floor in this bay; however, only a few cans and the possible remnants of a shopping cart were observed. Some of the moorings and anchored boats appeared derelict. Many crabs were observed on the south side of the bay, but were not identified to species.

No eelgrass was observed in **Snug Cove** including the head of the cove, near Crippen Park beach. Possible reasons include dredging, ferry wakes, eutrophication and boat traffic associated with the marina, and pollution of the substrate due to chipped wood debris. No flora was observed on the sea floor except for encrusting algae. There are restoration opportunities for the nearshore environment by Crippen Park beach if the historical and present impacts from the marina and former log booming site are addressed.

The inner portion of the eastern cove of **Konishi Bay** on the south coast of the island appeared suitable for eelgrass due to the sandy substrate and sheltered cove with a sandy beach. The substrate was bare sand, however. Eelgrass was observed in deeper locations of that bay. Removal of native plants and retaining wall constructions were noted around residences. In another eelgrass location in the southern portion of Seymour Bay/Seymour Landing where an adjacent coastal lot was for sale, coastal vegetation had been cleared and there is already evidence of slope failure both at the top and foot of the slope, despite installation of riprap. Water flow had also been channeled in the area, which could intensify water and sediment flow into the nearshore environment. Slope failure is a possible threat to eelgrass through smothering by eroding sediments. Shoreline hardening also increases wave energy and wave deflection, which can scour shorelines (Lamont 2013).

The area around **Cape Roger Curtis** has been of concern to local residents due to the construction of large docks and potential for damage to submerged habitats. Eelgrass was not observed around the exposed cape, as the observed substrate was steep and rocky. Kelp was observed in the area, however. Chains from the new construction were observed on the ocean floor. Kelp beds are a major feature along the rocky parts of the Bowen Island shoreline. Several schools of small or juvenile fish were also observed around the island.

10 2014 Inventory Findings

Areas mapped in 2014 for eelgrass (*Zostera marina*) within the Islands Trust Area include:

- Salt Spring Island Local Trust Area
- Saturna Island Local Trust Area
- Thormanby Islands and Gambier - Sunshine Coast associated islands (findings included in Section 8.1 above)
- Lasqueti Associated Islands (findings included in Section 8.2 above)
- North Pender Associated Islands (findings included in Section 8.3 above)

The characteristics and locations of eelgrass habitats for Salt Spring Island and Saturna Island local trust areas are described below. Thormanby Islands are described in Section 8.1 above as they are in the Gambier Island Local Trust Area; Lasqueti Associated Islands are included in Section 8.2 as they are part of the Lasqueti Island Local Trust Area; and North Pender Associated Islands are included in 8.3, as they are part of the North Pender Island Local Trust Area.

10.1 Salt Spring Local Trust Area

Eelgrass surrounding Salt Spring and its associated islands was surveyed between April 18th and August 1st, 2014. Approximately 18% of the Island's linear shorelines are eelgrass habitats. The shore composition is mostly low rocky boulder (62%) with softer sediments in pocket beaches on the west facing shorelines. Most of the impacts on eelgrass habitat are heavy boat usage near the shore (boat moorings and anchoring, fuel docks, marinas, sewage discharge and derelict boats, docks and buoys), non-point source pollution and the removal of shoreline riparian native vegetation. Seven potential eelgrass restoration sites were identified.

It is recommended that intertidal mapping by community members be undertaken to update intertidal mapping data collected by the community in 1975 and 1996. It is also suggested that an eelgrass monitoring schedule be developed to measure potential eelgrass habitat impacts of aquaculture activities on the island over time. Improved anchoring methods for mooring buoys would decrease scouring of the seabed.

Compared to maps of intertidal eelgrass beds completed in the past (1975 and 1996), eelgrass beds are greatly reduced in size and spatial extent in **Ganges Harbour**. Flat patchy beds with less than 25% cover (density) were growing near its south western shores. Surveyors identified one

potential eelgrass restoration site on this side of the harbour and another site south of the harbour's entrance near a large continuous bed. Major impacts to eelgrass distribution within the harbour include historical log storage, present day non-point pollution and heavy usage by recreational boats.

The north eastern shoreline of the harbour contains small areas of continuous fringing eelgrass beds. No eelgrass was observed growing on Goat, Deadman or Sister Islands. Ruckle Park to the north of Beaver Pt. contains a naturalized shoreline and is protected as a BC Provincial Park. Densities of eelgrass varied from 25% to 75% in small bays within the Park boundary.

Fulford Harbour contains continuous flat eelgrass habitat on the western shoreline. The density changes into fringing continuous beds to the south of these beds. Five eelgrass patches less than 10m² were noted on the eastern shores. Two potential restoration sites are suggested near two of the eelgrass patches to the south.

Off the shores facing Sansum Narrows eelgrass grows intertidally, some of which lies between aquaculture rafts. Some riparian vegetation had been removed from behind a 30 metre long brick wall. At one site where there is a natural shoreline with a fringing continuous eelgrass bed, an abundance of salmon smolts was noted (May 6, 2014).

Eelgrass in Burgoyne Bay is composed of small fringing continuous beds delineated by a sharp drop off into deeper waters on the southern shores of the bay. Closer to the mouth of Burgoyne Bay, known to be used by salmon (pers. comm. Kathy Reimer), there is extensive flat continuous eelgrass. A derelict dock was observed and there was evidence of past log booming activities. Approximately seven boats, including house boats and a sailboat, some of them with small attached docks, were observed.

Over ten harbour seals were noted in the eelgrass beds in the bay. No eelgrass was noted on the northern shore or on the shores of Mt. Maxwell Ecological Reserve, with the exception of a small patch and a small continuous bed to the north of the patch. The sediment on this side of the island is low rocky boulder.

Bader's Beach contains three small but continuous flat eelgrass beds. The continuity of the habitat may be affected by a boat ramp and nearby placement of rip rap, as well as boat moorings. Booth Inlet contains extensive continuous flat eelgrass habitat amongst mooring buoys and a gravel boat launch site. It is recommended that a more detailed polygon be created of this habitat to monitor changes over time from aquacultural activities and from the effects of mooring buoys. A potential restoration site was located north of Booth Bay. Many eagles were cited in this area.

Vesuvius Bay also contains extensive continuous flat eelgrass beds, as well as Duck Bay. Surrounding the shores of Idol Island eelgrass habitat is characterized as patches and fringing and flat continuous beds. Small eelgrass patches (<10m²) to small continuous flat beds were observed from Duck Bay to Stone Cutters Bay. In Stone Cutters Bay an increase of continuous flat eelgrass habitat was noted, although there was clearing of backshore native vegetation near residences.

At the northern tip of the bay, dense continuous beds extend into the intertidal zone, but the habitat is interrupted by docks and mooring buoys and most likely impacted by the removal of backshore vegetation.

Continuous flat eelgrass habitat continues along the more protected northeastern shore of the island. Along the shores there was a groin, clearing of riparian vegetation by shore residences and docks. There is a gap in the habitat, beginning with a residential site with cleared vegetation from the house to the beach. The gap might be due to a change from shallow sand to cobble. Another gap in otherwise continuous eelgrass occurs further south where again backshore vegetation was cleared.

At the northern and southern outside edges of **Walker's Hook** lie continuous flat eelgrass beds, associated with natural shores and backshores. From the end of the southern bed of Walker's Hook to Nose Pt., small patches, with some fringing continuous beds were surveyed. Dense kelp (*Nereocystis* sp.) obstructed surveyors from traveling closer to shore. Most likely exposure to southwesterly waves and storms limits eelgrass growth in this area.

A derelict buoy was observed in an eelgrass bed on the south side of Walker's Hook. It is providing a subtidal platform for kelp settlement and may be shading out eelgrass beneath it. River otters were observed on the eastern facing shore of Walker's Hook near a small fringing patch of eelgrass.

Intertidal eelgrass habitats along the eastern shores of **Long Harbour** were observed by community mappers in the past. In 2014, four small continuous flat beds were noted in the same areas. On the northwestern shore, sandy substrate where eelgrass should have been present but was absent was noted by the surveyors. Two potential restoration sites were indicated within the harbour. An eelgrass restoration test plot (1200 shoots) was installed during the summer of 2014 near one of these sites. It will be monitored in the spring of 2015 to evaluate whether the transplanted eelgrass site can be expanded. On the western shore two small fringing continuous beds were found. A yacht club outstation and approximately 20 mooring buoys were observed in the harbour.

The eastern shore of **Madrona Bay** contains patchy continuous beds. Some dock construction and boat moorings were present. Gravel beaches line the bay.

The **Associated Islands of Salt Spring** are composed of 14% eelgrass habitat. Four potential eelgrass restoration sites were noted. Impacts included boat anchoring, present day and historical log booming operations, placement of mooring buoys in shallow waters and shoreline modifications resulting in potential hardening of the shore. Note that the Isabella Islets were not surveyed as they are within the Gulf Islands National Park Reserve boundary.

Wallace Island to the northeast of Salt Spring Island contains extensive continuous flat eelgrass habitat on its northwestern shores. However, **Princess Cove** is composed of sandy substrate and was evaluated as a suitable eelgrass restoration site, as well as another site to the south of this area. Boat anchoring may be impacting this area; with improvements in boat mooring practices,

eelgrass in Princess Cove, within the Wallace Island Marine Provincial Park, could be restored. Two potential eelgrass restoration sites were located on the western shore of Wallace Island.

One potential eelgrass restoration site was also located off the southeastern shore of **Secretary Island**. A small patch of eelgrass is growing in this area, which may have been used for log storage in the past. Dense intertidal and subtidal eelgrass beds were noted on the southern end of the Secretary Islands. Most likely rocky cobble substrate limits eelgrass growth between otherwise continuous eelgrass. A seal haul out was observed in one of the south west facing bays. The survey of shallow eelgrass habitat in these bays was limited by tide levels and rocky substrate.

Mowgli Island has a small fringing continuous bed on its south and north shores. The southwestern facing shores of **Norway Island** contain continuous and patchy eelgrass habitats amidst rocky outcrops. **Jackscrew Island** has small continuous flat eelgrass beds growing in muddy sandy bottoms of its western shores. Some of the beds are extending into the intertidal zone. **Hall Island** has two continuous eelgrass beds and a patchy bed less than 10 m² on its southeastern shore which extends into the intertidal zone. Eelgrass patches are growing within a small cove in the most southern area. The entrance of this site is surrounded by *Nereocystis* sp. and other kelps.

Eelgrass is continuous along the eastern, northern and southern areas of **Shoal Islands**. The northern Shoal Island eelgrass is dense (26 %-> 75% percent cover) and in shallow water (-0.9 to -3.5 m depth). Large schools of fish, harbour seals, gulls, Blue Herons, Canada Geese and eagles were observed here. One buoy was observed within the bed. There was also a logging operation noted on a large tidal flat site in this area. On the farthest northern section of this area, there was an abundance of logs and woody debris on shore, indicators of a highly impacted shoreline. Eelgrass distribution changes in this site from continuous to patchy or absent.

The southern, east facing beds of the Shoal Islands were dense (26%-75% cover) continuous flat habitats. A pulp mill and associated activities have impacted the southern area of these beds, such as the placement of a modified shoreline composed of rip rap. A white slime was observed on eelgrass blades in this area. However, it is recommended that the eelgrass beds surrounding Shoal Islands be protected as they illustrate a rich biodiversity within the Salish Sea, even though industrial activities are operating nearby (log booms to the north and a pulp mill in the south).

All eelgrass surrounding **Prevost Island** was surveyed, except for beds occurring within the boundary of the Gulf Islands National Park Reserve (Parks Canada). The majority of eelgrass habitats were situated on the southwestern shores and most were characterized as either fringing or flat continuous beds, some of which extended into the intertidal zone. One restoration site was indicated on the southeastern bay. One small continuous flat bed was observed on the central east side of the island. Most likely rocky substrate limits extensive eelgrass growth. Most of the backshore was naturally vegetated.

Piers Island eelgrass habitat is composed of extensive continuous bands on the south and eastern shorelines. Docks, boat moorings and their associated chains, and seawalls may be

causing some of the habitat to be interrupted or less dense than if these structures were not present. In many places eelgrass was located behind docks closer to shore, which might indicate the locations of these docks may be shading otherwise continuous beds.

10.2 Saturna Island Local Trust Area

Eelgrass surrounding Saturna Island was surveyed between July 2nd and 29th, 2014 and is present on 19.5% of its shores, excluding the shores within the Parks Canada's Gulf Islands National Park Reserve. Fifty-seven percent of Saturna Island's shoreline is composed of rocky boulder and 32% sea cliffs.

Most of the eelgrass located within the Islands Trust Area on Saturna Island was located on the east side, where it is protected from the north westerly winds and waves by Mayne Island. The majority of shoreline on the south end of the island is under the protection and jurisdiction of Parks Canada's Gulf Islands National Park Reserve and was not included in this eelgrass inventory. Eelgrass on the southwest and southeast of the Parks Canada boundary was distributed in patchy and continuous flats. Impacts on eelgrass beds include mooring buoys, docks and shoreline developments that remove native plant vegetation from the marine riparian areas. One potential restoration site was located.

Within **Boot Cove** on the west side of Saturna Island, eelgrass was expected to be observed, as it is a very sheltered site with sandy substrate. However, the area is very heavily used with the construction of docks, placement of multiple mooring buoys and attached boats, floats and ramps throughout the cove. Eelgrass is present but is not dense and absent in many areas where it should be growing. There is potential at this site for restoration in cooperation with local residents. The eelgrass between **Trevor Islet** and Saturna Island was growing in shallow waters (-1.3m). The surveyors were not able to access the site to map, but it was evident the entire area is eelgrass. Canada geese were observed swimming in the bed.

Eelgrass on the south shores of **Lyall Harbour** is mostly continuous flat beds with boulder shores and forested backshores. Towards the east of the harbour there is evidence of a former log booming site with three dolphins (upright log poles) in the site as well as a constructed breakwater and a grouping of wooden floats. Eelgrass is patchy at this location. Approximately one half of the backshore at the end of the harbour is landscaped (i.e. natural native vegetation has been removed). The north side of the harbour contains continuous beds extending into the intertidal zone. The backshore here is forested with rocky boulder shores. At some shore sites the eelgrass becomes dense (26%-75%).

The southwestern entrance to **Winter Cove** is composed of fringing continuous eelgrass with *Nereocystis* sp. kelp growing in deeper waters. The shores are predominately rocky with very small sandy beaches. The majority of the backshore in the bay is treed, with some rip rap placed on shore.

Eelgrass habitats off the southwestern shores of **Samuel Island** are continuous and flat. Canada geese were observed on shore. Except for a small continuous bed mid-island, there was no

eelgrass noted on the northeastern shore. Most likely exposure to northwesterly winds and waves prevent its growth. Natural shorelines and backshores characterize this island.

11 Threats to Eelgrass Habitats

The impacts from human activities have been described previously (Section 4.0). Other field observations are described below.

There seems to be an increase in the abundance and distribution range of the invasive seaweed, *Sargassum muticum* within the Islands Trust Area, although there is at present no research to substantiate this. Although the plant settles and grows on cobble, surrounding eelgrass in sandy/muddy sediment can be shaded out by its overarching canopy. The presence of *Zostera japonica* was noted on Lasqueti and Thetis Islands and other areas within the Islands Trust. This non-native species of eelgrass is not known to compete with *Z. marina*, though it can be found mixed with the native eelgrass in the lower reaches of the intertidal zone.

Though there is some disagreement about the causes of epiphytic algae growth on eelgrass blades, it was noted within Telegraph Harbour on Thetis Island and Montague Harbour on Galiano Island. This could be an indication of excessive nutrients, causing an abundance of algae growth on the blades and blocking light, nutrients and gas exchange (Mumford 2007).

Canada geese are infamous for their grazing on eelgrass shoots. They were noted in large numbers on Lasqueti, Gabriola, and North Pender and South Pender Islands. Overgrazing of shallow eelgrass beds might be a growing concern as the birds are increasing in range and numbers.

As winter storms intensify, there might be an increase in burial of eelgrass shoots by sand over wash. Monitoring eelgrass habitats over time in selected locations vulnerable to storm events might shed light on the effects of climate changes upon the nearshore environment.

12 Opportunities for Eelgrass Restoration

A total of forty-two sites were identified as potential eelgrass transplant areas during the inventories that occurred between 2012-2014. These sites are shown on the maps produced by this project. When funding is available, these sites can be further investigated. The history of eelgrass transplants and their success in British Columbia to date is described below.

12.1 History of Eelgrass Restoration

In the Pacific Northwest, the history of success for *Zostera marina* transplanting projects was dismal prior to 1985. Initially transplant techniques were developed and successful on the Atlantic coast. However, these techniques were not well suited to the Pacific north coast environment and

eelgrass. Many of the early transplants were conducted without a thorough understanding of eelgrass physiology and ecology; the donor stock was not always well suited to the area where they were transplanted, and the biophysical conditions of the transplant site were not always appropriate for the species (Durance 2001).

Since 1985, knowledge and experience from adaptive management practices have resulted in a higher success rate for focused mitigation and enhancement projects along the Pacific coast (Thom, Borde, Williams, Southard, Blanto and Woodruff 2001). Factors that led to a higher success rate include the correct selection of physical attributes for the restoration area, including elevation, substrate composition and light and current regime. The selection of the most suitable ecotype or genotype increased the likelihood for success and rate of production. The criteria for success included shoot density and area re-vegetated (Durance 2001).

12.2 Criteria for Successful Restoration

In British Columbia, the criterion for transplant success is based upon the mean shoot density being equal or greater than the area of adjacent natural beds and the area coverage. Projects are thus considered successful if the habitat that was created provided habitat equal in eelgrass productivity (shoot density) to that which it was designed to replace (Durance 2001).

Site selection with the appropriate biophysical characteristics (salinity, sediment type, current velocity, light/depth, temperature, and pH), using suitable plant donor stock (ecotype), using an appropriate transplanting technique and handling the donor plants with care are necessary for successful transplants. Several restoration transplants have occurred in Squamish, the Sunshine Coast, Campbell River, Cowichan Bay and Saanich Inlet. Most of the locations have been impacted by historical log storage practices. The majority of these transplants are considered successful based on monitoring of shoot densities and area coverage post-transplant. They were completed under the supervision of a scientific advisor with community volunteer support and a Workers Compensation Board (WCB) certified team, with funds collected by environmental conservation groups.

13 Recommendations

Globally, eelgrass has been used as an indicator of water quality (Neckles 1994). Often, a bed will decrease or increase in width and length dependent on light availability. The lower depth distribution of eelgrass is related to overall water clarity. Water quality, including water clarity, is affected by land practices and water uses. If, for example, a large scale development occurs on shore near an eelgrass bed, the bed may decrease in size because the water quality in the nearshore is consistently compromised by the increased pollution load, known as non-point source pollution, frequently delivered by the storm water system. When the amount of light reaching the plants is limited by shading from increased sediment or plankton blooms associated with increased nutrients from land, eelgrass meadows adapt to the poor light availability through dieback, decreases in density or width and migration to shallower depths.

The Islands Trust Area is home to more than 25,000 people and is located between the highly populated centres of Vancouver, Victoria and Nanaimo. However, only approximately 12.5 % of the marine environment has some type of protection. Most of this protection is in Rockfish Conservation Areas, with Provincial and Federal Marine Protected Areas accounting for only 1.53% (Islands Trust Fund Regional Conservation Plan 2011-2015). Sound decisions by local trustees and an educated public are necessary to protect the functions of the nearshore for all who benefit from their healthy ecology.

A set of recommendations is listed below to contribute to the conservation work of the Islands Trust and Islands Trust Fund.

13.1 Education

1. Educate boaters and coastal residents about the presence and importance of eelgrass beds.
2. Encourage shoreline landowners to replace light-impenetrable docks with materials that allow light penetration.
3. Encourage signage at boat ramps reminding boaters to avoid eelgrass beds in shallow water.
4. Build public awareness about the importance of reducing nutrient inputs in marine riparian areas; encourage protection and restoration of wetlands and the construction of retention ponds to filter land based pollutants; and encourage reduction in the use of fertilizers, pesticides and herbicides.
5. Develop a long term public outreach nearshore marine education strategy that includes new shoreline property owners.

13.2 Regulatory and Enforcement

1. Limit dock development, particularly in established and potential eelgrass areas (i.e. areas where substrate is suitable for eelgrass growth).
2. Encourage creation of “No anchoring/mooring” zones in suitable eelgrass areas (based on substrate, depth and observed presence of eelgrass); encourage movement of moorings to areas that are too deep for eelgrass.
3. Limit shoreline development; maintain a coastal riparian zone that will enable inland shift of eelgrass beds as sea levels rise.
4. Create and implement appropriate setbacks for built structures from the nearshore.

5. Limit or reduce overwater structures; increase shared community docks and wharves when possible.
6. Require removal of illegal shoreline modifications; require restoration or removal of aged derelict structures where possible.

13.3 Opportunities for collaboration with other agencies

1. Encourage and undertake as resources allow regularly scheduled monitoring of sensitive or vulnerable shorelines; make monitoring results readily accessible to all.
2. Where boat traffic must go through an eelgrass bed, encourage establishment of marked boat channels so that the least damage is done to the habitat.
3. Create protected marine zones and encourage planned siting for mooring buoys for recreational boats around eelgrass beds.
4. Promote management strategies to mitigate conflicting uses in eelgrass habitat, such as oyster and clam harvesting, boating and anchoring in meadows and near-shore development requiring dredging.
5. Promote restoration of natural hydrology when opportunities arise.
6. Promote restoration of eelgrass habitats where possible.
7. Work with BC Parks staff and other organizations to establish best practices for anchorages and mooring buoy sites and encourage active monitoring of the usage of those sites.

14 Conclusion

Changes from increased human population, more frequent and intense storms and changes in sea levels and pH of the oceans emphasize the need to monitor eelgrass habitat and protect it with sound science-based policies and regulations.

Eelgrass meadows function as natural marine sanctuaries, as indicators of nearshore ecological health, and as sequesters of atmospheric carbon. As well, these valuable habitats are important sources of nutrients for local and off-shore marine and nearshore systems. The conservation, protection, monitoring and restoration of native eelgrass within the Islands Trust Area is and will continue to be a long term smart investment in the social, cultural and biological vitality of the islands.

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Appendix A: Mapping Methodology 2012 – 2014

2012 Methodology for *Zostera marina* Presence and Absence Mapping With a Towed Underwater Camera

The following methodology for eelgrass mapping (*Zostera marina*) was used to determine the location (presence/absence) of eelgrass habitats for Thetis, North and South Pender, Mayne, Lasqueti and Gambier Islands in 2012 under contract with the Islands Trust Fund.

The methodology reported here is an addendum to “Methods for Mapping and Monitoring Eelgrass Habitat in British Columbia” (“Methods”) authored by Precision Identification Biological Consultants and peer reviewed by experts in the field. This addendum was created by the Seagrass Conservation Working Group with input and review by Precision Identification.

The purpose of presence and absence mapping methodology is to determine the linear extent of eelgrass along the coastline. This is achieved by deploying an underwater camera that is towed by a boat and recording the geographic location of eelgrass beds using a hand held GPS. The resulting representation of eelgrass beds are lines.

General habitat characteristics outlined in Methods are also recorded: Form (flat/fringing), Distribution (continuous/patchy), Percent Cover (<25%, 26-75%, >75%), and Substrate type (sand/mud/pebble/cobble/boulder). The state of the tide was recorded as “slack” or “running” in order to indicate the level of confidence in the percent cover estimate. A slack tide yields a higher level of confidence than a running tide, which causes the eelgrass lay across the ocean floor.

Eelgrass ShoreZone bioband mapping and marine charts were used to determine potential locations of eelgrass beds. The majority of the eelgrass beds in the Southern Salish Sea include habitat between 1 and 3 m chart datum. This depth contour was followed and eelgrass presence within this depth range was recorded. If eelgrass was not found in this depth range where bathymetry and substrate characteristics were suitable for eelgrass growth, a perpendicular transect was followed ranging from +1m to -6m which is the typical range of eelgrass in the Salish Sea.

GPS waypoints and the following parameters were recorded at roughly 10m intervals: depth, eelgrass presence, form, distribution, substrate, percent cover, tide state, presence of broad or tuft algae, visibility.

Where marine charts indicated suitable conditions (a shallow bathymetric relief) for eelgrass but eelgrass was not present; waypoints and substrate type were recorded at 20m intervals. Where marine charts indicated unsuitable conditions for eelgrass (steep bathymetric relief), only waypoints were recorded to indicate mapping coverage.

2013 Methodology for *Zostera marina* Presence Mapping with a Towed Underwater Camera

For the 2013 contract, the following methodology for eelgrass mapping (*Zostera marina*) was used to determine the location (presence) of eelgrass habitats for the Gabriola Island Local Trust Area, the Galiano Island Local Trust Area, Valdes Island, Winchelsea-Ballenas (Executive Islands) Local Trust Area, Cufra Inlet (Thetis Island) and the Gambier Associated Islands found within Howe Sound (excluding the Thormanbies and other islands off of the Sunshine Coast).

The methodology reported here is an addendum to “Methods for Mapping and Monitoring Eelgrass Habitat in British Columbia” (“Methods”) authored by Precision Identification Biological Consultants and peer reviewed by experts in the field. This addendum was created by the Seagrass Conservation Working Group with input and review by Precision Identification. For 2013 mapping Islands Trust Global Positioning System Specifications (Schedule G to the contract) were adopted except for Cufra Inlet on Thetis Island where a hand held GPS was used to be consistent with 2012 mapping. Average accuracy was 0.814m and was the combined result of the built-in accuracy of the GPS unit, lag time between sighting eelgrass and the unit gathering enough satellite data to create a waypoint, in combination with boat drift.

Linear Mapping

With the exception of the islands in Metro Vancouver, the Islands Trust eelgrass mapping was done using a linear method to determine presence of eelgrass along the shoreline. This linear eelgrass mapping is achieved by towing an underwater camera using a boat, except for the mapping done in Cufra Inlet in 2013, where the water was shallow enough to observe eelgrass from kayaks, and by concurrently recording the geographic location of eelgrass beds using a GPS. The resulting representations of eelgrass beds are lines and points (where the eelgrass patch was less than 3m in length).

Polygon Mapping

With financial assistance from Metro Vancouver, eelgrass beds on Bowen, Bowyer and Passage Islands were mapped using polygons to show their full extent. In addition to the linear mapping described above, underwater camera transects were conducted perpendicular to shore to map shoreward and seaward edges. In some areas, fringing eelgrass and eelgrass patches were too small to map as polygons. In these locations lines and points were used respectively to show eelgrass presence. Fringing eelgrass bands $\leq 5\text{m}$ wide were mapped as lines and patches less than 10m^2 were mapped as points. Mapping of polygons according to standard methodology was limited due to safe boat operation in wind, current and tidal movements, as well as navigation around boats and swimmers.

For all the islands, general habitat characteristics outlined in Methods are also recorded: Form (flat/fringing), Distribution (continuous/patchy), Percent Cover (<25%, 26-75%, >75%), and Substrate type (sand/mud/pebble/cobble). The state of the tide was recorded as “slack” or

“running” in order to indicate the level of confidence in the percent cover estimate. A slack tide yields a higher level of confidence than a running tide, which causes the eelgrass to lie across the ocean floor.

ShoreZone eelgrass bioband mapping and marine charts were used to determine potential locations of eelgrass beds. The majority of the eelgrass beds in the Southern Salish Sea are found between 1 and 3m chart datum. This depth contour was followed and eelgrass presence within this depth range was recorded. If eelgrass was not found in this depth range where bathymetry and substrate characteristics were suitable for eelgrass growth, a perpendicular transect was followed ranging from +1m to -6m which is the typical range of eelgrass in the Salish Sea.

GPS waypoints and the following parameters were recorded at roughly 10m intervals with intervals no longer than 20m: depth, eelgrass presence, form, distribution, substrate, percent cover, tide state, presence of broad or tuft algae, visibility.

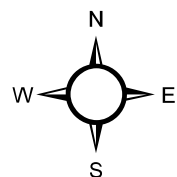
The following section was removed from the methodology for 2013:

Where marine charts indicated suitable conditions (a shallow bathymetric relief) for eelgrass but eelgrass was not present, waypoints and substrate type were recorded at 20 metre intervals. Where marine charts indicated unsuitable conditions for eelgrass (steep bathymetric relief), only waypoints were recorded to indicate mapping coverage.

Appendix B: Maps of Shoreline Units

Shoreline Units & Zostera Bioband Units -- Pender Islands --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2012
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:50,000

Eelgrass Mapping Summary

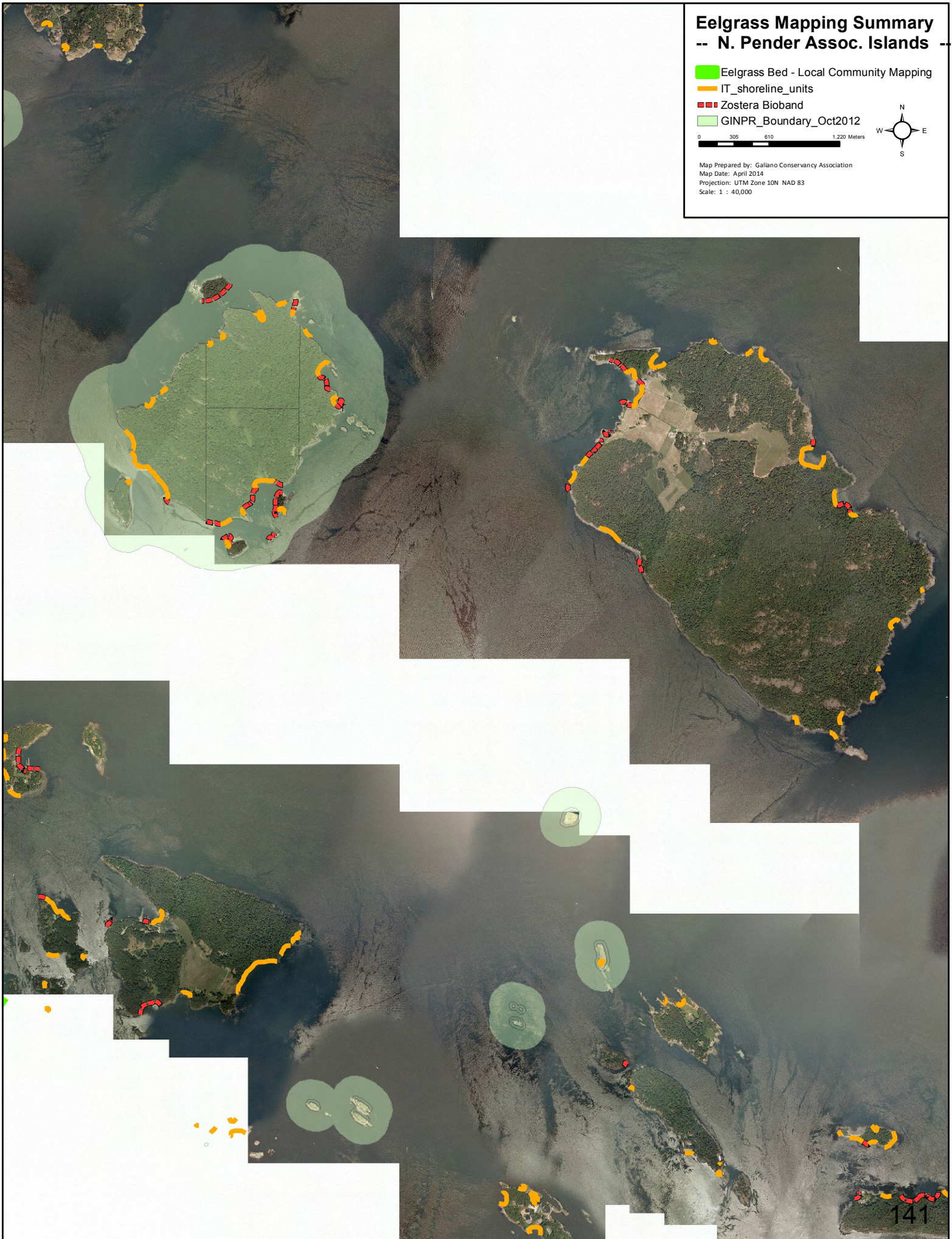
-- N. Pender Assoc. Islands

- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband
- GINPR_Boundary_Oct2012

0 305 610 1,220 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Eelgrass Mapping Summary -- N. Pender Assoc. Islands

- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband
- GINPR_Boundary_Oct2012

0 345 690 1,380 Meters

Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Shoreline Units

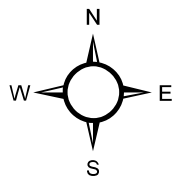
-- Gambier Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2012

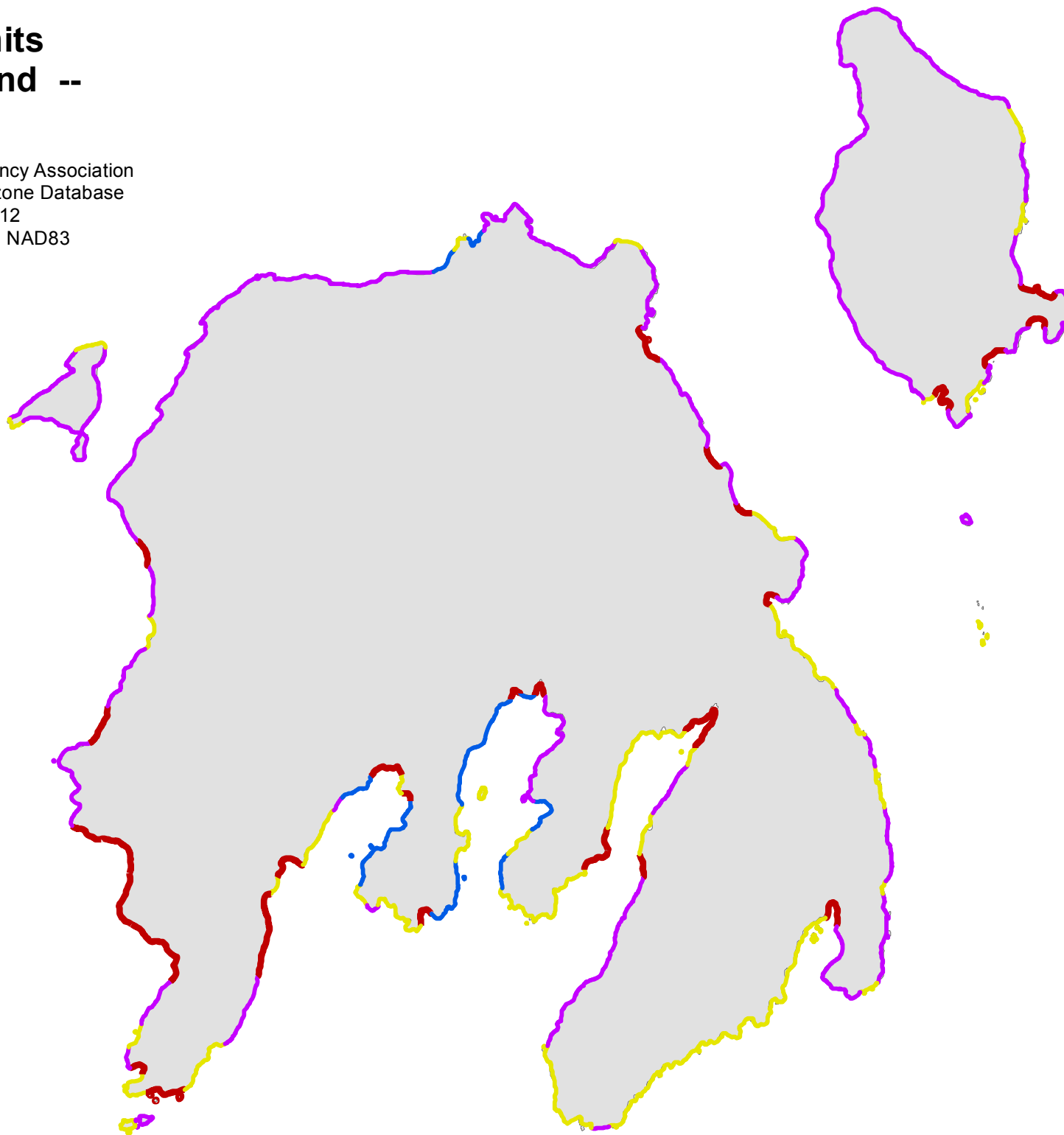
Projection: UTM Zone 10 NAD83



SHORELINE_UNITS

- Estuary
- Sand / Cobble
- Low Rock / Boulder
- Altered
- Cliff
- Coastal Banks or Bluffs

1:70,000



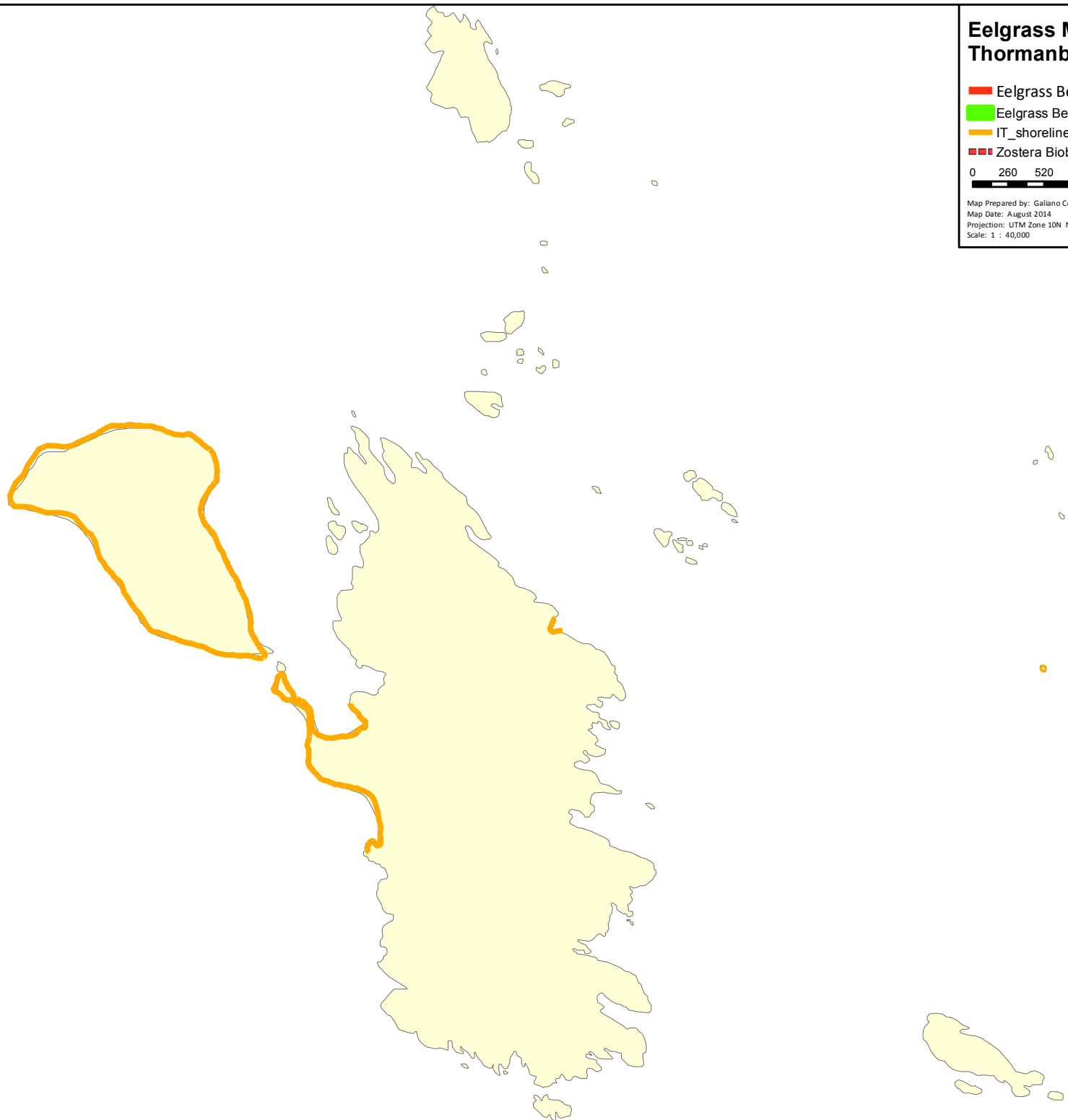
Eelgrass Mapping Summary Thormanby & Assoc. Islands NW

-  Eelgrass Bed - 2012 Islands Trust Inventory
-  Eelgrass Bed - Local Community Mapping
-  IT_shoreline_units
-  Zostera Bioband

0 260 520 1,040 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: August 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



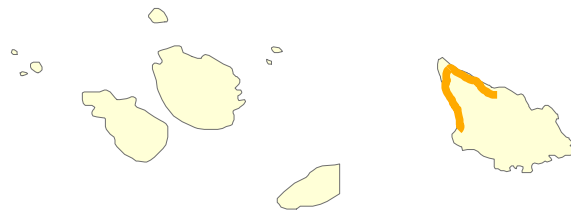
Eelgrass Mapping Summary

-- Thormanby Assoc. Islands SE --

-  Eelgrass Bed - 2012 Islands Trust Inventory
-  Eelgrass Bed - Local Community Mapping
-  IT_shoreline_units
-  Zostera Bioband

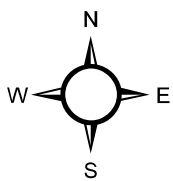
0 260 520 1,040 Meters

Map Prepared by: Galliano Conservancy Association
Map Date: August 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Shoreline Units & Zostera Bioband Units -- Thetis Island Trust Area --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2012
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

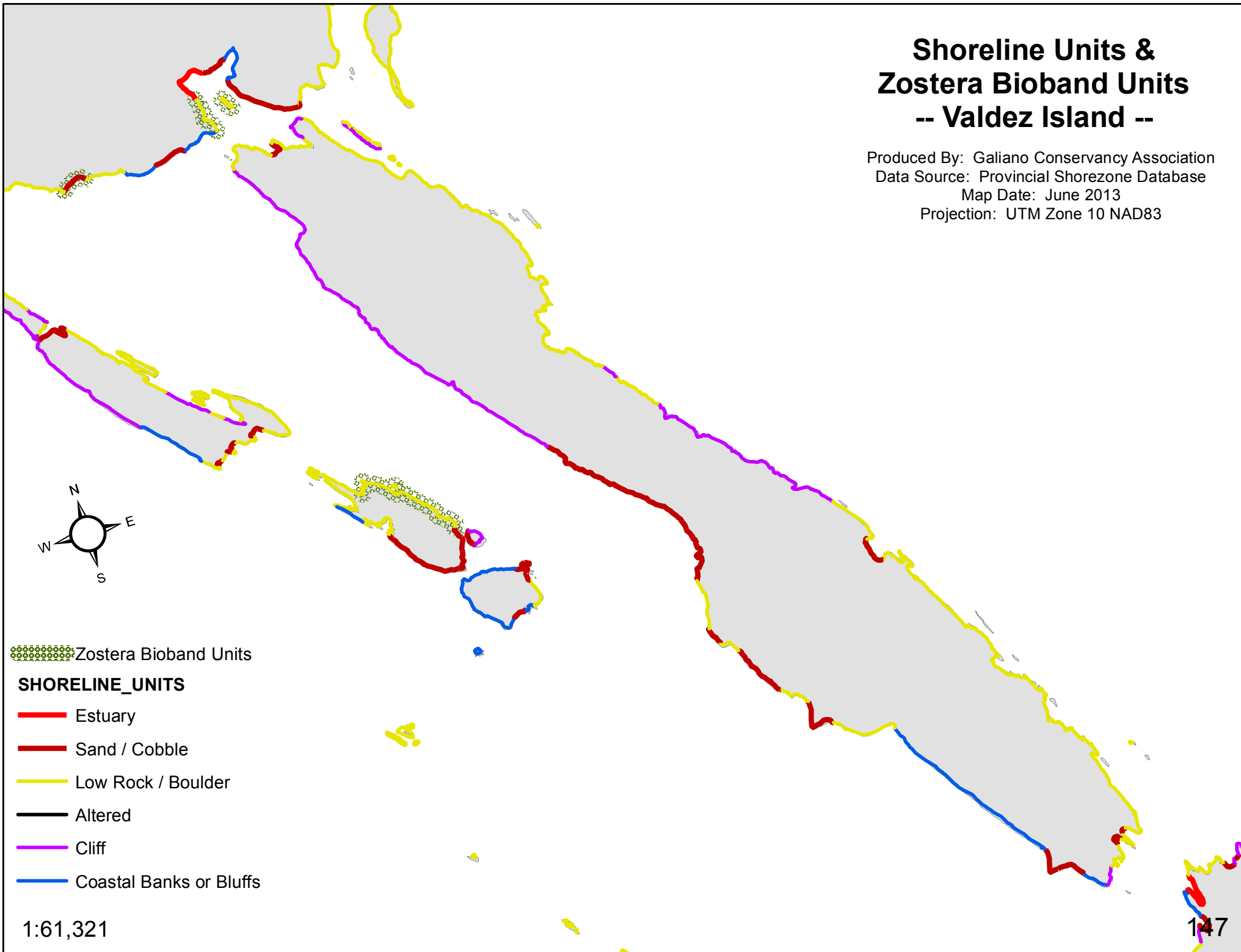
SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:55,000

Shoreline Units & Zostera Bioband Units -- Valdez Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



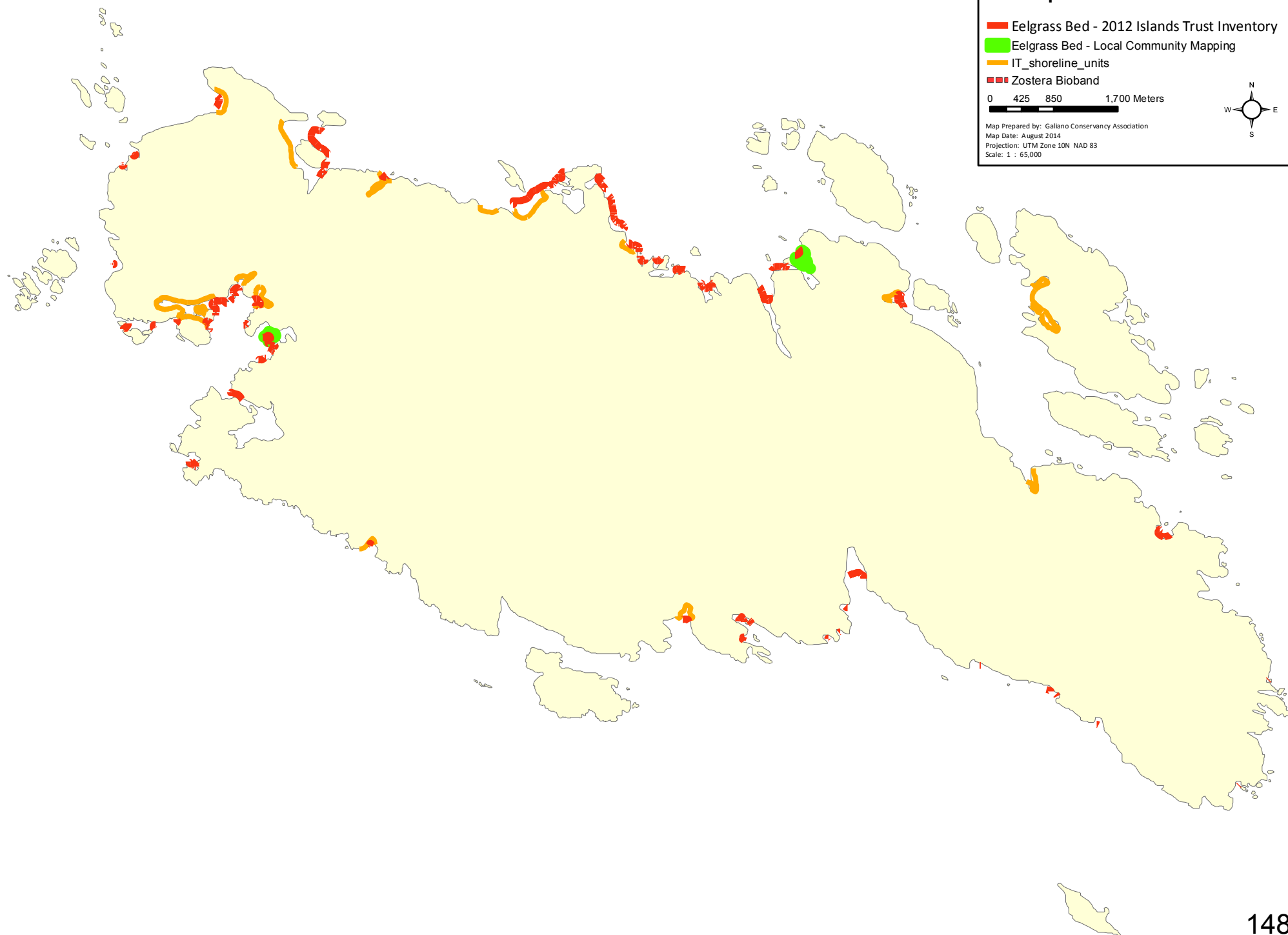
Eelgrass Mapping Summary -- Lasqueti & Associated Islands --

- Eelgrass Bed - 2012 Islands Trust Inventory
- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband

0 425 850 1,700 Meters

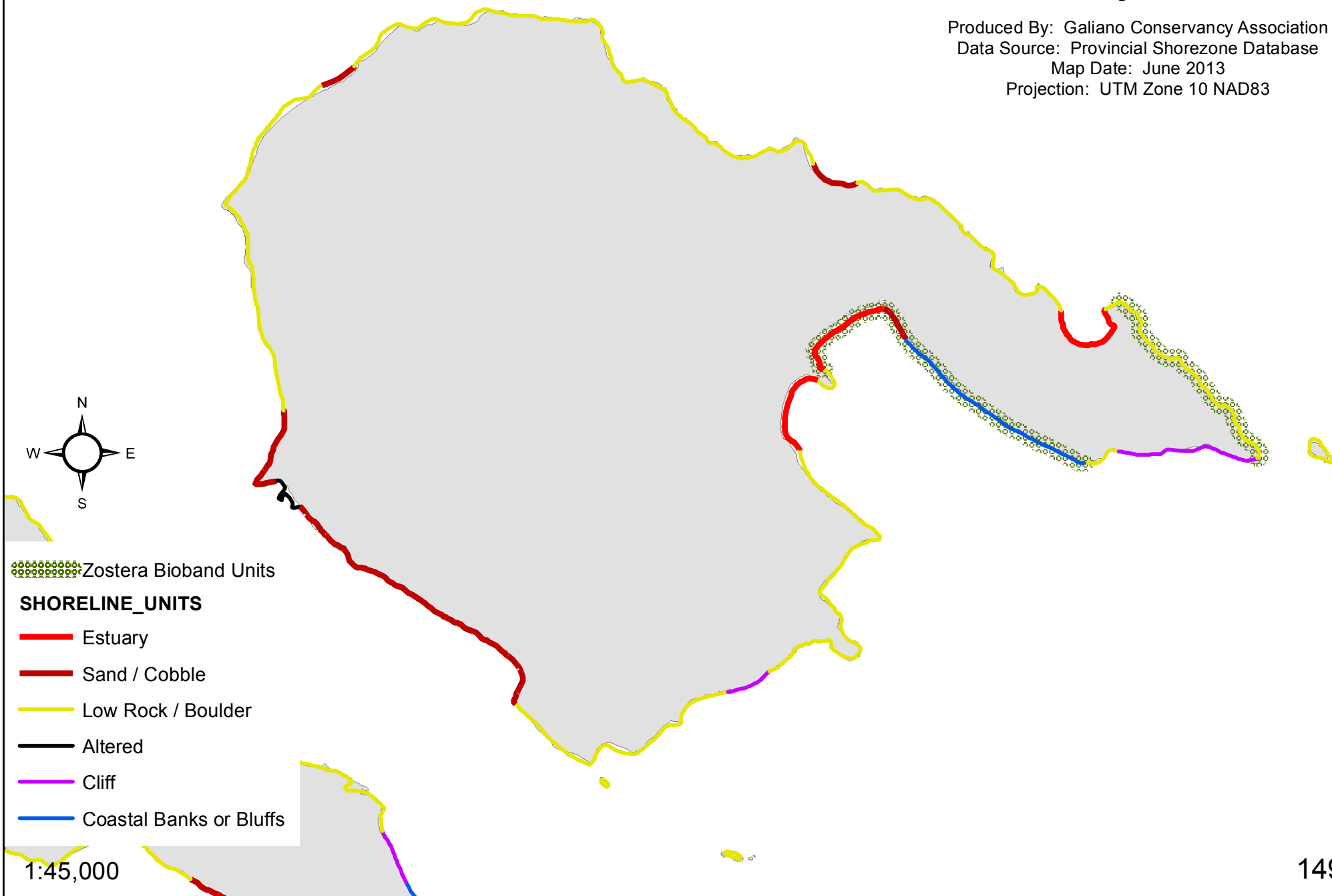


Map Prepared by: Galliano Conservancy Association
Map Date: August 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 65,000



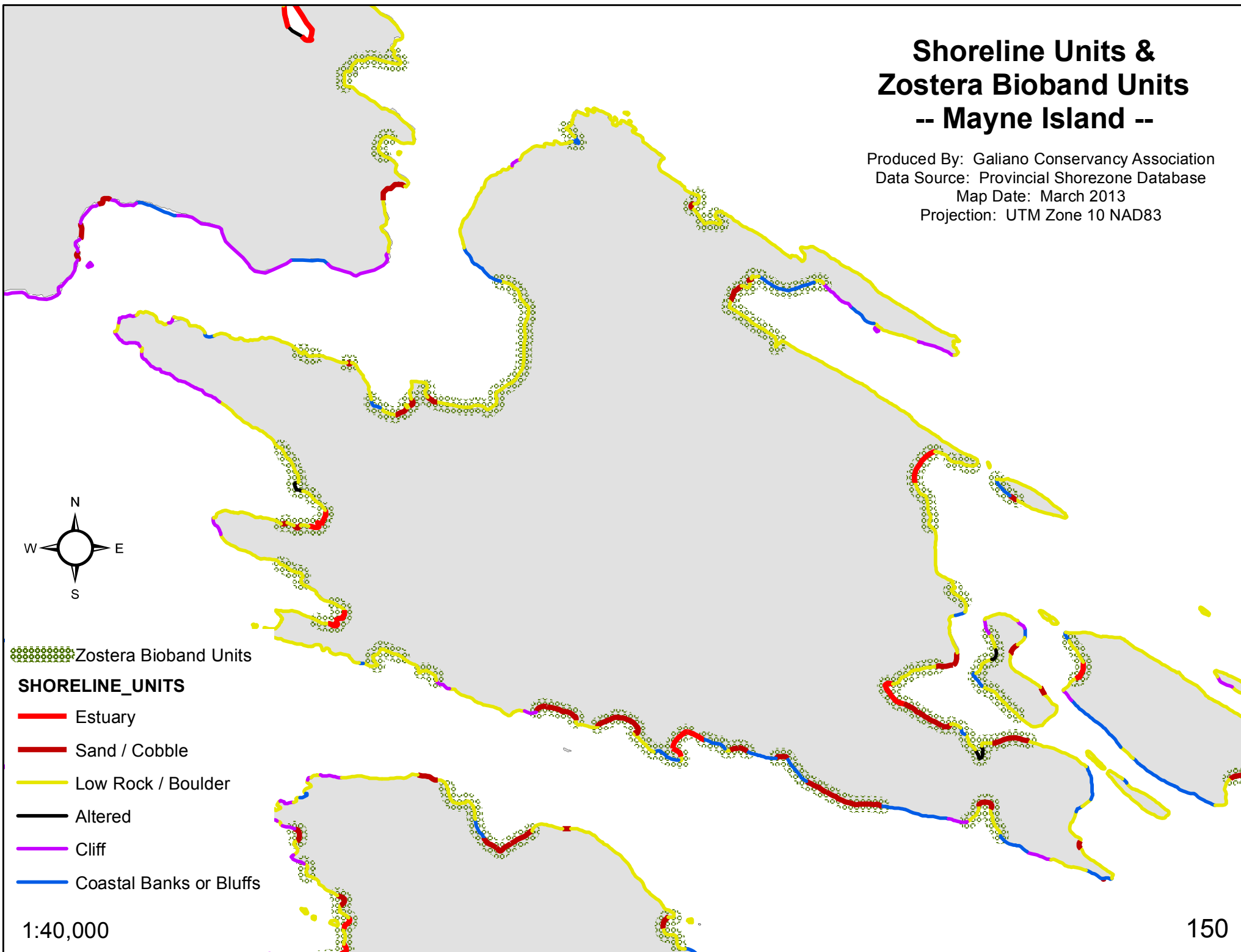
Shoreline Units & Zostera Bioband Units -- Hornby Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



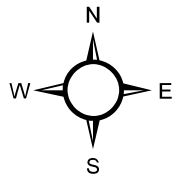
Shoreline Units & Zostera Bioband Units -- Mayne Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: March 2013
Projection: UTM Zone 10 NAD83



Shoreline Units & Zostera Bioband Units -- Executive Islands --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:46,362

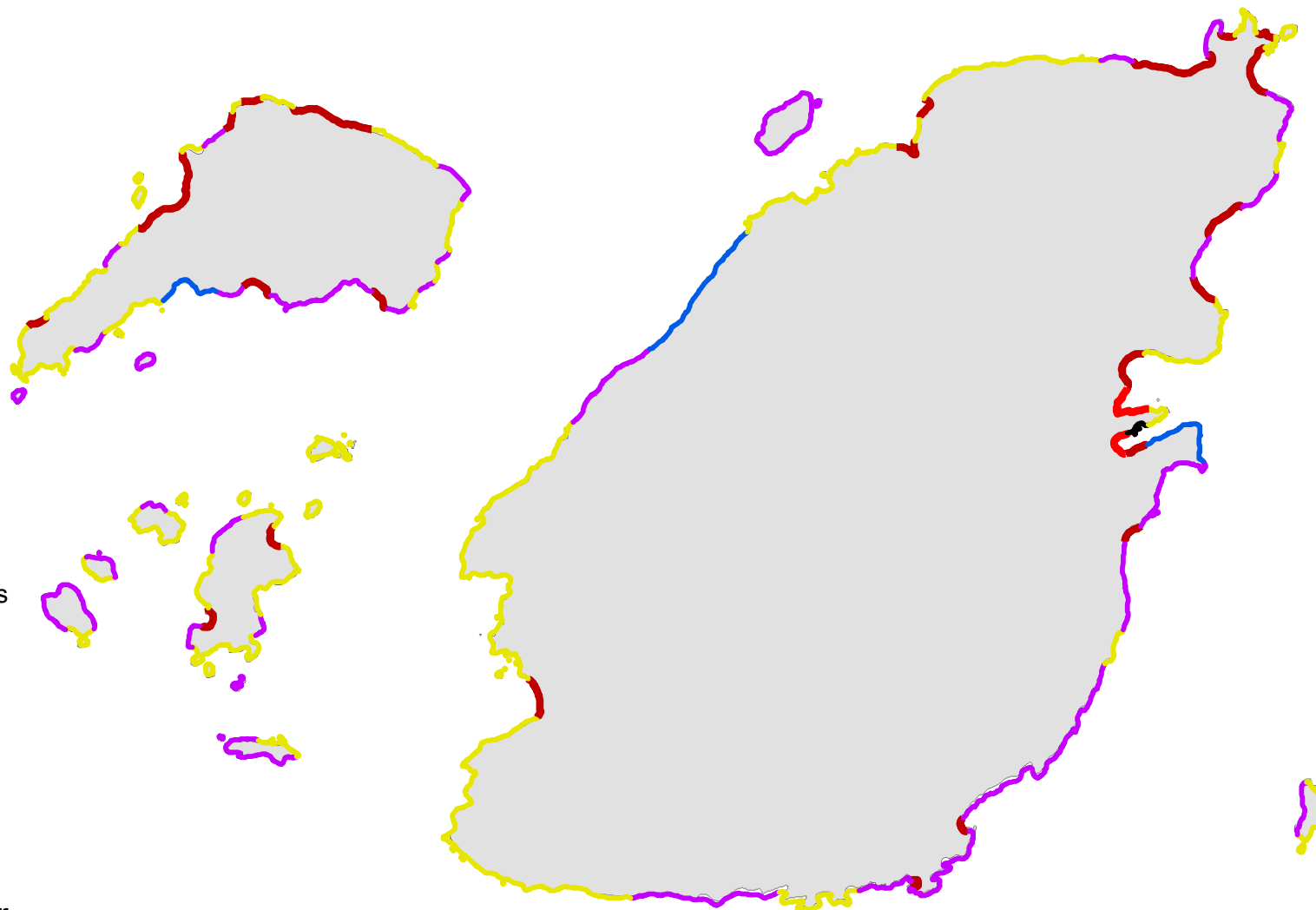
Shoreline Units & Zostera Bioband Units -- Bowen Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2013

Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

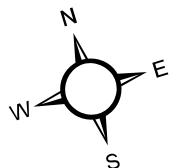
SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:70,000

Shoreline Units & Zostera Bioband Units -- Denman Island --

Produced By: Galiano Conservancy Association
Data Source: Provincial Shorezone Database
Map Date: June 2013
Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:70,000

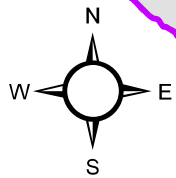
Shoreline Units & Zostera Bioband Units -- Gabriola Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2012

Projection: UTM Zone 10 NAD83



 Zostera Bioband Units

SHORELINE_UNITS

-  Estuary
-  Sand / Cobble
-  Low Rock / Boulder
-  Altered
-  Cliff
-  Coastal Banks or Bluffs

1:57,500

154

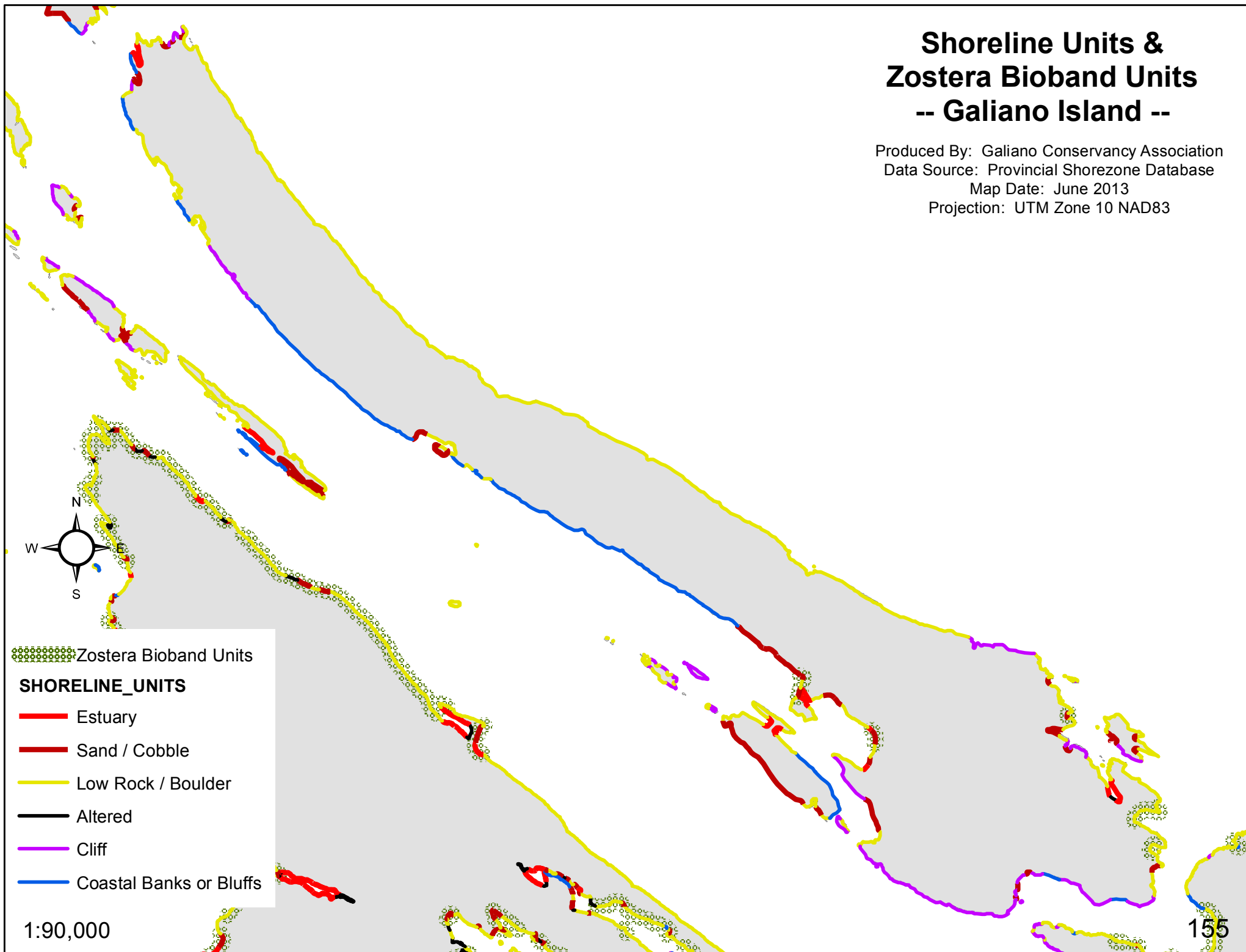
Shoreline Units & Zostera Bioband Units -- Galiano Island --

Produced By: Galiano Conservancy Association

Data Source: Provincial Shorezone Database

Map Date: June 2013

Projection: UTM Zone 10 NAD83



Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

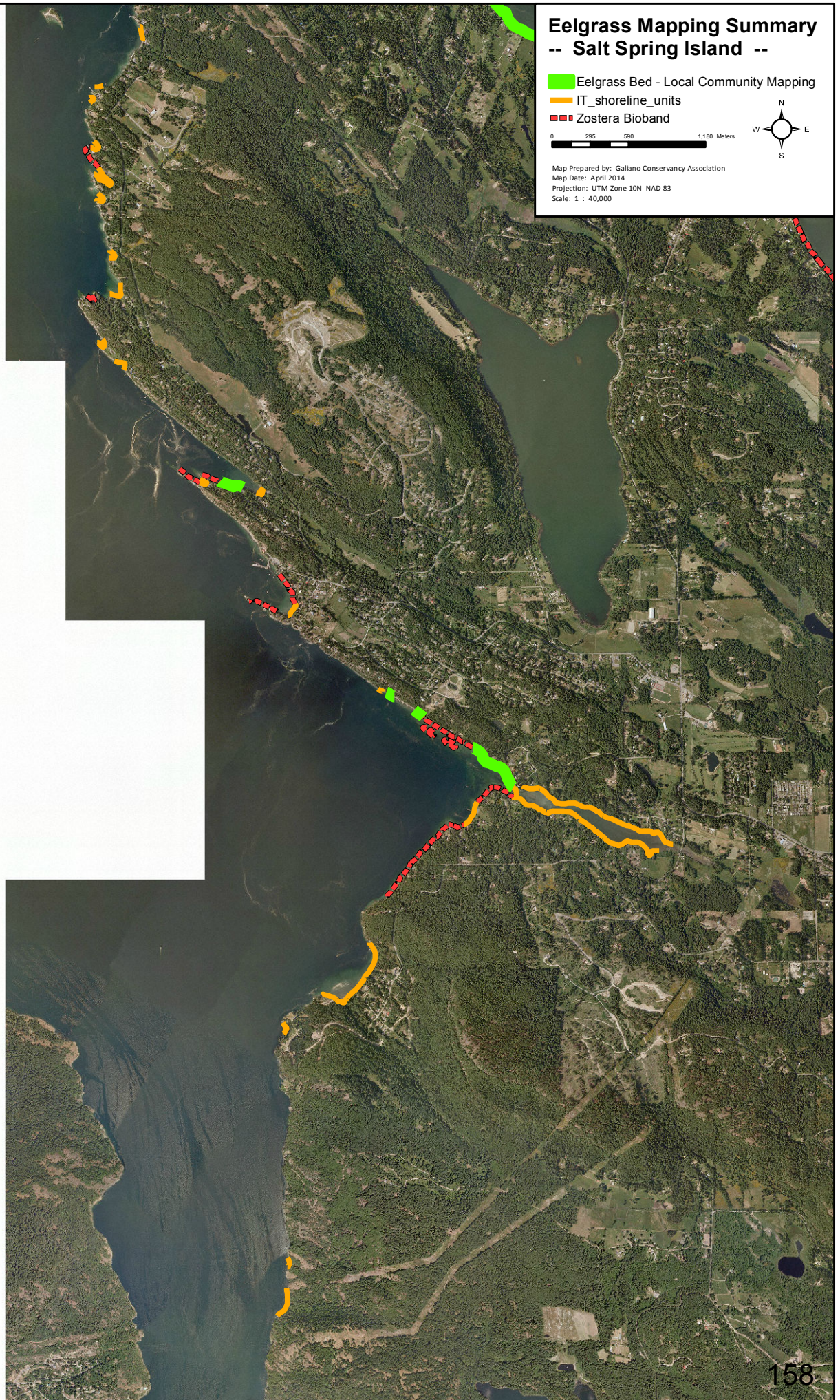
Eelgrass Mapping Summary -- Salt Spring Island --

- Eelgrass Bed - Local Community Mapping
- IT_shoreline_units
- Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



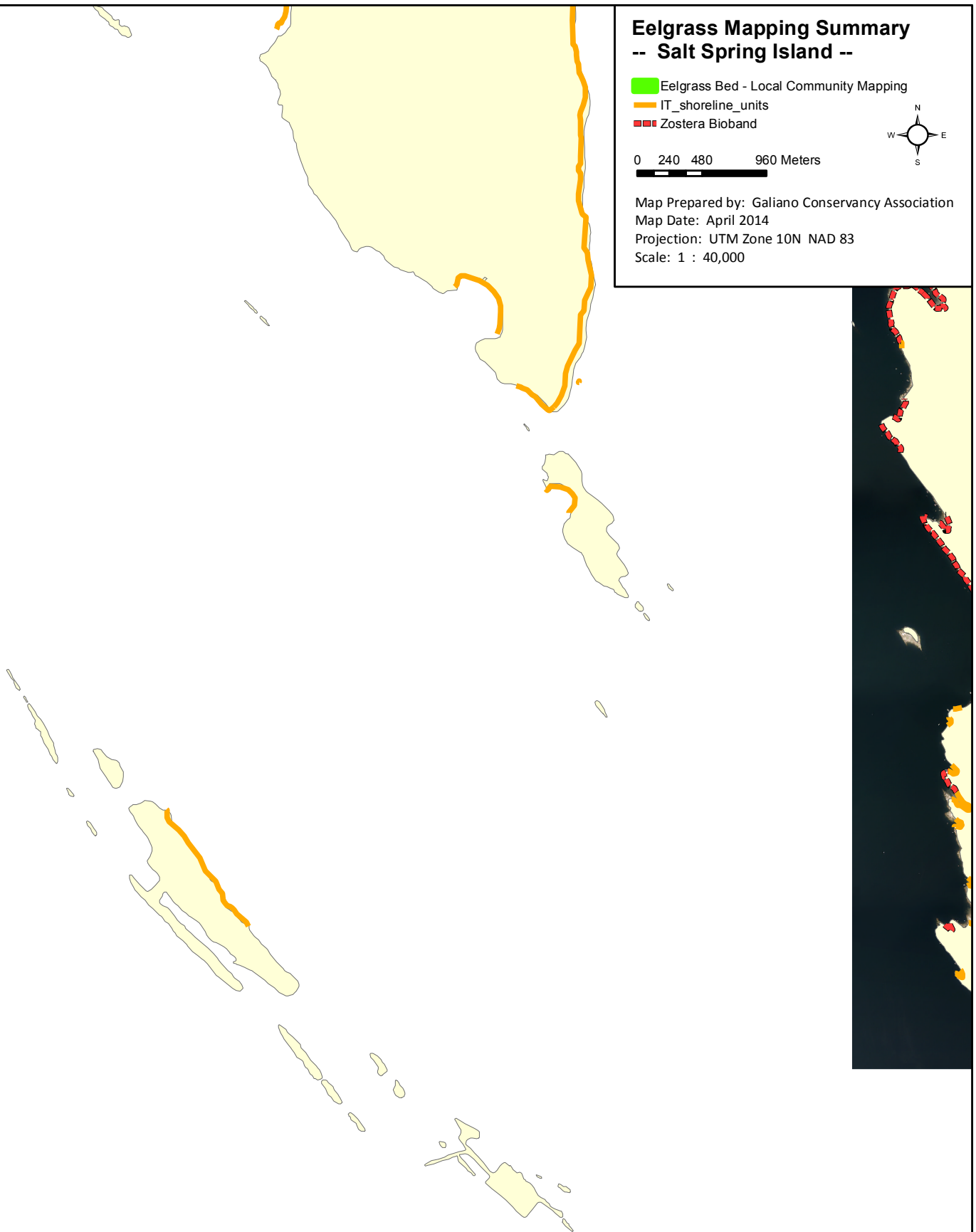
Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 240 480 960 Meters



Map Prepared by: Galiano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Eelgrass Mapping Summary -- Salt Spring Island --

 Eelgrass Bed - Local Community Mapping

 IT_shoreline_units

 Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

Eelgrass Mapping Summary -- Salt Spring Island North --

 Eelgrass Bed - Local Community Mapping
 IT_shoreline_units
 Zostera Bioband

0 240 480 960 Meters



Map Prepared by: Galiano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000

Eelgrass Mapping Summary -- Salt Spring Island --

Eelgrass Bed - Local Community Mapping

IT_shoreline_units

Zostera Bioband

0 295 590 1,180 Meters



Map Prepared by: Galliano Conservancy Association
Map Date: April 2014
Projection: UTM Zone 10N NAD 83
Scale: 1 : 40,000



Eelgrass Mapping Summary

-- N. Pender Assoc. Islands

 Eelgrass Bed - Local Community Mapping

 IT_shoreline_units

 Zostera Bioband

 GINPR_Boundary_Oct2012

0 410 820 1,640 Meters

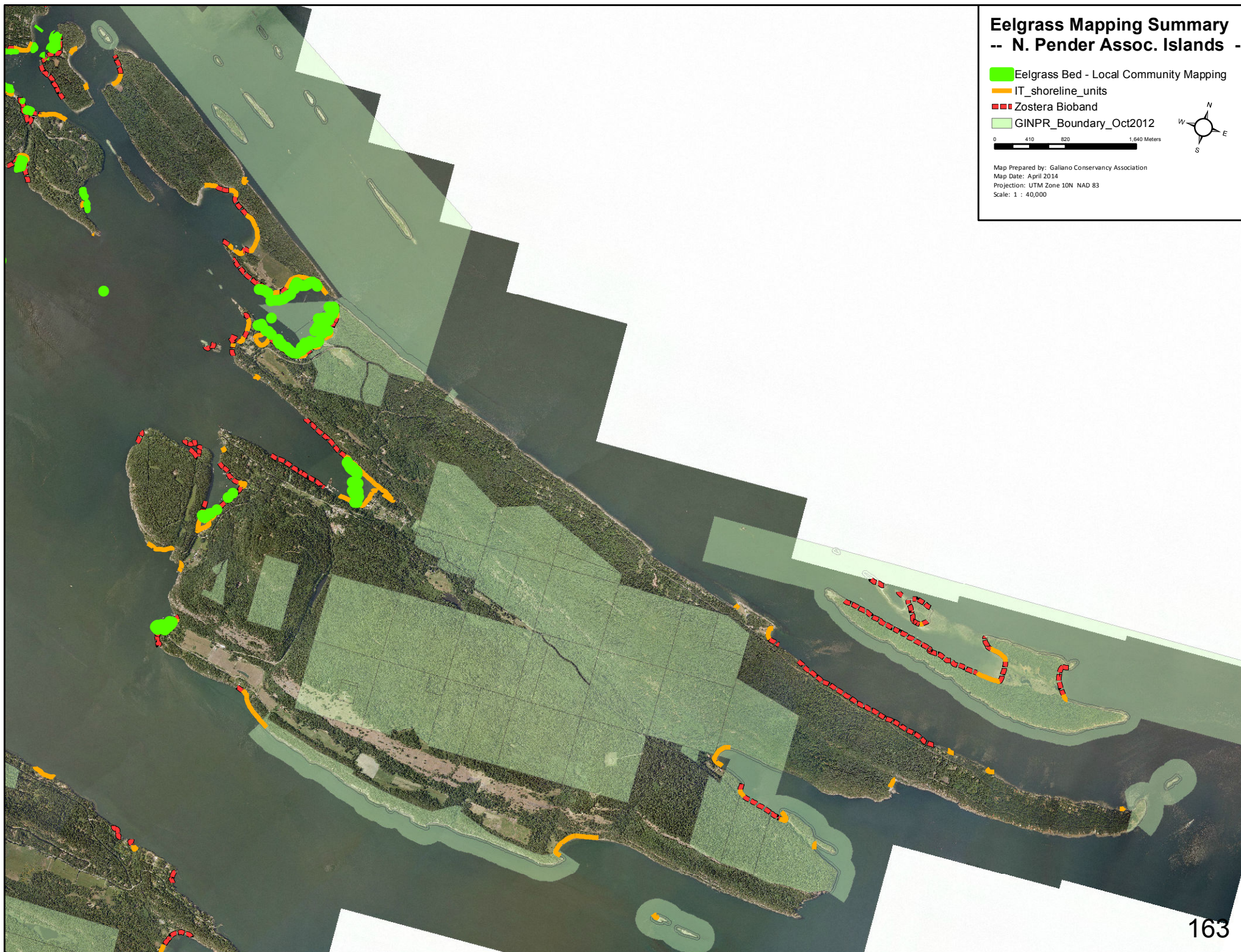


Map Prepared by: Galliano Conservancy Association

Map Date: April 2014

Projection: UTM Zone 10N NAD 83

Scale: 1 : 40,000



Appendix C: Summary of Overwater Structures

The Impacts of Overwater Structures on the Marine Nearshore Environment



The following information was taken from two sources. A Green Shores document summarizes possible effects of docks.¹ A White Paper published in 2001² for the Washington State Transportation Commission in Puget Sound is more detailed. The page numbers at the end of paragraphs indicate the page on which the information was found in the original document.

Information collated by Nikki Wright, Executive Director

SeaChange Marine Conservation Society

¹ Province of British Columbia. *Coastal Shore Stewardship: A Guide for Planners, Builders and Developers on Canada's Pacific Coast*. www.greenshores.ca

² Nightingale, B. & Simenstad, C.A. (2001) *Overwater Structures: Marine Issues White Paper Research Project T 1803, Task 35*. Prepared for Washington State Transportation Commission and in cooperation with U.S. Department of Transportation, Federal Highway Administration. 108 pages.

Summary of Possible Effects of Docks

Coastal Shore Stewardship: A Guide for Planners, Builders and Developers on Canada's Pacific Coast Province of British Columbia (Available on the Green Shores Web site:

www.greenshores.ca)

What Can Happen (p. 65)

The installation of docks can affect the coastal biophysical environment in a variety of ways:

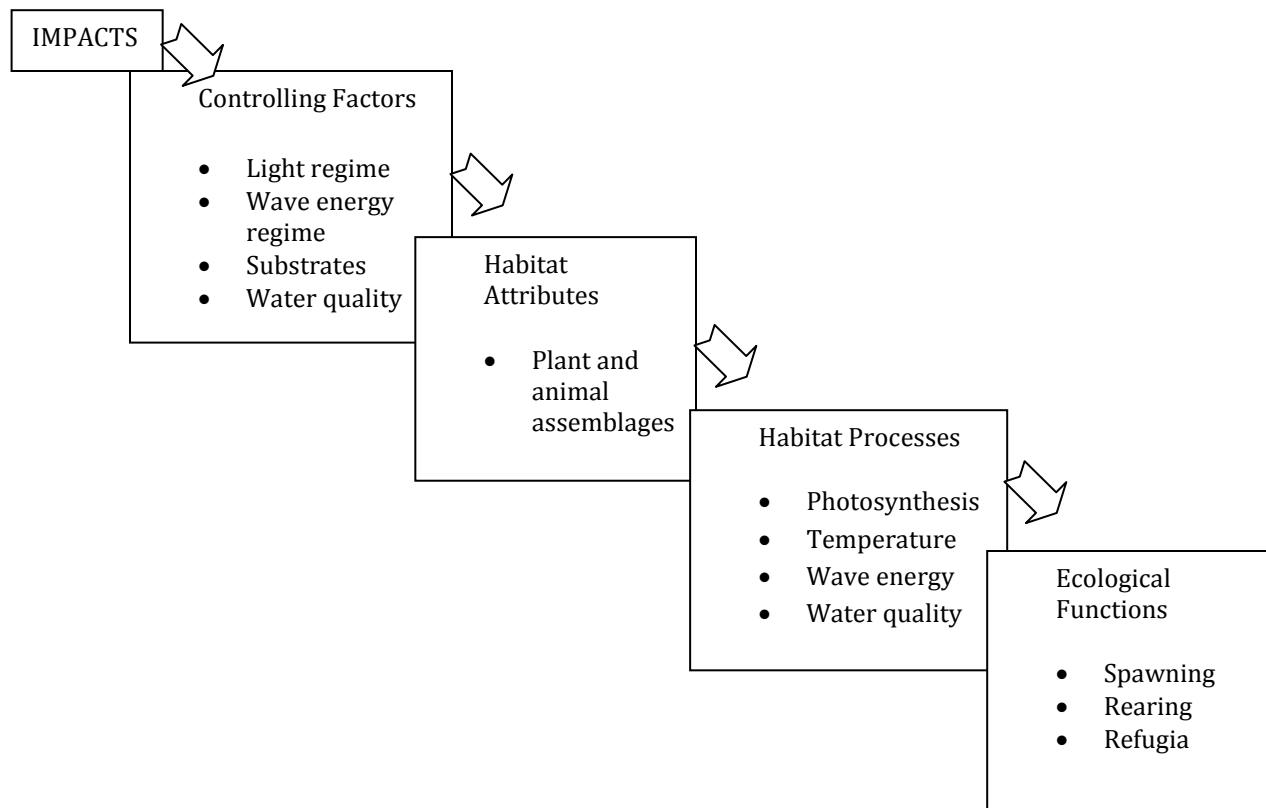
- Shading: Shading caused by the dock can affect the vigor of intertidal and subtidal plant communities, such as marsh plants, eelgrass and kelp beds. These impacts may be chronic (reduced productivity) or acute (wiping out plant communities, leaving the area barren).
- Disruption of shore drift patterns: This can result in updrift beach formation and downdrift shoreline erosion.
- Shore damage: Removal of shore plants and disturbance of soils where docks are attached to land can increase erosion and sedimentation of the intertidal and adjacent subtidal areas.
- Bottom habitat: Installation of footings, pilings and other structures permanently alienates benthic habitat. Dredging to create sufficient depth next to the dock can also disrupt or destroy bottom habitat.
- Operational pollution: poor refueling and dock maintenance practices, bilge releases and accidental spills from boats and docks can release contaminants into the nearby waters. (p. 65)

Overview of Ecological and Habitat Issues

From: Overwater Structures: Marine Issues White Paper Research Project T 1803, Task 35.

Estuarine and shallow marine nearshore habitats provide passage for fish and fish larvae, ocean water and human transportation, as well as areas for settlement of marine shellfish and other marine life. These sites are important sources of prey resource production, refugia, and spawning areas for Pacific salmon, groundfish, and forage fish, such as herring, sand lance and surf smelt. Overwater constructed structures can pose alterations to key factors that control prey production and spawning. Light, wave energy and substrate regimes determine the habitat characteristics that support these critical functions (p. 1).

Overwater structures are typically located in intertidal areas from above the area submerged by the mean higher high tides and out to 15 meters below the area exposed by the mean lower low tide. The primary physical processes controlling habitat attributes (i.e. plant and animal assemblages) and functions are depth (elevation) substrate type, wave energy, and light and water quality. These are the most important factors influencing the development and distribution of nearshore habitats (p. 33).



Conceptual model used by authors to define overwater structure impacts to nearshore habitat (p. 33).

Overwater structures and associated activities can impact the ecological functions of habitat through the alteration of habitat controlling factors (light regime, wave energy regime, and substrate and water quality). These alterations can, in turn, interfere with habitat processes supporting the key ecological functions of spawning, rearing and refugia. Whether any of these impacts occur and to what degree they occur at any one site depend upon the nature of site-specific habitat controlling factors and the type, characteristic, and use patterns of a given overwater structure located at a specific site (p. 34).

In addition to impacts associated with overwater constructed structures, activities associated with docks can also pose risks to the quality and quantity of habitat through prop scour, groundings, contaminant introduction to the marine environment and structural interferences with shallow nearshore habitats with the placement of ramps and haul-outs in nearshore areas.

Habitat Impact Mechanisms (p. 34)

Habitat Controlling Factors	Overwater Structures & Activities	Habitat Impact Mechanisms	Habitat Impacts
Light Regime	• Docks • Floats • Pilings • Moored vessels	• Reduced light levels	• Limited plant growth & recruitment • Altered animal behavior and assemblages
Wave Energy Regime	• Floats • Breakwaters • Prop wash • Marina	• Altered wave patterns	• Altered plant and animal assemblages • Altered substrate type • Altered sediment transport & distribution
Substrate	• Prop & anchor scour • Pilings, breakwaters & floats	• Altered substrate characteristics	• Altered sediment transport & distribution • Altered substrate type • Altered plant & animal assemblages
Water Quality	• Discharges • Boat & upland run-off	• Increased exotics, toxics, nutrients and bacterial introductions	• Altered plant & animal assemblages • Limited growth & recruitment • Exotic species replacement of natives

Overwater Structure Effects on Light Regime

Effects on Underwater Vegetation

Without proper precautions, docks, piers, and pilings can cast shade upon the underwater water environment thereby limiting light availability for plant photosynthesis. Distributions of invertebrates, fishes, and plants have been found to be severely limited in under-dock environments when compared to adjacent vegetated habitat in the Pacific Northwest not shaded by overwater structures (p. 38).

Each dock defines a shade footprint specific to its structural specifications. Dock height, width, construction materials, and the dock's orientation to the arc of the sun are primary factors in determining the shade footprint that a given dock casts over the submerged substrates. Researchers found underwater light availability and eelgrass bed quality under docks to be primarily dependent upon dock height, followed in importance by dock width and dock orientation to the arc of the sun. Light is the most important variable affecting canopy structure (i.e. shoot density and height) and eelgrass bed quality. To the degree that a shade footprint limits plant photosynthesis, it decreases the extent and quality of habitat that support a wide variety of fish and shellfish populations. Construction of even partially shading types of structures, floating or on pilings, could be expected to largely eliminate existing eelgrass and other macroflora with little chance for replacement plant growth (p. 39).

Effects on Fish

Overwater structures can create sharp underwater light contrasts by casting shade in ambient daylight conditions. They can also produce sharp underwater light contrasts by casting artificial light in ambient nighttime conditions. Changes to ambient underwater light environments pose a risk of altering fish migration behavior and increasing mortality risks. Findings have demonstrated that fish responses to piers are ambiguous with some individuals passing under the dock, some pausing and going around the dock, schools breaking up upon encountering docks, and some pausing and eventually going under the dock (p. 43).

Light is considered to be the primary factor limiting the survival and distribution of eelgrass. Given the strong association of important fish prey resources with eelgrass, limitations in the extent of eelgrass pose a potential risk of reduced prey resources. Prey resource limitations likely impact migration patterns and the survival of many juvenile fish species. For smaller fish less than 50 mm in length, residence times along particular shorelines are thought to be a function of prey abundance. Research in the Hood Canal demonstrated that outmigrating juvenile chum fry (30-45 mm) feed extensively upon small, densely distributed harpacticoid

copepods selecting for the largest copepods available. As the fish grew in size, their diet content became composed more of larger epibenthos and pelagic crustaceans. Consistent with other studies, the highest densities of harpacticoid copepods occurred in magnitudes 4-5 times higher in eelgrass stands than in sand habitat without eelgrass. Similarly, the largest abundance of first post-larval stage crabs of 0+ age are found in eelgrass beds (p. 45).

Impacts on Wave Energy

Wave energy and water transport alterations imposed by docks, bulkheads, breakwaters, ramps and associated activities alter the size, distribution, and abundance of substrate and detrital materials required to maintain the nearshore detrital-based food web. Alteration of sediment transport patterns can present potential barriers to the natural processes that build spits and beaches and provide substrates required for plant propagation, fish and shellfish settlement and rearing, and forage fish spawning. Although the specific characteristics of the factors at play vary with the geology of each region or subsystem, changing the type and distribution of sediment will likely alter key plant and animal assemblages. Wave and current interactions in shallow water (i.e. depths <1.0m) are particularly important to intertidal flora and fauna (p. 48).

Dock pilings have also been found to alter adjacent substrates with increased shell hash deposition from piling communities and changes to substrate bathymetry. Similarly, dock uses and construction activities are known to limit underwater light and redistribute sediments through prop scouring, vessel shading, and pile driving. These changes in substrate type can change the nature of the flora and fauna native to a given site. In the case of pilings, native dominant communities typically associated with sand, gravel, mud, sand, and seagrass substrates are replaced by those communities associated with shell hash substrates (p. 49).

Cumulative Effects

Given the apparent increasing demand for overwater structures, structural design to allow maximum light transmission and to mitigate energy and substrate changes is required to protect the ecosystems marine fishes rely upon. Given what is known concerning overwater structure impacts in marine and estuarine ecosystems, we conclude that multiple placements of overwater structures in marine waters can pose substantive risks of significant changes to the immediate and surrounding marine and estuarine ecosystems. These risks require the assessment of existing cumulative light limitation effects and wave energy and substrate effects to the shoreline environment. These risks require assessment at the drift cell before considering the addition of new structures (p. 91).

Appendix D: 2012 - 2014 Islands Trust Area Eelgrass Inventory Meta Data

1. File Identification Information:

2012-2014 Islands Trust Eelgrass Inventory.dbf
 2012-2014 Islands Trust Eelgrass Inventory.prj
 2012-2014 Islands Trust Eelgrass Inventory.sbn
 2012-2014 Islands Trust Eelgrass Inventory.sbx
 2012-2014 Islands Trust Eelgrass Inventory.shp
 2012-2014 Islands Trust Eelgrass Inventory.shx

2012-2014 Islands Trust Eelgrass Inventory Points.dbf
 2012-2014 Islands Trust Eelgrass Inventory Points.prj
 2012-2014 Islands Trust Eelgrass Inventory Points.sbn
 2012-2014 Islands Trust Eelgrass Inventory Points.sbx
 2012-2014 Islands Trust Eelgrass Inventory Points.shp
 2012-2014 Islands Trust Eelgrass Inventory Points.shx

2012-2014 Islands Trust Eelgrass Inventory Polygons.dbf
 2012-2014 Islands Trust Eelgrass Inventory Polygons.prj
 2012-2014 Islands Trust Eelgrass Inventory Polygons.sbn
 2012-2014 Islands Trust Eelgrass Inventory Polygons.sbx
 2012-2014 Islands Trust Eelgrass Inventory Polygons.shp
 2012-2014 Islands Trust Eelgrass Inventory Polygons.shx

2. Standard: GPS survey was conducted in accordance with “Methods for Mapping and Monitoring Eelgrass Habitat in British Columbia (MMEHBC)” and the addendum included below as *Appendix A*. GPS data (2013/2014) was collected in accordance with 'Ammended Schedule G: GLOBAL POSITIONING SYSTEM SPECIFICATIONS' included below as *Appendix B*.
3. GPS Receiver Type: 2012 Data: Garmin GPSMAP 62s with build in high sensitivity receiver (Penders, Lasqueti, Thetis). Garmin GPSMAP 60C and Garmin GPSMAP 62st with built in high sensitivity receiver (Gambier). 2013/2014 Data: Trimble Pathfinder ProXR.
4. Correction Type: 2012 Data: Uncorrected 2013/2014 Data: Post Processed (Trimble Pathfinder Office Pro)
5. Accuracy: GPS data was exported to ESRI shape file format and brought into an ArcMap project. GPS line segments were interpreted and edited to improve accuracy in accordance with MMEHBC standards. The following tables summarize reported GPS accuracy:

2012 Data:

Worst Horizontal Precision Reading (m)	
Gambier Island	12
Lasqueti Island	2
Thetis Island	7
North Pender Island	2
South Pender Island	2

Average Horizontal Precision Reading(m)	
Gambier Island	3
Lasqueti Island	2
Thetis Island	3
North Pender	2
South Pender	2

2013 & 2014 Data:

	2013	2014	2013/14 Combined
Total Point Features	11,754	9,032	20786
Best Reported Horizontal Precision	0.3 m	0.3 m	0.3
Worst Reported Horizontal Precision	69.3 m	75.6 m	75.6
Average Horizontal Precision	0.814 m	0.615 m	0.728
Standard Deviation of Horizontal Precision	1.812 m	1.644 m	1.739
% Point Features with Reported Horizontal Precision < 1.0m	91.44%	97.00%	93.85%
% Point Features with Reported Horizontal Precision < 5.0m	97.04% *	99.06%*	97.91%
% Point Features with Maximum HDOP < 3	99.62%	99.62%	99.62%
% Point Features with Maximum HDOP < 5	100%	99.98%	99.99%

*All point features with reported horizontal precision over 5.0m were duly noted and assessed on a case by case basis for their utility as guides for interpretation of line / polygon / point placement.

6. Geographic Extent: Islands Trust Area
West Bounding Coordinate: 365551
East Bounding Coordinate: 496460
North Bounding Coordinate: 5499562
South Bounding Coordinate: 5379453

Areas Exempted From Inventory:

- i. Shoreline areas within the Gulf Islands National Park Reserve
- ii. Shoreline areas directly adjacent to First Nations Reserves

7. Contact Information
Keith Erickson
Galiano Conservancy Association
RR#1 Sturdies Bay Road
Galiano Island, BC V0N 1P0
Canada

8. Data Projection: UTM, Zone 10, NAD 83

9. Definitions of Attributes in Database Fields:

Field	Description
ObjectID	Unique number ID for labeling purposes
ID	Code used to match up records with GPS data
Trust_Area	Code for Islands Trust Area
Is_Name	Code for island located in Trust Area
Presence	Presence (Y) or Absence (N) of eelgrass
Form	Describes the shape of an eelgrass bed as either flat (FL) or fringe (FR)
Distrib	Indicates the distribution of eelgrass as either continuous (C) or patchy (P)
Sub_sand	Indicates proportion of sand substrate as primary (1), secondary (2) or tertiary (3)
Sub_mud	Indicates proportion of mud substrate as primary (1), secondary (2) or tertiary (3)
Sub_shell	Indicates proportion of shell substrate as primary (1), secondary (2) or tertiary (3)
Sub_pebble	Indicates proportion of pebble substrate as primary (1), secondary (2) or tertiary (3)
Sub_cobble	Indicates proportion of cobble substrate as primary (1), secondary (2) or tertiary (3)
Cover	Estimate of percent cover of eelgrass; <25% (1), 26-75% (2), >75% (3)
Tide	Describes whether the tide is running (R) or slack (S). A running tide increases error of percent cover estimate.
Algae	Describes presence of broad (B) and/or tufty (T) algal species. Presence of broad algae can impair surveyor's ability to characterize the substrate.
Visibility	Refers to the ability of the surveyor to see through the water column; high (H), medium (M), low (L). Low visibility can impair surveyor's ability to characterize substrate and can increase error of percent cover estimate.
Comments	Comments on backshore and eelgrass limiting factors such as presence of docks, wharves, mooring buoys, anchoring boats, shoreline erosion, point source pollution.
Length_m / Area	Length of line segment in meters / Area of polygon in square meters
Map_Class	Categories used for map display (Presence + form + distribution)
Rest_Pot	Yes – identified as a potential site for ecological restoration
Survey_Yr	Year that ground inventory was completed

Local Trust Area Codes

BO Bowen
 DE Denman
 EX Ballenas – Winchelsea (Executive Committee)
 GB Gabriola
 GL Galiano
 GM Gambier
 HO Hornby
 LA Lasqueti
 MA Mayne
 NP North Pender
 SA Saturna
 SP South Pender
 SS Salt Spring
 TH Thetis
 VA Valdes

SCHEDULE G

GLOBAL POSITIONING SYSTEM SPECIFICATIONS

1. General Application

1.01

The target horizontal accuracy is 1 metre. The lowest acceptable horizontal accuracy is 5 metres, at the 95% confidence level. This applies to final map data after averaging (for point features), approximating (for line features), and any editing.

1.02

All GPS receiver systems must be approved for use in stream mapping by Islands Trust GIS staff. Only receiver models which have been tested and proven to be capable of meeting the above accuracy specification in field conditions will be approved.

1.03

At least one person, who is responsible for the quality of the data, must act as a supervisor and have completed GPS-specific training acceptable to Islands Trust GIS staff.

1.04

Field operators must be trained to the satisfaction of the supervisor, including GPS training and other training as required.

2. Field Parameters and Procedures

2.01

All positions fixes must use at least four satellites. No height constraints can be applied.

2.02

The minimum elevation angle to satellites is 15 degrees above the horizon.

2.03

The maximum Dilution of Precision (DoP) is:

HDOP 5 (preferred in most cases)

PDOP 8

GDOP 10

VDOP 5 (only if elevations are required)

2.04

For standard static point features occupation time must be at least 60 seconds AND there must be at least 30 individual position fixes for each feature.

For boat-based, eelgrass surveys, occupation time for static point features must be less than 5 seconds with a target of 1 position fix and never more than 3 position fixes for each feature. Line and polygon features may be interpreted from successive static point features. The majority of the static point features must be no more than 15 metres apart. The maximum distance between successive static point features is 20 metres.

2.05

The maximum distance for point offsets is 25 metres. Directions must be accurate to 2 degrees and distances accurate to 1 metre. If the slope is over 10 percent and over 10 metres long, slope measurements (accurate to 5 percent or 3 degrees) must be made.

2.06

For all line (and polygon) features, all significant deflections and meanders of the feature must be mapped.

2.07

For line (and polygon) features surveyed in dynamic mode, the majority of the individual position fixes must be no more than 2.5 metres apart. The maximum distance between successive position fixes is 10 metres.

2.08

The maximum distance for constant line offsets is 5 metres.

2.09

For line (and area) features surveyed in station-to-station mode, the maximum distance between stations is 10 metres.

2.10

Supplementary traverses (using compass and chain) must begin (Point of Commencement) and end (Point of

Termination) on static GPS point features or on survey control monuments of 1 metre or better accuracy.

2.11

Directions for supplementary traverses must be accurate to 2 degrees and distances accurate to 1 metre. If the slope is greater than 10 percent, slope measurements accurate to 5 percent or 2.5 degrees must be made. The maximum length of an individual traverse leg is 50 metres. There is no limit on the total length of a supplementary traverse.

3. Data Processing and Mapping

3.01

All position fixes must be differentially corrected in real-time or post-processed. If position corrections are used, the same set of satellites must be used at the reference station as at the field receiver.

3.02

Reference stations (real-time or post-processed) must be approved by Islands Trust GIS staff.

3.03

The maximum age of real-time corrections is 20 seconds from the time the observations are made at the reference station to the time the computed corrections are applied at the field receiver.

3.04

All directions from compass observations must be corrected for declination before offset or traverse computations. If applicable, correction for grid convergence must be made.

3.05

Supplemental traverses must close to better than 1 percent (1/100) of the total traverse distance plus 2.5 metres. Traverse misclosures over 2.5 metres total must be adjusted ("balanced") using the standard compass rule method.

3.06

If true NAD 27 coordinates are required, NAD 83 coordinates must be converted using the Canadian National Transformation, version 2 (NT v2).

3.07

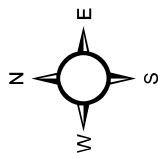
If elevations are required, they must be converted from ellipsoidal to orthometric using the CRD Geoid model HT 2.0.

3.08

If data in any other coordinate system (e.g. ground coordinates) are required, procedures acceptable to Islands Trust GIS staff and the owner of the mapping must be used.

3.09

Any discrepancies between the GPS survey and existing mapping used as base maps must be resolved to the satisfaction of Islands Trust GIS staff and the local agency(s) considered responsible for the mapping.



132 132 136 131

135

126

601 110 111

124 124 124 124

116

114 115 116 117

MAP 2a: Eelgrass Presence South Pender Island

- Eelgrass Present: Flat, Continuous
- Eelgrass Present: Flat, Patchy
- Eelgrass Present: Fringing, Continuous
- Eelgrass Present: Fringing, Patchy

Eelgrass inventory was completed by SeaChange Marine Conservation Society under contract by Islands Trust Fund and the Islands Trust. The inventory was conducted in July 2012 using a towed underwater camera and Garmin GPS.

0 500 1,000 Meters

Map Produced by: Galiano Conservancy Association
Map Date: December 6th, 2012
Orthophoto Date: 2011
Map Scale: 1 : 7,500
Map Projection: UTM Zone 10, NAD83

Each line segment is labeled with its unique ID number. This number corresponds with the ID column in the associated data table.