



**COWICHAN ESTUARY ENVIRONMENTAL MANAGEMENT PLAN
COMMITTEE MEETING
TUESDAY, JUNE 30TH, 2015 AT 1:00 P.M.**

**Cowichan Bay Estuary Nature Centre
Located at Hecate Park, Cowichan Bay, BC**

AGENDA

Pages

- | | | | |
|----|---|---|--------------------------------|
| 1. | <u>APPROVAL OF AGENDA</u> | | |
| 2. | <u>ADOPTION OF MINUTES</u> | | |
| | M1 | Cowichan Estuary Environmental Management Committee Meeting of April 27, 2015. | 1 - 3 |
| 3. | <u>BUSINESS ARISING FROM THE MINUTES</u> | | |
| 4. | <u>DELEGATION</u> | | |
| 5. | <u>CORRESPONDENCE</u> | | |
| | C1 | Peter Fitzpatrick forwarded the Stantec Consulting Report regarding the revised site plan at 1789 Cowichan Bay Road. | 4 - 8 |
| | C2 | Email from Ron Diederichs regarding draft letter for Public Input Opportunities Document to the CEEMC. | 9 - 10 |
| 6. | <u>REPORTS</u> | | |
| | R1 | Emily Doyle-Yamaguchi regarding Executive Summary from Environment Impact Study on the relocation of the effluent outfall – moving sewage outfall from the river to satellite channel. | 11
(previously distributed) |
| | R2 | Ann Kjerulf regarding CVRD Area D Zoning Bylaw 3773 for a potential motion from the committee to forward to Minister of Environment for approval.
www.cvrld.bc.ca/areadzoning | 12
(see website) |
| | R3 | Kyle Young, Planning and Sustainability, Municipality of North Cowichan North Cowichan Marine Zoning Bylaw | 13 - 23 |
| | R4 | Report from Herold Engineering regarding Wharf Assessment Report for the Cowichan Bay Maritime Centre/Wooden Boat Society Pier Restoration. | 24 – 49 |
| | R5 | Ann Kjerulf regarding Terms of Reference for WFP intertidal benthic invertebrate study | Verbal |

6. NEW BUSINESS
7. UNFINISHED BUSINESS
8. ADJOURNMENT

The next meeting of the CEEMC is TBA.

Cowichan Estuary Environmental Management Plan Committee

Ron Diederichs, Chair, MFLNRO ron.diederichs@gov.bc.ca

Bridgid Reynolds, North Cowichan bridgid.reynolds@northcowichan.ca

Bonita Wallace, MFLNRO Bonita.Wallace@gov.bc.ca

Larry George, Cowichan Tribes larry.george@cowichantribes.com

Tracy Fleming, Cowichan Tribes tracy.fleming@cowichantribes.com

Lori Innidinardo, Area Director, CVRD linnidinardo@cvrd.bc.ca

Mike Tippett, CVRD mtippett@cvrd.bc.ca

Ann Kjerulf, CVRD akjerulf@cvrd.bc.ca

Laura Robertson, CVRD lrobertson@cvrd.bc.ca

Minutes of the Cowichan Estuary Environmental Management Committee Meeting held on Monday, April 27, 2015 at 1:30 p.m. in the Cowichan Valley Regional District Board Room, 175 Ingram Street, Duncan, BC V9L 1N8

PRESENT

Ron Diederichs, Chair, Ministry of Forests, Lands & Natural Resource Operations
Lori Iannindaro, Director, Cowichan Valley Regional District
Alison Garnett, Cowichan Valley Regional District
Tracy Fleming, Cowichan Tribes
Brigid Reynolds, Municipality of North Cowichan
Kyle Young, Municipality of North Cowichan

OTHER

Laura Robertson, Cowichan Valley Regional District, Recording Secretary

APPROVAL OF AGENDA

The Chair noted changes to the agenda, including the addition of one Delegate.

It was moved and seconded that the agenda be approved as amended.

MOTION CARRIED

ADOPTION OF MINUTES

It was moved and seconded that the Minutes of the Cowichan Estuary Environmental Management Committee Meeting of March 19, 2015, be adopted.

MOTION CARRIED

DELEGATIONS

D1

Peter Fitzpatrick was present regarding revised site plan for application of stilt home rebuild at 1789 Cowichan Bay Road.

Mr. Fitzpatrick stated the cement wall and pilings will stay the same. The Committee was not as supportive of using shot rock, the applicant agreed to remove the shot-rock from the drawings of the foundation. Mr. Fitzpatrick noted that Stantec of Victoria has been contacted regarding the timing and the cost to do an assessment of the archeological overview. He also mentioned that no change to size of plan has been made.

Mr. Fitzpatrick noted that the fiberglass grid decking that was suggested by CEEMC is not suitable for the entire deck and dock, he wondered if they could make a donation in the amount of the difference of cost between the two decking materials. This donation could go towards eel grass restoration in the Cowichan Estuary to make up for the shading that would be occurring because of a solid wood deck. An agreement was reached with the Committee regarding a compromise of using both materials, solid wood on the seaward side of the house and grid along the side walkways.

The Committee directed questions, and thanked the delegate for appearing.

It was moved and seconded:

- 1. That Peter Fitzpatrick submit another plan with the revised dock having a portion of wood closest to the house, and the extended deck to be of the composite grid decking.**
- 2. That the committee supported Fitzpatrick's suggestion to make a donation to the Cowichan Land Trust for the purposes of environmental restoration to compensate the dock shading and the overall footprint enlargement from the existing house. The**

Cowichan Land Trust to be advised that consultation with the CEEMC regarding the utilisation of the funds to restore habitat is needed.

- 3. That all considerations according to the professional reports being followed and the requests of the CEEMC need to be met.**

MOTION CARRIED

D2

Derek Haupt from Western Forest Products (WFP) was present to ask the Committee what they would like to see done regarding the log storage renewal. The Minister set some guidelines for the WFP renewal but it was received with some lack of clarity by WFP. The Committee stated the shortcomings that the report that WFP submitted last summer didn't touch on the organisms that support the salmon fry food chain, and on how they are affected by the log storage. The study needs to show how this affects the organisms that are in the food chain for salmon fry and be passed on to the minister for the renewal in 2017. Mr. Haupt noted that log storage boom not grounding isn't feasible, they would be grounding and out of compliance twice a day because of the tides. He asked what impact the CEEMC has on the decisions of renewals, the Committee explained that each renewal is like a new application in that it requires a separate decision.

Mr. Haupt stated that WFP is doing extensive log salvage on a daily basis and a bi-yearly extra clean up. They were very involved with the Mariners Island cleanup, which the Committee found very impressive and positive during the field trip on morning of April 27.

The Committee directed questions to the delegate.

The Chair thanked the delegate for appearing and WFP's contribution to the Mariners Island Cleanup.

Action: The CEEMC will provide information to WFP on the organisms and survey methods that is felt to be important to determine the effects of log storage and grounding. This will be provided to WFP, including Mr. Haupt so that WFP can contract a company to do a study of the environmental impact.

REPORTS

R1

Report from Kyle Young, Municipality of North Cowichan, regarding Development Permit Application for 900 Khenipsen Road. Application is for the house, driveway, septic field and garage.

It was moved and seconded that the recommendation of the professional reports be met with the inclusion of the following;

- 1. The applicant revisit the ecological site series classification to ensure that vegetation suggested by the consultant for site restoration is appropriate to that site and possibly register the Geotech Report on land titles.**
- 2. The owner be informed about the archeological alteration permit that may be required by the province.**
- 3. Rain water and storm water management discharge details are provided with more specifics.**

MOTION CARRIED

NEXT MEETING
ADJOURNMENT

The next meeting is TBA by the Chair.

It was moved and seconded that the meeting be adjourned.

MOTION CARRIED

Meeting adjourned at 4:08 p.m.

Chairperson

Recording Secretary



Stantec Consulting Ltd.
11-2042 Mills Road, Sidney BC V8L 5X4

May 27, 2015
File: 123220314

Attention: Peter Fitzpatrick
Coastal Pacific Forest Products Inc.
1781 Cowichan Bay Road
Cowichan Bay, BC
(250) 701-2619

Dear Mr. Fitzpatrick,

Reference: Preliminary Field Reconnaissance—1789 Cowichan Bay Road, Cowichan Bay, BC

At the request of Peter Fitzpatrick, Stantec Consulting Ltd. (Stantec) conducted a preliminary field reconnaissance (PFR) inspection of 1789 Cowichan Bay Road, Cowichan Bay, BC. The PFR was conducted to examine the property for surface archaeological resources and to evaluate the potential for buried archaeological resources. A marine assessment focusing on the upper intertidal zone of the property was conducted by Castor Consultants (2014) and identified deposits containing varying densities of "shell hash". The PFR was conducted, in part, to investigate if the nature of these shell deposits (i.e., cultural versus natural deposition).

The property is situated at the edge of Cowichan Bay and mostly intertidal. The natural shoreline along this portion of the bay appears to have been quite steep in the past but has been leveled by road construction. The property is not in conflict with any recorded archaeological sites. The nearest known archaeological site is Ddkv-96, a precontact shell midden located approximately 540 m to the west-northwest (Figure 1).

The PFR was conducted on May 20, 2015 by Stantec archaeologist Andrea Gallacher with Irvin Canute from Cowichan Tribes. The PFR was conducted during low tide to allow thorough inspection of the surface of the property and included inspection beneath a stilt house which presently occupies the property (Photo 1).

In addition to beach deposits on the property surface, the PFR also involved inspection of soil profiles visible behind a retaining wall at the back of the building and along the shore bank. Examination behind the retaining wall revealed fill, brown sandy loam and beach cobbles (Photo 2). No shell was identified behind the retaining wall or within any exposures along the bank. Little to no erosion of the bank is occurring with the retaining wall in place.



May 27, 2015
Peter Fitzpatrick
Page 3 of 5

Reference: Preliminary Field Reconnaissance—1789 Cowichan Bay Road, Cowichan Bay, BC



Photo 1 View Southwest below Silt House toward Retaining Wall

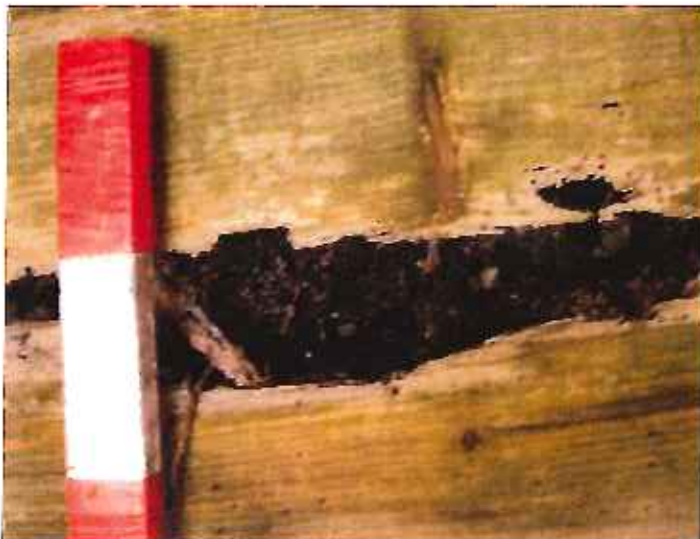


Photo 2 View Southwest through Wooden Portion of Retaining Wall

Design with community in mind



May 27, 2015
Peter Fitzpatrick
Page 4 of 5

Reference: Preliminary Field Reconnaissance—1789 Cowichan Bay Road, Cowichan Bay, BC

Examination of the intertidal zone revealed small pockets of "shell hash" on the surface. The "shell hash" consisted mainly of crushed barnacles with no associated cultural material (e.g., fire modified rock, dark greasy midden loams). The "shell hash" has accumulated behind and along the sides of the house pilings and is consistent with the natural deposition of marine deposits through wave action (Photo 3).



Photo 3 "Shell Hash" Gathering around Piling

No surface archaeological materials, deposits, or features were identified during the PFR. The potential for buried archaeological sites on the property is considered low based on the absence of archaeological materials on the surface, settling in the intertidal zone, and evidence that this portion of the shoreline was likely steep prior to road construction.

Based on these results, no further archaeological investigation (e.g., archaeological impact assessment) is recommended for 1789 Cowichan Bay Road.

Archaeological sites which pre-date AD 1846 are automatically protected in British Columbia by the *Heritage Conservation Act* (HCA). In the unlikely event that suspected pre-1846 archaeological resources, like shell midden (typically consisting of dark organic soils with shell inclusions), lithics (stone tools) are encountered during redevelopment of the property, all ground disturbing activities must cease until the Archaeology Branch is contacted for further direction.

Design with community in mind



May 27, 2015
Peter Fitzpatrick
Page 5 of 5

Reference: Preliminary Field Reconnaissance—1789 Cowichan Bay Road, Cowichan Bay, BC

Should you have any questions, please do not hesitate to contact the undersigned.

Regards,

STANTEC CONSULTING LTD.

Reviewed By:

Andrea Gallacher

Andrea Gallacher, BA
Archaeologist
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REFERENCE

Castor Consultants Ltd. 2014. Marine Assessment of a Proposed Residential Building Replacement on the Foreshore at 1789 Cowichan Bay Road, Cowichan Bay, BC.

Laura Robertson

From: Diederichs, Ron FLNR:EX <Ron.Diederichs@gov.bc.ca>
Sent: Monday, June 22, 2015 9:38 AM
To: Ann Kjerulf; Lori Ianinidinaldo; Brigid Reynolds; 'Tracy Fleming'; Wallace, Bonita FLNR:EX
Cc: Laura Robertson
Subject: public input to the CEEMC- 1st draft
Attachments: public input to the CEEMC.docx

Not sure if we'll have a chance to review this on June 30, but this is my first shot at something that has been needed for a while.

It's meant to be a one-pager and I've kept it to titles rather than names as it will be hard to keep it current as folks transition jobs (though we've been stable for a year or two).

Bonita: I wonder if we should include a reference to your side of the business for input on tenures; I currently don't think this would be appropriate as you do referrals to the agencies you need input from(?).

It probably should include links to the CVRD website for agendas and minutes

-Ron

The Cowichan Estuary Environmental Management Committee (CEEMC) was created in 1986 to implement the Cowichan Estuary Environmental Management Plan (the Plan) under Order in Council No. 1652

The CEEMC was envisioned to be composed of representatives from several levels of government and is chaired by a representative of the Province of British Columbia (B.C.). Representatives from First Nations (Cowichan Tribes, CT), the federal government (when available: Fisheries and Oceans Canada, DFO), and local government (Cowichan Valley Regional District, (CVRD) and Municipality of North Cowichan (MNC)) use a consensus model to review development proposals that may have a significant impact on the environment within the Plan boundary. The CEEMC gathers information for decisions that may be made by the Minister of Environment (B.C.)

An important part of the review process is to receive and note public concerns around development proposals and the CEEMC maintains an abiding interest in obtaining good information on the public's views on management of the Plan area.

There are a number of ways for the public to provide input to the CEEMC:

1. Through member agencies of the CEEMC:
 - a) Chair: Ecosystems Section Head, Forests, Lands and Natural Resource Operations, Nanaimo Phone: 250-751-3223
 - b) Cowichan Tribes, Referral Coordinator Phone: 250-746-XXXX
 - c) Cowichan Valley Regional District, Senior Planner, Phone: 250-746-XXXX or through the Area X Director
 - d) Municipality of North Cowichan, Senior Planner, Phone: 250-746-XXXX
2. By direct written submission to the Chair (see above)
3. By direct verbal presentations to the CEEMC at its meetings, subject to notification in advance to ensure adequate time for presentations.

The CEEMC will consider the information provided by the public and proponents and may obtain expert advice and other information to inform a decision.

There are several possible outcomes of that review:

A proposal may be deemed to not pose a significant environmental impact, either due to low inherent risk, or because of mitigative measures proposed by the proponent and implemented through the Plan or other regulatory regimes. These types of proposals are deemed to not require a Minister's decision.

A proposal may be deemed to be either not in compliance with the zoning provisions of the Plan or may be considered a risk of significant environmental impact to the Plan area. Information is prepared and a decision package is forwarded to the Minister of Environment for decision.

R1



202 - 2780 Veterans Memorial Parkway
Victoria, BC, V9B 3S8
Phone: 778-433-2672
web: www.greatpacific.ca
E-Mail: gpinfo@greatpacific.ca

**COWICHAN VALLEY REGIONAL DISTRICT
MARINE DISCHARGE OUTFALL
ENVIRONMENTAL IMPACT STUDY
STAGE 1**

Attention:
Cowichan Valley Regional District
175 Ingram Street
Duncan, BC
V9L 1N8

June 25, 2015
1019-001
REV 0

R2



Zoning Bylaws

Cowichan Bay Marine Zoning Bylaw

Procedures Bylaw



MEETINGS / EVENTS



CVRD FEEDBACK



COWICHAN PHOTOS



NOTIFY ME



LOCAL WEATHER



VOLUNTEERING



EMERGENCY ALERT

Cowichan Bay Marine Zoning Bylaw

Bylaw 3773 (Marine Zoning Bylaw)

Zoning Amendment Bylaw 3773 (Marine Zones) is intended to implement Official Community Plan policies concerning lands within Cowichan Bay Village, the Cowichan Estuary Environmental Management Plan (CEEMP) area, and other marine areas of Electoral Area D - Cowichan Bay. The bylaw has been developed with input from community members and other stakeholders including marina owners, float home and live-aboard residents, Cowichan Tribes, Island Health, the Advisory Planning Commission, and the OCP Implementation Committee.

Public hearings for proposed Bylaw 3773 were held February 19th and April 14th 2015. Changes resulting from input at the public hearings include:

- Simplifying the definition of "Live-aboard Vessel" to "residential use of a vessel designed or intended to be used for navigation";
- Adding a condition that live-aboard vessels moored in a marina be seaworthy and capable of navigation;
- Adding a height exemption for a float home's flotation system;
- Excluding water zones from watercourse setback requirements;
- Reducing the height limit, parcel coverage and front setback in the W-8 (still home) zone.

The CVRD Board granted 3rd reading to proposed Bylaw 3773 on May 13, 2015.

- View the March 11, 2015 Staff [Board Report](#).
- View the March 11, 2015 [Board Minutes](#).
- View the May 13, 2015 Staff [Board Report](#).
- View proposed [Zoning Amendment Bylaw 3773](#).
- View proposed [Schedule A - Zoning Map](#).

Prior to final adoption by the CVRD Board, Bylaw 3773 must be approved by the Minister of Transportation and Infrastructure and the Minister of Environment.

Contact:

[Ann Kierulf, MCIP, RPP](#)

Senior Planner

Community & Regional Planning Division

Planning & Development Department

250.746.2829

PART 3 – ESTABLISHMENT OF ZONES

3.1 ZONES

3.1.1 For the purposes of this Bylaw, The Municipality of North Cowichan is hereby divided into the following zones:

PART 10 – MARINE ZONES

Zone Name	Abbreviation
Marine Access Zone	M1
Marine Transportation Zone	M2
Marine Commercial Zone	M3
Marine Industrial Zone	M4
Marine Conservation Zone	M5

PART 5 – GENERAL AND PERMITTED USE DEFINITIONS

ACCESSORY DWELLING UNIT – means a dwelling unit that is accessory to a principal use other than a residential use;

AQUACULTURE - means the hatching, rearing and harvesting of finfish or shellfish for commercial purposes, in any natural or artificial water environment, excluding processing activities;

BED AND BREAKFAST - means the partial use of a single residential dwelling for transient tourist accommodation in which rooms are rented on a short term basis, and may include the provision of breakfast served on the premises;

BOAT CHARTER – means a business where watercraft are operated for the purposes of providing marine tours or charters;

BOAT SHELTER - means a floating structure used to provide shelter for the protected moorage of marine vessels, with or without storage of associated supplies and equipment;

COMMERCIAL BUSINESS (RURAL) -- means the use of buildings, land, or a combination thereof for the purposes of conducting local amenity type businesses necessary to the sustainable functioning of rural areas including retail stores, personal/professional services, restaurants, art galleries, assembly halls, educational facilities, brew pubs, veterinary clinics, and hotels;

COMMUNITY WATER ACCESS – means any structure owned or operated by the Municipality that provides public water access and recreation opportunities for the general public, including wharves, docks, piers, boat launches and other marine access facilities;

DERELICT VESSEL – means any vessel or watercraft that has been abandoned and deserted at sea and is unable to operate under its own power;

FLOAT HOME – means any structure incorporating a floatation system, intended for use or occupancy or being used or occupied for residential purposes, containing one dwelling unit only, and not primarily intended for, or usable in navigation, but does not include any vessel or watercraft designed or intended for navigation;

INDUSTRY (HIGH INTENSITY) - means a use providing for the co-generation, manufacturing, processing, assembling, fabricating, testing, servicing, repair, storing, transporting, warehousing, or distributing of goods or materials or things with or without an ancillary office to administer the industrial use on the lot, and includes wholesaling provided that the merchandise being sold is distributed from the lot and may include sawmills, pulp mills, and planing mills and the processing of live animals;

HABITAT MANAGEMENT – means the restoration or enhancement of fish, plant and wildlife habitats, including ecological preservation and conservation activities;

HOTEL - means a building which contains sleeping units used or intended to be used for the temporary accommodation of transient lodgers. A hotel may include ancillary facilities such as a restaurant, meeting rooms, convention facilities, gift shop, recreational facilities and/or pub. For the purpose of this Bylaw, HOTEL includes motels and motor hotels.

LIVE-ABOARD VESSEL – means any vessel or watercraft occupied for residential purposes for a period exceeding five (5) days, and specifically excludes marine navigation moorage;

MARINA – means the use of land or buildings for the docking, berthing or mooring of boats and may also include boat launching facilities, sales and rentals of boats, personal watercraft and their accessories, storage of boats, sales of marine petroleum products, fishing supplies and accessory retail sales, boat repairs, boat building, and a marina office;

MARINE NAVIGATION MOORAGE – means the temporary moorage of a watercraft or vessel by anchorage or a mooring buoy for up to five (5) days for activities normally associated with marine navigation, including repairs, emergencies and provisioning;

MARINE TOILET – means any toilet on or within a vessel or watercraft;

MARINE TRANSPORTATION – means the commercial use of watercraft, including tug-boat services, boat charters and water taxis.

MOORING BUOY – means a small floating structure used for the purpose of boat moorage, typically composed of rigid plastic foam or rigid molded plastic, and specifically manufactured for the intended use of boat moorage;

PUMP-OUT FACILITY – means a device or method for the removal of sewage from a holding tank connected to a marine toilet or from a self-contained marine toilet;

RESIDENTIAL USE – means the occupancy or use of a building, or part thereof, as a dwelling unit;

RETAIL STORE – means a store in which any type of goods or wares are sold or rented to the final consumer, provided that the product may be stored and sold from within a building, and specifically includes Personal Service Use, and Pharmacy;

SEAFOOD PROCESSING – means the storage, drying, cooking, packaging, preparation, and manufacture of any aquatic organism;

TOURIST ACCOMMODATION – means the use of land or buildings for the provision of overnight accommodation to tourists and may include the provision of parking for recreational vehicles or the provision of space for tenters, including accessory facilities;

TOURIST FACILITY – means the use of land, buildings or structures for galleries, museums, aquariums, gardens, sanctuaries, theatres, and other similar attractions;

TRANSPORTATION TERMINAL – means the use of land, buildings or structures for bus stations, railway stations, airports, ferry terminals, and the storage and maintenance of transportation equipment and includes user fee parking and ticket purchase;

WATERCRAFT – means any boat, hull, barge or houseboat, whether self-propelled or not, and includes pleasure and commercial craft.

YACHT CLUB – means all buildings, land, foreshore, water lots and land covered by water occupied for recreation use of a bona fide club incorporated under the *Society Act* and amendments thereto, for the purpose of boating, sailing, or yachting, and in which the affairs of the organization are actually conducted and carried on by members thereof;

PART 6 – GENERAL REGULATIONS

6.1 Uses Permitted in All Zones

6.1.3 Community water access is permitted in all marine zones.

6.1.4 Habitat management is permitted in all marine zones.

6.20 Marine General Regulations

- 6.20.1 Marinas providing moorage to float homes or live-aboard vessels must comply with the fire protection requirements set out in Part 4 of the *British Columbia Float Home Standards* or any subsequent standard(s) which may be enacted in substitution therefore, and despite the forgoing.
- 6.20.2 Marinas providing moorage to float homes must be equipped with a sewage collection system that is permanently connected to the Municipal sewer system and approved under applicable provincial and federal legislation.
- 6.20.3 Marinas providing moorage to live-aboard vessels must be equipped with a sewage collection system that is permanently connected to the Municipal sewer system and approved under applicable provincial and federal legislation, and a sewage pump-out that is permanently connected to that system and available for use at all times.
- 6.20.4 Float homes must meet all of the following conditions:
- (a) Float homes must be constructed, used and moored in accordance with the *British Columbia Float Home Standards* or any subsequent standard(s) which may be enacted in substitution therefore, and despite the forgoing, must meet requirements of the *British Columbia Building Code*, where required.
 - (b) Float homes must be permanently connected to the Municipal sewer system by means of a marina sewage collection system.
- 6.20.5 Live-aboard vessels must meet all of the following conditions:
- (a) Live-aboard vessels must be permanently connected to the Municipal sewer system by means of a marina sewage collection system, or are moored at a marina that has a sewage pump-out facility that is permanently connected to the Municipal sewer system that is available for use at all times, and is equipped with a sewage holding tank for the temporary storage of sewage that complies with Division 4 of the *Vessel Pollution and Dangerous Chemical Regulation* of the *Canada Shipping Act*, as amended, where all zones that permit live-aboard vessels are considered "designated sewage area" under the Regulation.
 - (b) Any chimneys, solid fuel-burning fireplaces and appliances, or electrical, gas and plumbing systems installed in a live-aboard vessel after the date of original manufacture of the vessel must be certified as being in accordance with the requirements of Transport Canada Safety Branch and the Canadian Coast Guard.

- 6.20.6 Derelict vessels are prohibited in all zones.
- 6.20.7 All structures extending seaward below the natural boundary of the sea must be fully contained within the boundaries of a water lease or license of occupation area approved by the Province of British Columbia.
- 6.20.8 Wharves, piers and floats must not impede pedestrian access along the foreshore and must not extend farther seaward than necessary for water access and moorage at extreme low tide.

PART 10 – MARINE

10.1 Description of Zones

Zone Name	Zone	Intent of Zone
Marine Access Zone	M1	This zone provides for access to the sea from upland residential properties.
Marine Transportation Zone	M2	This zone provides for marinas and associated uses as well as transportation terminals.
Marine Commercial Zone	M3	This zone provides for a variety of commercial uses that are typically found in marine communities on lot upland from the sea.
Marine Industrial Zone	M4	This zone provides for the continuation of industrial uses extending seaward from upland industrial land.
Marine Conservation Zone	M5	This zone provides for conservation of the marine environment, with opportunities for sustainable resource use.

10.2 Permitted Uses

10.2.1 The uses listed in the following table shall be permitted where indicated within the corresponding specified zone, and may be carried subject to the conditions of use.

Use	Zone					Conditions of Use
	M1	M2	M3	M4	M5	
Accessory Dwelling Unit	-	A	A	A	-	
Aquaculture	P	P	-	P	P	
Bed and Breakfast	-	-	P	-	-	Maximum of 6 sleeping units.
Boat Shelter	-	P	-	-	-	Only permitted in Genoa Bay and Bird's Eye Cove. Must not be habitable or contain toilet facilities.
Commercial Business (Rural)	-	-	P	-	-	
Floats, Wharves and Piers	P	P	P	P	-	Except as otherwise specified in this Bylaw, floats, wharves and piers in the M1 Zone are limited to private, non-commercial use. In the M1 Zone, limited to a maximum of 4.0 m in width. In the M1 Zone, posts with lighting fixtures, posts, rails and supports necessary for safety are the only structures permitted to be placed on a float, wharf or pier.
Float Home	-	P	-	-	-	
Industry (High Intensity)	-	-	-	P	-	
Hotel	-	-	P	-	-	
Laundromat	-	-	P	-	-	
Live-Aboard Vessel	-	A	-	-	-	
Log Storage and Sorting	-	-	-	P	-	
Marina	-	P	P	P	-	Fuel tanks must be fully located on land.
Marine Navigation Moorage	P	P	-	P	P	
Marine Transportation	A	P	P	P	-	In the M1 Zone, limited to a single watercraft offering charters or taxi service for a maximum of 10 people at any one time.

Use	Zone					Conditions of Use
	M1	M2	M3	M4	M5	
Mooring Buoy	P	P	-	P	P	
Office	-	A	A	A	-	In the M2 Zone, limited to an office for the administration of a marina.
Restaurant	-	P	P	-	-	
Research Facility and Laboratory	-	P	P	P	-	
Seafood Processing	-	-	-	P	-	
Tourist Accommodation	-	-	P	-	-	
Tourist Facility	-	P	P	-	-	
Transportation Terminal	-	P	-	P	-	
Yacht Club	-	P	P	-	-	

P – Specifies a Permitted Use.

A – Specifies the use is Accessory only.

- = Use not permitted in this zone.

10.2.4 The following uses shall be permitted on a site-specific basis only:

Use	Permitted Location	Conditions of Use
Residential Use	6145 Genoa Bay Road	<p>Maximum one dwelling unit per 275 m² of residential site area.</p> <p>Minimum permitted frontage is 100 m.</p> <p>Minimum permitted lot area is 10,000 m².</p> <p>Maximum 50% total lot coverage.</p> <p>Maximum 50% coverage of the commercial site area for commercial use.</p> <p>Maximum 30% coverage of the residential site area for residential use.</p>

10.3 - Density

10.3.1 – The maximum permitted density within the Marine zones shall be in accordance with the following table:

Zone	Maximum Base Density	Additional Density
M2	1 Accessory Dwelling Unit per parcel	-
M3	1 Accessory Dwelling Unit per parcel	-
M4	1 Accessory Dwelling Unit per parcel	-

10.4 – Lot Size and Dimensions

Zone	Minimum Lot Size	Minimum Lot Frontage	Minimum Lot Depth
M3	560 m ²	15 m	-

10.5 – Siting of Buildings

10.5.1 – Buildings shall be site in accordance with the following table:

Zone	Maximum Front Yard Setback	Minimum Front Yard Setback	Side Yard Setback	Flanking Side Yard Setback	Rear Yard Setback
M3	-	8.0 m	3.0 m	3.0 m	-

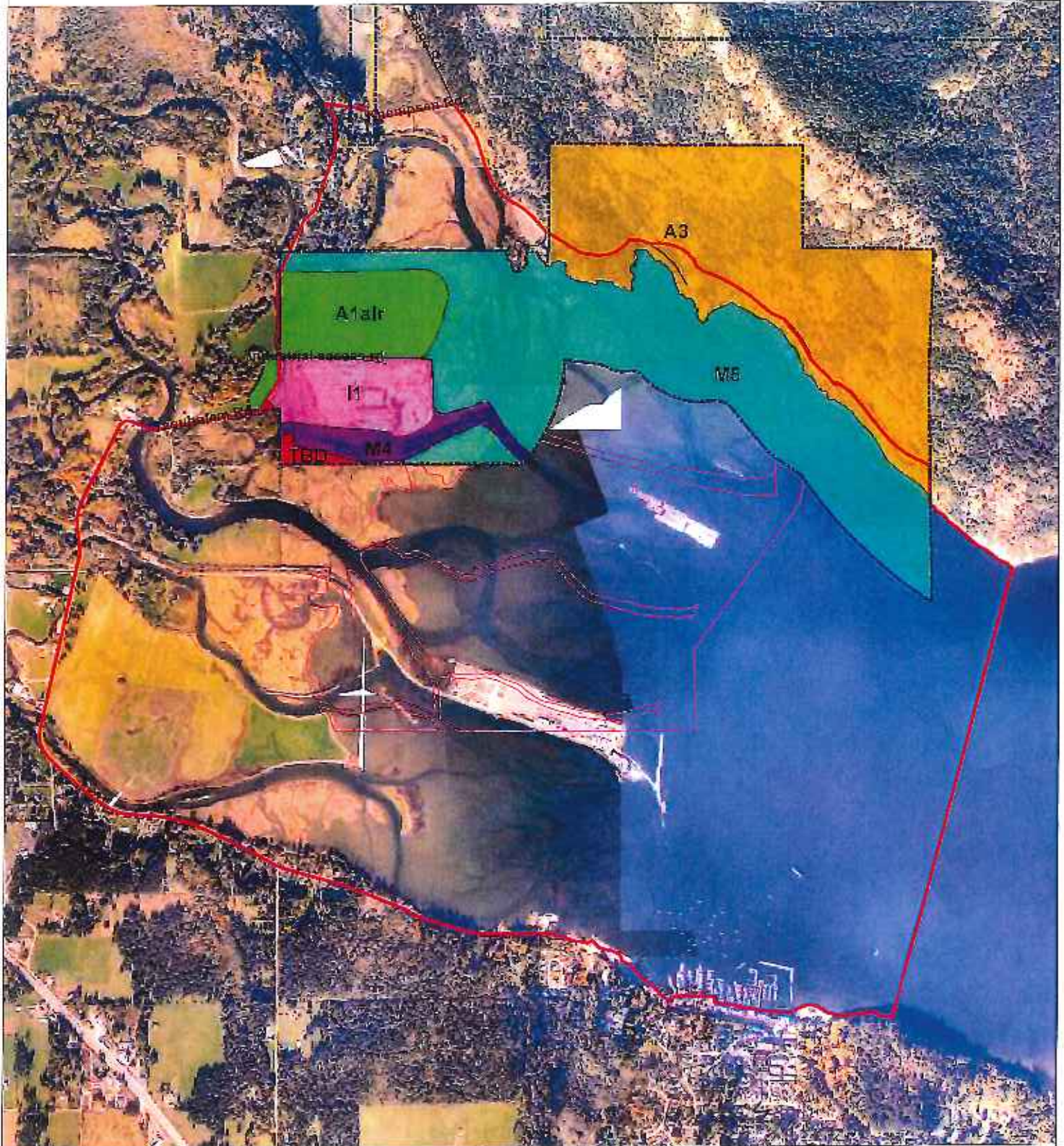
10.6 – Size of Buildings

10.6.1 The maximum lot coverage and height, as well as the minimum required height, and maximum Gross Floor Area of a principal building shall be as specified within following table within the applicable zone:

Zone	Maximum Lot Coverage	Max Height of Principal Building	Min Height of Principal Building
M2	30% water lease area coverage of all boat shelters, float homes and wharves. 10% water lease area coverage of all buildings and structures on wharves.	10.0 m, except that a minimum of 50% of the number of boat shelters per water lease area must not exceed 6.5 m in height.	-
M3	50%	12.0 m	-

Proposed Marine Zones - Cowichan Estuary - Map for Committee

Proposed Zoning



MUNICIPALITY OF
NORTH
Cowichan

1:20,000



Proposed Marine Zones

- M1 (Marine Access)
- M2 (Marine Transportation)
- M3 (Marine Commercial)
- M4 (Marine Industrial)
- M5 (Marine Conservation)

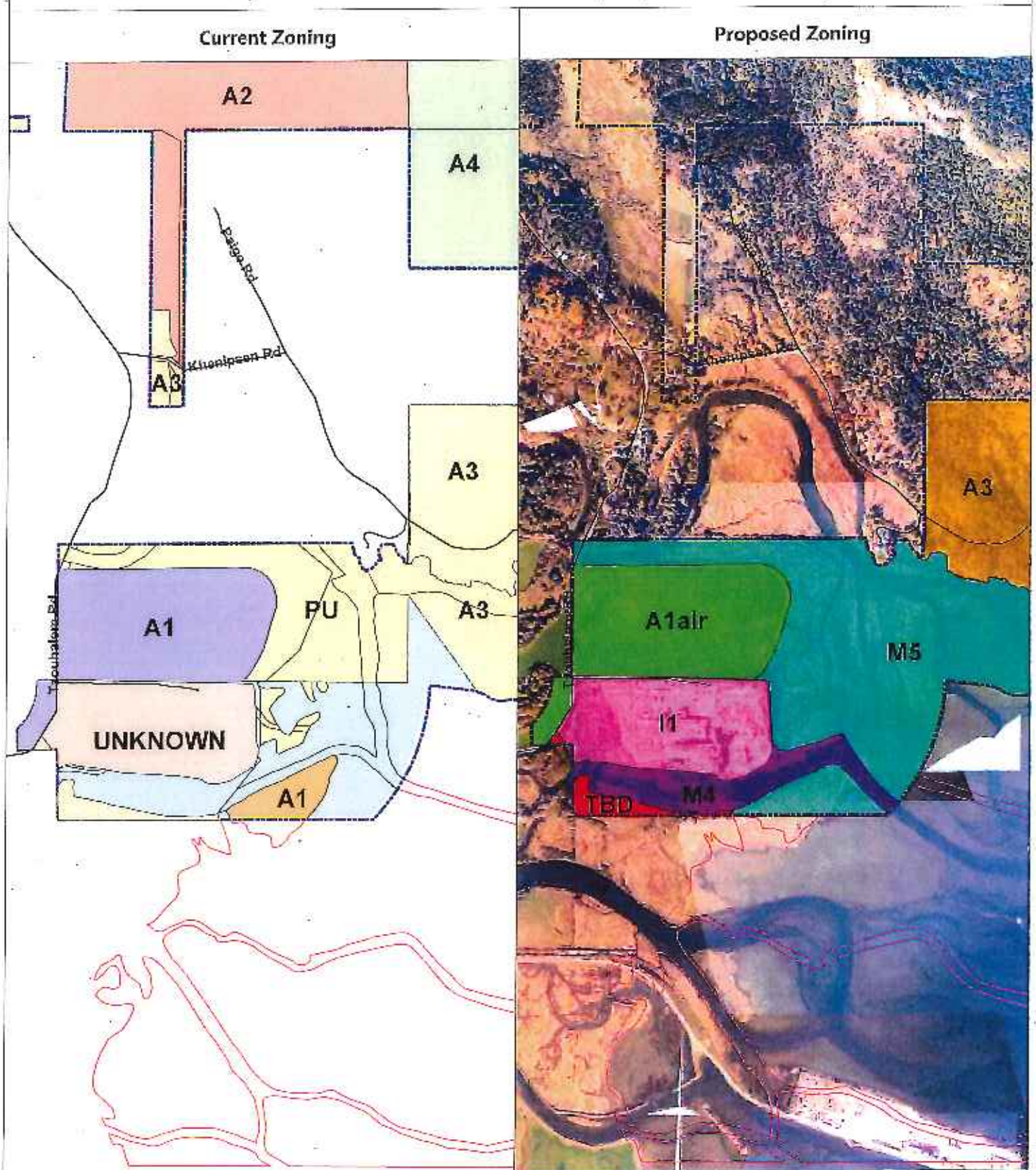
Other Proposed Zones

- A1alr (Agriculture - Large Plot in ALR)
- A3 (Agriculture - Small Plot)
- I1 (Industrial - High Intensity)
- TRD (To Be Determined)



- MNC Boundary
- Water Lease Areas
- Management Area

Proposed Marine Zones - Detail Map 3 (Cowichan Estuary)



Proposed Marine Zones

- M1 (Marine Access)
- M2 (Marine Transportation)
- M3 (Marine Commercial)
- M4 (Marine Industrial)
- M5 (Marine Conservation)

Other Proposed Zones

- A1alr (Agriculture - Large Plot in ALR)
- A3 (Agriculture - Small Plot)
- I1 (Industrial - High Intensity)
- TBD (To Be Determined)



MNC Boundary



Water Lease Areas

WHARF ASSESSMENT REPORT

MARITIME CENTRE WHARF FACILITY

Prepared for:

Cowichan Wooden Boat Society
1761 Cowichan Bay Rd.
PO Box 22,
Cowichan Bay, BC V0R 1N0

Attn: Sharon McLeod

Prepared by:

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Submittal Date:

July 14, 2014

Project No.

3316-001

WHARF ASSESSMENT REPORT MARITIME CENTRE WHARF FACILITY

Executive Summary

The scope of this assignment includes an above and below water inspection and subsequent condition assessment report primarily regarding the condition of bearing piles, batter piles, and cross braces. The report includes residual life estimates and remediation costs for the facility.

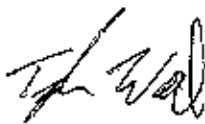
The site inspection of this facility was conducted May 28, 2014.

The structural members inspected of the Maritime Centre Wharf Facility at Cowichan Bay, B.C. are in overall poor but serviceable condition.

There are many bearing piles and batter piles that have deteriorated such that they are mostly hollow and are considered structurally unreliable. Other members are effected by less severe deterioration and require remediation. The majority of cross bracing on both the wharhead and approach has deteriorated or become detached from the structure.

The recommended repairs for this facility are considered significant and necessary in the short term. The total magnitude cost estimate for the repairs prescribed in this report is in the order of \$216,000.

Prepared By:



Tyler Wilson, EIT

Reviewed By:



Jeff Duncan, P.Eng.

MARITIME CENTRE WHARF FACILITY **WHARF ASSESSMENT REPORT**

Table of Contents

1	Introduction.....	1
1.1	Purpose of Inspection	1
1.2	Scope of Work.....	1
1.3	Reference Material.....	1
2	Description	2
2.1	Reference System.....	2
2.2	Geometry	2
2.3	Wharfhead.....	2
3	Inspection Results	3
3.1	Wharfhead.....	3
3.1.1	General	3
3.1.2	Bearing Piles	3
3.1.3	Pilecaps.....	3
3.1.4	Stringers.....	3
3.1.5	Braces	3
3.1.6	Soundings	3
3.2	Approach.....	3
3.2.1	General	3
3.2.2	Abutment.....	4
3.2.3	Bearing Piles	4
3.2.4	Pilecaps.....	4
3.2.5	Stringers.....	4
3.2.6	Braces	4
3.2.7	Soundings	4
3.3	Reference Tables.....	5
4	Residual Life Estimate	6
4.1	Approach and Wharfhead	6
5	Conclusions and Recommendations	7

Appendix A Site Photographs

1 Introduction

Facility: Maritime Center Wharf Facility

Inspected by: Herold Engineering Limited: Tyler Wilson, EIT
Westcoast Diving Contractor's Ltd.

Date: May 28, 2014

Start Time: 8:00 am

1.1 Purpose of Inspection

The purpose of the assessment was to complete a detailed inspection of the bearing piles and batter piles supporting the wharf, as well as the cross braces that provide lateral stability. This included an underwater inspection of each pile by a dive team. Additionally, the underside of the superstructure including pile caps and stringers was visually inspected from a distance for obvious signs of deterioration, but due to accessibility was not assessed in detail.

1.2 Scope of Work

The inspection and assessment of the facility components were completed to the standards set out below. The inspection work included the facility components as noted in the Purpose of Inspection, and excludes the decking, handrails, buildings atop the wharf, gangways, floats, and marine railway. Our condition assessment, residual life and remediation costing were based on previous experience in addition to the reference material noted below

1.3 Reference Material

- Procedures for Inspection and Assessment of Fixed Timber Docks – 1994 September – 4th Edition by R.G. Sexsmith Ltd.
- Standard Practice Manual for Underwater Investigations by the American Society of Civil Engineers, Ports and Harbours Committee, May 2000.
- Canadian Highway Bridge Design Code CAN/CSA S6-06.

2 Description

2.1 Reference System

Reference to locations on the approach and wharfhead are done alphanumerically based on the system shown on Drawing No. S02 found at the end of Section 3.

For the purpose of this report, the approach is considered to run North-South, with the wharfhead running East-West at the northern end.

For the purpose of this report, the pile bent in line with the rip rap revetment to the east of the approach was chosen as the start point. This bent has been called Bent 1, with each of the bents under the approach and wharfhead numbered up to the seaward-most Bent 27. There are a number of pile bents upland of the approach and underneath the Cowichan Wooden Boat Society office. Many of these bents were inaccessible and not included in the scope of this report. Bents shoreward of the start point are number -1, -2, etc.; these are above the high water mark and those that were accessible were found to be in good condition.

Pile reference within each bent is made with the westernmost pile being Pile A, and the easternmost being Pile B on the approach, or Pile G on the wharfhead. Where multiple piles exist at a given grid-point, a "+" or "-" has been added as a superscript for further clarification (eg. Pile B24⁺ is just north of Pile B24⁻, and Pile G⁺25 is just east of Pile G⁻25).

2.2 Geometry

The approximated geometry of the facility included the following:

Approach	72.0m x 4.5m
Wharfhead	17.0m x 7.2m

There are three one-storey buildings on the approach: 2 are roughly 7.6m long, and the central building is roughly 11.0m long. There is a building that covers most of the wharfhead and is roughly 11.0m x 7.2m.

2.3 Wharfhead

The Wharfhead is a timber pile supported structure. The structure consists of timber plank decking on stringers supported by pile caps on timber bearing piles. There are 27 bents in total, each with either 2 or 7 bearing piles.

3 Inspection Results

3.1 Wharfhead

3.1.1 General

Overall the superstructure of the wharfhead appears to be in good condition, while the substructure is in poor condition. The substructure is considered to be serviceable. See the descriptions below and tables in Section 3.3 for additional details.

3.1.2 Bearing Piles

The piles are in poor condition. There are 10 bearing piles and 1 batter pile supporting the wharfhead that are severely deteriorated and unreliable; they are typically either hollow due to decay or severely cracked along their length. Additionally, there are 9 bearing piles that show signs of deterioration and preventative maintenance is recommended.

3.1.3 Pilecaps

The pilecaps are creosote treated and appear to be in good condition. They were not inspected in detail, only visually reviewed from water level at the time of inspection; no deterioration was noted.

3.1.4 Stringers

The stringers are a mix of creosote treated and pressure treated timber. They appear to be in good condition. They were not inspected in detail, only visually reviewed from water level at the time of inspection; no deterioration was noted.

3.1.5 Braces

The cross bracing is in poor condition. The majority of timber cross braces have rotted at their bottom ends, including many that have rotten such that they have come disconnected from their bolted connections. Similarly there are steel cross braces that are corroded at the lower ends, and in some cases have come disconnected.

3.1.6 Soundings

Two soundings were taken, one near Pile C26, and one near Pile C24. The dock elevation to mudline elevation at the time of the inspection was:

Pile C26	- 8.8 m
Pile C24	- 8.2 m

3.2 Approach

3.2.1 General

Overall the superstructure of the approach appears to be in good condition, while the substructure is in poor condition. It is considered to be serviceable. See the descriptions below and tables in Section 3.3 for additional details.

3.2.2 Abutment

The abutment was not accessible, but those upland pile bents above the high water mark nearest to the abutment were on good condition and it is expected that the abutment is similar.

3.2.3 Bearing Piles

The piles are in poor condition. There are 5 bearing piles and 2 batter piles supporting the wharfhead that are severely deteriorated and unreliable; they are typically either hollow due to decay or severely cracked along their length. Additionally, there are 12 bearing piles and 1 batter pile that show signs of deterioration and preventative maintenance is recommended.

3.2.4 Pilecaps

The pilecaps are creosote treated and appear to be in good condition. They were not inspected in detail, only visually reviewed from water level at the time of inspection; no deterioration was noted.

3.2.5 Stringers

The stringers are a mix of creosote treated and pressure treated timber. They appear to be in good condition. They were not inspected in detail, only visually reviewed from water level at the time of inspection; no deterioration was noted.

3.2.6 Braces

The cross bracing is in poor condition. The majority of timber cross braces have rotted at their bottom ends, including some that have rotten such that they have come disconnected from their bolted connections.

3.2.7 Soundings

Three soundings were taken, one near Pile B20, one near Pile A13, and one near A8. The deck elevation to mudline elevation at the time of the inspection was:

Pile B20	- 7.4 m
Pile A13	- 5.8 m
Pile A8	- 5.4 m

3.3 Reference Tables

Approach and Wharhead				
Item	Location	Damage	Comments	Proposed Remediation
Substructure				
Bearing Pile	A2	Checking	Narrow crack roughly 0.3m tall at mudline, extending completely through the pile	Install Pile Wrap
Bearing Pile	B3	Checking	1.2m tall crack, 50mm deep	Install Pile Wrap
Bearing Pile	B6	Checking	1.2m tall crack, 50mm deep	Install Pile Wrap
Bearing Pile	B7	Decay	Pile is hollow	Replace Pile
Bearing Pile	B10	Decay	Pile is hollow	Replace Pile
Bearing Pile	B12	Checking	Multiple short cracks	Install Pile Wrap
Bearing Pile	B13	Decay	Multiple holes, roughly 50mm deep	Install Pile Wrap
Bearing Pile	B17	Checking	Multiple cracks throughout, up to 50mm deep	Install Pile Wrap
Bearing Pile	A18	Checking	1.2m tall crack, 50mm deep	Install Pile Wrap
Bearing Pile	B19	Checking	Full height crack, 75 - 125mm deep	Install Pile Wrap
Bearing Pile	B+20	Checking	1.8m tall crack, 100mm deep	Install Pile Wrap
Bearing Pile	A20-	Checking	1.8m tall crack, 50mm deep	Install Pile Wrap
Bearing Pile	A20+	Decay	Pile is hollow	Replace Pile
Bearing Pile	A21	Decay	Pile is hollow	Replace Pile
Bearing Pile	B-21-	Checking	1.8m tall crack, 50mm deep	Install Pile Wrap
Bearing Pile	A22	Checking	1.8m tall crack, 100mm deep	Install Pile Wrap
Bearing Pile	B23	Decay	Pile is hollow	Replace Pile
Bearing Pile	A24+	Checking	Multiple cracks throughout, up to 50mm deep	Install Pile Wrap
Bearing Pile	C24	Checking	1.8m tall crack, 200mm deep	Install Pile Wrap
Bearing Pile	D24	Decay	Pile is hollow	Replace Pile
Bearing Pile	G-24	Decay	75mm square hole, roughly 75mm deep	Install Pile Wrap
Bearing Pile	A25	Decay	Pile is hollow	Replace Pile
Bearing Pile	B25	Checking	Full height crack, 75 - 150mm deep	Install Pile Wrap
Bearing Pile	C25	Decay	Pile is hollow	Remove/Abandon Pile & Reinforce Pile Cap
Bearing Pile	D25	Decay	Pile is hollow	Remove/Abandon Pile & Reinforce Pile Cap
Bearing Pile	E25	Checking	Full height crack, 75mm deep	Install Pile Wrap
Bearing Pile	F25	Decay	Pile is hollow	Remove/Abandon Pile & Reinforce Pile Cap
Bearing Pile	G-25	Decay	Pile is hollow	Replace Pile
Bearing Pile	A26-	Decay	Pile is hollow	Replace Pile
Bearing Pile	B26-	Decay	Pile is hollow	Replace Pile
Bearing Pile	C26-	Decay	150mm square hole, roughly 150mm deep	Install Pile Wrap
Bearing Pile	F26-	Checking	1.0m tall crack, 125-150mm deep	Install Pile Wrap
Bearing Pile	F26+	Decay	50mm wide hole, 200mm deep	Install Pile Wrap
Bearing Pile	G-26-	Checking	Full height crack, 75mm deep	Install Pile Wrap
Bearing Pile	G+26-	Decay	Pile is hollow	Replace Pile
Bearing Pile	G26+	Decay	Pile is hollow	Replace Pile

Item	Location	Damage	Comments	Proposed Remediation
Substructure Continued				
Batter Piles	Throughout/Approach	Decay	All batter piles showing signs of decay near top connections	Remove/Abandon Header Piles and Install Modified Cross Braces
Batter Pile	Bent 8	Decay	Pile is hollow	
Batter Pile	Bent 12	Spalling	Outer surface of pile spalling off full circumference, roughly 0.9m length	
Batter Pile	Bent 20	Decay	Pile is hollow	
Batter Pile	C25 South	Decay	Pile is hollow	
Timber Cross Braces	Throughout	Decay	The majority of timber cross braces are disconnected or significantly decayed at the lower end	Replace with Modified Cross Braces
Steel Cross Braces	Throughout Wharfhead	Corrosion	All steel cross braces are affected by some level of corrosion and roughly 20% have become disconnected at the lower end.	Replace with Modified Cross Braces

4 Residual Life Estimate

The residual life estimates are based on Section 2.5 of "Procedures for Inspection and Assessment of Fixed Timber Docks, 4th Edition" by R.G. Sexsmith Ltd. These estimates represent the worst case members inspected in any member group. For this reason, the overall condition of the member group is not necessarily reflected by the following residual life estimates. See appropriate tables in Section 3 to determine which members the residual life estimate applies to.

As noted in the above referenced material, the following applies:

- Where treated wood has been examined for presence of decay, and found sound, a life of 8-10 years is appropriate.
- Where evidence of some decay, but very limited extent was found present, a life of 3-6 years is appropriate.
- Where an element has weakened cross-section due to decay, the life can be presumed to be negligible (i.e. 0 years).

See appropriate tables in Section 3 to determine to which members the residual life estimates apply.

4.1 Approach and Wharfhead

Pile Caps and Stringers	8-10 years (based on visual inspection from boat)
Bracing	0 years (based on rotting braces, 3-6 years otherwise)
Bearing Piles	0 years (based on hollow piles, 3-6 years otherwise)

5 Conclusions and Recommendations

Conclusions:

Based on the level of deterioration noted in multiple structurally critical locations, repairs are necessary in order for the facility to remain in serviceable condition.

There are several factors affecting the extent and form of repairs to be recommended:

- Usage of the facility has changed since original design and construction such that live loads are significantly reduced and ships no longer berth against the structure;
- Access to some components of the structure has been prevented by the construction of buildings atop of the wharf.

With these factors accounted for, our recommendations are as described below.

Recommendations:

- 1) Install pile-wraps on all piles with limited deterioration;
- 2) Replace unreliable bearing piles along the approach;
- 3) Replace unreliable bearing piles along the perimeter of the wharf head;
- 4) Abandon/Remove unreliable bearing piles at the interior of the wharf head and reinforce pile caps to withstand increased span;
- 5) Abandon/Remove deteriorated batter piles and deteriorated cross-bracing on the approach and install modified cross-bracing;
- 6) Abandon/Remove deteriorated batter piles and deteriorated cross-bracing on the wharfhead and install modified cross-bracing.

The following is a detailed breakdown of remedial work required at the facility. The individual costing assumes that construction personnel are on-site for a major upgrade. The remediation costs are nominal Class C estimates in 2014 dollars. The cost estimates exclude any project development and project management costs.

Item	Location	Remediation Recommendations	Timing Estimation	Remediation Cost
Mobilization / Demobilization				\$15,000
Approach and Wharfhed				
Substructure				
Bearing Pile	A2	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B3	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B6	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B7	Replace Pile	Short Term	\$5,000
Bearing Pile	B10	Replace Pile	Short Term	\$5,000
Bearing Pile	B12	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B13	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B17	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	A19	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B19	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B+20	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	A20-	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	A20+	Replace Pile	Short Term	\$5,000
Bearing Pile	A21	Replace Pile	Short Term	\$5,000
Bearing Pile	B-21-	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	A22	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	B23	Replace Pile	Short Term	\$5,000
Bearing Pile	A24-	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	C24	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	D24	Replace Pile	Short Term	\$5,000
Bearing Pile	G-24	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	A25	Replace Pile	Short Term	\$5,000
Bearing Pile	B25	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	C25	Remove/Abandon Pile & Reinforce Pile Cap	Short Term	\$4,000
Bearing Pile	D25	Remove/Abandon Pile & Reinforce Pile Cap	Short Term	\$4,000
Bearing Pile	E25	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	F25	Remove/Abandon Pile & Reinforce Pile Cap	Short Term	\$4,000
Bearing Pile	G-25	Replace Pile	Short Term	\$5,000
Bearing Pile	A26	Replace Pile	Short Term	\$5,000
Bearing Pile	B26-	Replace Pile	Short Term	\$5,000
Bearing Pile	C26-	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	F26-	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	F26+	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	G-26-	Install Pile Wrap	Short Term	\$1,000
Bearing Pile	G-26+	Replace Pile	Short Term	\$5,000
Bearing Pile	G26+	Replace Pile	Short Term	\$5,000

Item	Location	Remediation Recommendations	Timing Estimation	Remediation Cost
Substructure Continued				
Batter Piles	Throughout Approach	Remove/Abandon Batter Piles and Install Modified Cross Braces	Short Term	\$50,000
Batter Pile	Bent 8		Short Term	
Batter Pile	Bent 12		Short Term	
Batter Pile	Bent 20		Short Term	
Batter Pile	C26 South		Short Term	
Timber Cross Braces	Throughout	Replace with Modified Cross Braces	Short Term	
Steel Cross Braces	Throughout Wharfhead	Replace with Modified Cross Braces	Short Term	

Subtotal	\$188,000.00
Contingency (15%)	\$28,200.00
Total	\$216,200.00

APPENDIX A

SITE PHOTOGRAPHS



Picture 1 – Wharf approach from water level, west side



Picture 2 – Wharf and marine ways (not assessed) from water level, west side



Picture 3 – Seaward building from water level, northwest corner



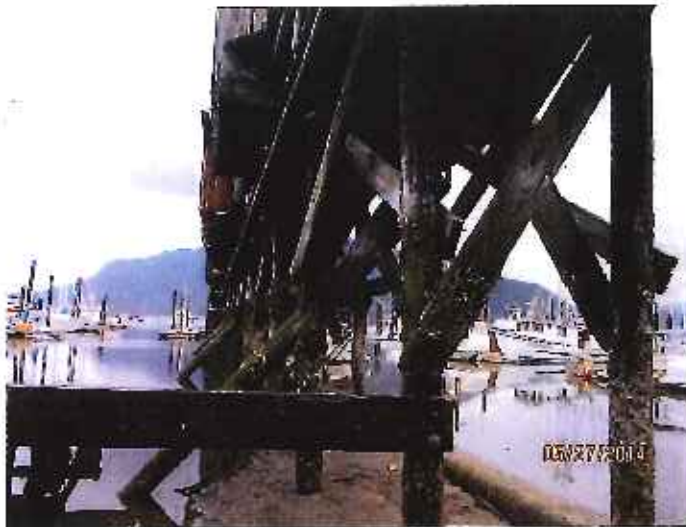
Picture 4 – Seaward building from water level, north end



Picture 5 – Seaward building and wharfhead piles from water level, northeast corner



Picture 6 – Wharf approach from water level, east side



Picture 7 – Wharf approach from shore



Picture 8 – Walkway below wharfhead



Picture 9 – Exhibit building on approach



Picture 10 – Typical handrail on approach



Picture 11 – Shoreward building on wharfhead from shore



Picture 12 – Disconnected timber cross braces



Picture 13 – Typical steel cross braces



Picture 14 – Disconnected steel cross braces



Picture 15 – Cracking along timber cross brace



Picture 16 – Cracking along batter pile



Picture 17 – Cavity in hearing pile



Picture 18 – Typical stringers and decking under approach



Picture 19 – Typical original and added cantilevered stringers under wharfhead



Picture 20 – Typical original stringers under wharfhead



Picture 21 – Timber cross braces deteriorated at bottom



Picture 22 – Disconnected timber cross braces



Picture 23 – Typical steel cross braces



Picture 24 – Hollow pile



Picture 25 – Hollow pile



Picture 26 – Hollow pile



Picture 27 – Hole through pile



Picture 28 – Cracking along pile



Picture 29 – Abandoned pile stub



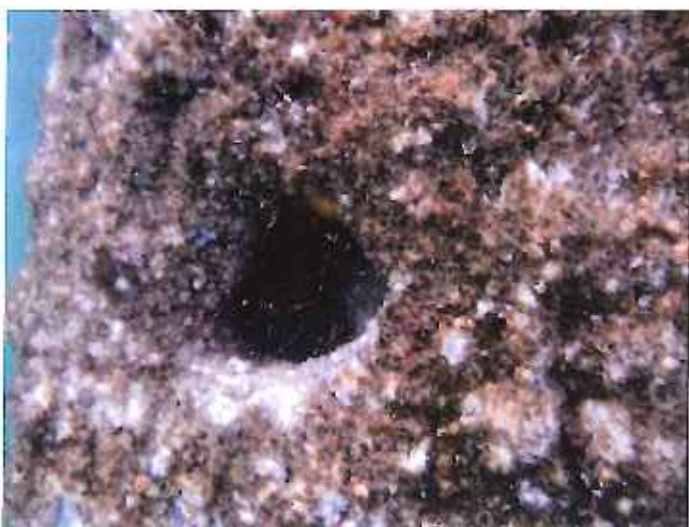
Picture 30 – Hollow pile



Picture 31 – Hollow pile



Picture 32 – Hollow pile



Picture 33 – Hole through pile



Picture 34 –Cracking along pile



Picture 35 – Hollow pile



Picture 36 – Hollow pile



Picture 37 – Hollow batter pile.