shíshálh NATION

BRITISH COLUMBIA

DISCLAIMER

This engineering report was commissioned by the Province and shíshálh Nation in response to previous feedback raised by interested parties related to the Pender Harbour Dock Management Plan. This report has been used for information purposes relating to the review of the Pender Harbour Dock Management Plan.

The report was prepared by McElhanney Ltd. in their professional capacity, and both opinions and facts are presented. Any opinions in the report are the firm's own and in some cases, do not necessarily reflect the view(s) of shíshálh Nation and the Province.

Review of Pender Harbour Dock Best Management Practices

January 17, 2023 | Revision 0

shishalh Nation | Prepared by McElhanney Ltd.

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Contents

1. Introduction

The shishalh Nation, together with the Province of BC, have developed a design guideline called the “Pender Harbour Dock Management Plan” (DMP), to assist in the approval of dock tenure applications. This policy identifies Best Management Practices (BMP) for all private, group and commercial docks that provide moorage within Pender Harbour, located within the shishalh swiya. Potential private moorage dock applicants have expressed concerns with the limitations on the dock sizes and construction within the shishalh swiya.

McElhanney Ltd. (McElhanney) has been retained to provide an independent review of the existing project and provide clear policy recommendations to assist the DMP with future planning and approval of dock infrastructure.

Figure 1 below provides an aerial view of the Pender Harbour Area.

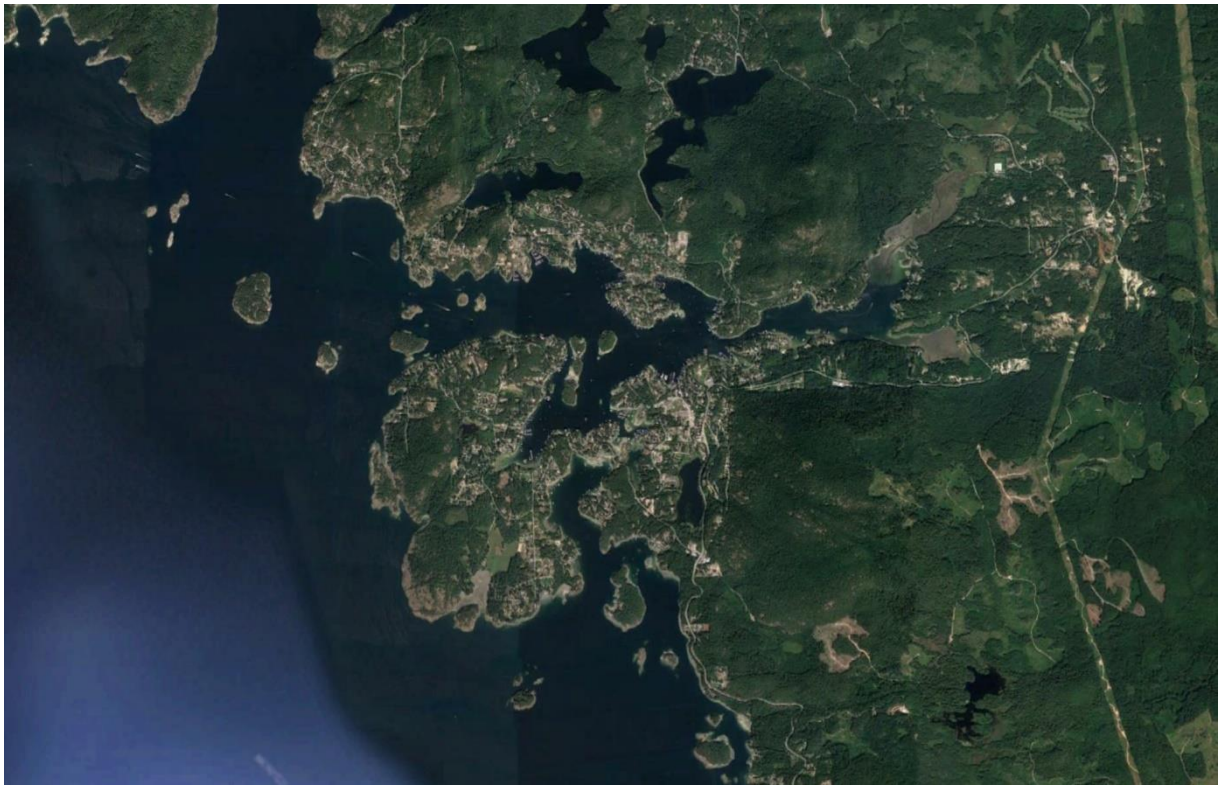

Figure 1 - Aerial View of the Pender Harbour Area

2. Review of Existing Best Management Practices

McElhanney has reviewed the previously submitted reports provided by independent consulting engineers and naval architects who have been retained by applicants, and their main concerns have been summarized below in Table 1. The reports reviewed were included with applicants' submissions to support their application and the requested variances under the Land Act. Additional comments raised by McElhanney are also included in Table 1. The recommended modifications to these existing best management practices can be found in Section 3.1.

Table 1 - Review of Previous Reports

Existing Criteria	Comments from Dock Applicants	Comments from McElhanney
Section 8.4 *The bottom of all floats must be a minimum of 1.5 meters above the seabed during the lowest tide.* *Dock height above lowest water level must be increased if deep draft vessels are to be moored at the Dock. The Dock and the vessel to be moored at the Dock must not come to rest on the seabed during the lowest tide of the year.*	• The use of the word "dock" in this case is inconsistent with the remainder of the report and the given definitions. In this case, the word "float" should be used when referencing the structure to which boats are moored. • This practice is unattainable as the floats within the Pender Harbour are known to ground at the lowest tide, for about a week every month (according to local residents).	• Provide recommended design criteria for anti-grounding.
Section 8.5 *The size of all docks should be minimized. […] Docks should not exceed a maximum width of 1.5 meters.*	• A float with a width of 1.5 meters does not satisfy the freeboard criteria, or the heeling criteria. With maximum loading of a float of this size, the float is at risk of sinking or capsizing. Wider floats are more resistant to heel and are safer. • A dock with a width of 1.5 is most likely too narrow to allow for it to rest on support legs which prevent grounding. • A float with a width of 1.5 meters fails buoyancy and stability safety criteria. Under loading, the dock heeled excessively, which could lead to capsizing, the draft and	• Among the existing written reports, this practice, specifically the maximum width of the float, is the main concern of the DMP. • The maximum width of the float causes safety concerns, specifically due to the stability of the float. Narrow floats do not perform well under wind and wave loads and are at a higher risk of heeling and capsizing when there is loading on one side of the float. The ASCE Planning and Design Guidelines for Small Craft Harbors states: "In general the ratio of 1:3 (width-to-length) of individual float

	freeboard were both unstable, and the live load capacity can only accommodate 4 people when on one end of the dock, which is not likely for a dock of this size. • A float with a width of 2.44 meters is just sufficient enough to meet the safety criteria will address the stability issues, and also use the same area of flotation billets, allowing for more light transmission through the deck. A float with a width of 3 meters would provide a higher degree of safety and allows room for maintaining the stability throughout the life of the structure. • During low tide, the floats are at risk of grounding. Due to the case where one section of the float is grounded and the other is buoyant, the float can experience additional stresses and possibly deformation. Narrower floats experience higher roll, yaw and pitch motions, and are therefore subject to higher stresses. • At the location reviewed, wind generated waves higher than 0.6 meters are expected. A single walkway float with a width less than 2 meters is considered unstable when on its own. A float with a width of 1.5 meters would not perform in this location, however a float with a width of 3 meters would be stable and functional under the various conditions.	modules should be upheld to maintain stability". This practice is therefore very limiting to the design of floats and their safety. • This width of float is not wide enough for the landing of a gangway/ramp and could cause damage to the float or be at risk of the ramp falling off the float. • The float will not be wheelchair accessible if the mooring piles are designed to be in the center of the float. • The width of the ramp and pier section of 1.2 meters causes accessibility issues. The width of the ramp, with handrails, will not provide space for wheelchair accessibility. • It is recommended that the float widths are not limited by width, and instead the float area is limited. This allows for the floats to be customizable, and still safe. The floats can also be reviewed on an individual basis. • A long narrow float is more subject to rotation which could lead to unstable conditions.

Section 8.6 *All improvements should be a minimum of 5.0 meters from the side property line (6.0 meters if adjacent to a dedicated public beach access or park) and at least 10 meters from any existing dock or structures, consistent with Federal requirements under Transport Canada's Navigable Waters Protection Act.*	• The requirement for the distance between docks should be relaxed, as many docks currently do not meet this standard, and is not necessary as long as the navigation channels are not being obstructed.	• This practice is not met by many of the existing docks within the Pender Harbour. • It is recommended that any docks be at least 5 meters from any existing dock or structure or be individually reviewed to ensure they do not obstruct the navigational channel, or any of the existing docks.
Section 8.7 *Docks must be constructed to allow light penetration under the entire structure. Docks, inclusive of all components, must allow for minimum of 43% open space allowing for light penetration to the water surface under the structure. Light transmitting materials may be made of various materials shaped in the form of grids, grates, and lattices to allow for light passage.*	• Light transmission in the different float options cannot meet the light transmission criteria if considering the area that is blocked by the flotation billets. • It is suggested that the 43% light transmission required was selected based upon a specific grating product, the Legacy Series ThruFlow grating. • The light transmission requirement of 43% is unachievable, even with a decking with the best ratio of open area. This is due to the flotation billets which block a majority of the float area from light transmission to the water. • The light transmission of a dock with a width of 2.44 meters would provide light transmission of about 38%, and a width of 1.5 meters would provide only 24%. Both options do not meet the criteria for light transmission. • Grating does not provide lateral or torsional support and cannot support vertical loads greater than pedestrian loads. Floats with	• This practice does not consider the light transmission that will be blocked by the flotation billets. Even if the decking of the floats allows for significant light transmission, the floats typically require billets on about at least 50% of the plan area to maintain the required freeboard. • It is recommended that this practice be removed, and instead replaced with the recommendation of using grated decking for the entire structure if this is supported by a Registered Professional Biologist who reviews the site supported application.

	grating require additional lateral bracing which can be difficult if using a wood frame float and is therefore not advisable. • For a float to have adequate freeboard, the floatation required will typically cover larger than 50% of the plan area of the entire float. • Small craft harbour facilities with the Department of Fisheries and Oceans Canada use wood decking as the standard for piers, floats and ramps. • The 43% light transmission criteria is difficult to achieve because it does not consider the fact that the flotation billets under the float do not allow for any light transmission.	
Section 8.8 *Docks should be aligned in a north-south direction, perpendicular to the shoreline, to the maximum extent that is practicable given site-specific conditions. This orientation increases the potential for adequate light penetration under the Dock to the water surface.*	• The requirement for North-South orientation is not necessary and not practical for this region.	
Additional comments	• The existing guideline does not reference a marine structure design or require approval by a qualified professional. • A 1.5-meter-wide dock is most likely too narrow to allow for it to rest on support legs which prevent grounding.	• Recommend that a Professional Engineer, registered in the Province of British Columbia, provide a detailed design of the dock structure which meets all current design guidelines and best practices.

	• Small dock structures are recommended to not have freeboards of greater than 600mm as it can potentially make the stability of the float worse, and also makes boarding and de-boarding from recreation watercrafts more difficult.	

3. Recommended Dock Design Criteria

3.1. MODIFICATIONS TO THE EXISTING BEST MANAGEMENT PRACTICES

Based on McElhanney's review of the current Best Management Plan under the Pender Harbour Dock Management Plan, certain criteria have been modified, as shown in Table 2 below. Justifications have been provided for existing criteria that will have no change, and for the modified criteria.

Table 2 - Recommended Modifications to Dock Design Criteria

Existing Criteria	New Proposed Criteria	Justification
Section 6.1 (b)(i) *The identification of any Habitat within the Tenure Area and Dock Footprint and the plan for the protection of any identified Habitat, completed by a Registered Professional Biologist or Registered Biological Technician in good standing with the BC College of Applied Biology and other Qualified Professionals if required/as needed.*	No change	Reduced impact area and affected marine habitat footprint. Provide information for the construction management plan on how to prevent impact to the habitat.
Section 8.4 *The bottom of all floats must be a minimum of 1.5 meters above the seabed during the lowest tide. Dock height above lowest water level must be increased if deep draft vessels are to be moored at the Dock. The Dock and the vessel to be moored at the Dock must not come to rest on the seabed during the lowest tide of the year.*	The bottom of all floats must be a minimum of 1.0 meters above the seabed during the lowest tide. Float height above lowest water level must be increased if deep draft vessels are to be moored at the Dock. The float and the vessel to be moored at the float must not come to rest on the seabed during the lowest tide of the year. The float must be on pilings/suspended or floating at all times. A description of this process is required in the Management Plan.	Reduced habitat impact from the grounding of floats and following similar criteria from other regional jurisdictions.

Section 8.5 *The size of all docks should be minimized. Access ramps, walkways or docks should be a minimum of 1.0 meter above the highest high-water mark of the tide. Access ramps and walkways should not exceed a maximum width of 1.2 meters. Docks should not exceed a maximum width of 1.5 meters.*	The size of all docks should be minimized. Access walkways should be a minimum of 1.0 meter above the highest high-water mark of the tide. Access ramps and walkways should not exceed a maximum width of 1.8 meters. The float area must not exceed an area of 30 m^2 The recommended dimensions for the floats are shown in Section 3.5.	Reduced impact area and affected marine habitat footprint which is aligned with the Vancouver Fraser Port Authority guidelines for recreational docks in Burrard Inlet. This maintains access for wheelchairs / mobility assisted devices, and accounts for the width of handrails. Property owners are allowed the freedom to decide on a length of float with a stable width.
Section 8.6 *All improvements should be a minimum of 5.0 meters from the side property line (6.0 meters if adjacent to a dedicated public beach access or park) and at least 10 meters from any existing dock or structures, consistent with Federal requirements under Transport Canada's Navigable Waters Protection Act.*	All docks should be a minimum of 5.0 meters from the side property line *(6.0 meters if adjacent to a dedicated public beach access or park)* and at least 10 meters from any existing dock or structures. Allowance for a deviation if: - Not less than 5 meters from adjacent structures - Does not impede on existing navigation / watercourse - Agreed to not allow boat moorage in the location closest to the adjacent structure	The criteria will prevent overcrowding of docks in the area, and still allow for deviation should the criteria be impossible to meet. 5 meters ensures navigational clearance between adjacent docks, which is suitable for small vessels up to 25' LOA. If the proposed vessel size changes and exceeds 25' LOA, then the applicant must seek approval from the Province.

Section 8.7 *Docks must be constructed to allow light penetration under the entire structure. Docks, inclusive of all components, must allow for minimum of 43% open space allowing for light penetration to the water surface under the structure. Light transmitting materials may be made of various materials shaped in the form of grids, grates, and lattices to allow for light passage.*	Docks are recommended to be constructed to allow light penetration under the entire structure where possible. Light transmitting materials may be made of various materials shaped in the form of grids, grates, and lattices to allow for light passage.	Feasible options available which provide enhanced light penetration and long-term durability.
Section 8.8 *Docks should be aligned in a north-south direction, perpendicular to the shoreline, to the maximum extent that is practicable given site-specific conditions. This orientation increases the potential for adequate light penetration under the Dock to the water surface.*	Docks should be aligned perpendicular to the shoreline, to the maximum extent that is practicable given site-specific conditions.	Avoid conflicts / navigational conflicts with adjacent docks.
Section 8.15 *The use of Styrofoam to keep docks afloat is prohibited for new construction and repairs unless the foam is encapsulated. Encapsulated foam is defined as 'foam which is fully enclosed in a solid, molded shell to prevent breakdown and discharge into the environment.' Styrofoam floats on existing docks that are showing evidence of breakdown must be replaced using an alternative material.*	No change	Unenclosed Styrofoam billets break down and disintegrate in the marine environment.

3.2. NEW BEST MANAGEMENT PRACTICES

McElhanney recommends that new dock design criteria be added to the existing. The additions are provided below in Table 3, along with justifications for why they are needed.

Table 3 - Recommended New Dock Design Criteria

Item	New Proposed Criteria	Justification
1	*The total combined length of the entire dock structure (from the start of the pier to the end of the float) must not exceed 60 meters or impact navigation on main waterways.*	Reduced navigational impacts to main waterways, reduced impact area and affected marine habitat footprint. This is based on the VFPA guidelines for recreational docks in Burrard Inlet.
2	*Minimize outdoor lighting so as not to attract or disturb the fish.* • *Only have outdoor lights as required for safety* • *Install lights with motion detectors and/or automatic turn-off times.* • *Minimize over-water lighting, and lighting directed into the water*	Minimize impacts to fish and wildlife.
3	*Floating Dock Motion During Storm Events not to exceed 0.3m to be confirmed with a coastal metocean analysis for exposed site locations.*	Minimize risk of damage to floats and gangway.
4	*No fuel storage allowed on floats. Any fuel containers located on or near the dock structures must be in good condition and adequately sealed to prevent leaks. All boats must meet all vessel compliance requirements.*	Prevent spills into the marine environment.
5	*All dock facilities must have a portable fire extinguisher and a spill response kit capable of containing and absorbing fuel spills on water. Sorbent pads should be used around the fill stem pipe to catch any drips from the nozzle when refuelling vessels.*	To ensure all spills are recovered and contaminations are removed.

6	*Proof of insurance policy which includes the dock structure with a minimum coverage of $2,000,000 CAD.*	Homeowner's standard policies typically do not cover damages to docks due to ice, flooding, watercraft impact, or waves form high winds. Ensures damaged structures are repaired properly, and with caution for the surrounding environment.
7	*Annual marine inspections are to be completed using a standardized template. Further in-depth structural assessments may be required at the discretion of FLNRORD and shishalh.*	Confirms no additional structures have been added, no safety issues, and no environmental issues have arisen.

3.3. COMMERCIAL DOCK DESIGN STANDARDS

Considerations for commercial dock designs and their size will be dependant on the number of vessels that require berthing and mooring. Vessels can be grouped as larger than 26' LOA and smaller than 26' LOA. All of the current Best Management Practices for private dock structure will apply to the commercial dock structures, with the following exceptions to the criteria in Table 4 below.

Table 4 - Recommended Modifications to Dock Design Criteria for Commercial Dock Structures

Existing Criteria	New Proposed Criteria	Justification
Section 8.4 *The bottom of all floats must be a minimum of 1.5 meters above the seabed during the lowest tide. Dock height above lowest water level must be increased if deep draft vessels are to be moored at the Dock. The Dock and the vessel to be moored at the Dock must not come to rest on the seabed during the lowest tide of the year.*	The float and the vessel to be moored at the float must not come to rest on the seabed. The float must be supported on the piles or floating. A description of this process is required in the Management Plan.	Reduced habitat impact from the grounding of floats.
Section 8.5 *The size of all docks should be minimized. Access ramps, walkways or docks should be a minimum of 1.0 meter above the highest high-water mark of the tide. Access ramps and walkways should not exceed a maximum width of 1.2 meters. Docks should not exceed a maximum width of 1.5 meters.*	The size of all docks should be minimized. Access walkways should be a minimum of 1.0 meter above the highest high-water mark of the tide. Access ramps and walkways should not exceed a maximum width of 3 meters. Main floats should not exceed a width of 3 meters. Float fingers should not exceed a width of 1.5 meters. The float area (including float fingers) must not exceed an area of 40 m^2 / commercial dock structure vessel capacity (for vessels up to 40' LOA). The recommended dimensions for the floats are shown in Section 3.5.	Reduced impact area and affected marine habitat footprint while allowing for increased capacity / pedestrian traffic typical of commercial dock operations. This maintains access for wheelchairs / mobility assisted devices, and accounts for the width of handrails. This allows for an increased float area for support the required capacity, while still limiting the impact area.

Item 1 *The total combined length of the entire dock structure (from the start of the pier to the end of the float) must not exceed 50 meters.*	*The total combined length of the entire dock structure (from the start of the pier to the end of the float) must not exceed 60 meters.*	Reduced navigational impacts to main waterways, reduced impact area and affected marine habitat footprint. Provide more space for the commercial docks to prevent grounding.

3.4. ADDITIONAL APPLICATION REQUIREMENTS

A review of the existing form: “For New Applications for Private Moorage Purposes in the Pender Harbour Management Area” has been completed. In addition to the General Requirements being updated according to the dock design criteria in Sections 5.1 and 5.2/5.3, it is also recommended that the form include the submission of the following:

- Description of any utilities / dock accessories
- Detailed description of the outdoor lighting plan
- Confirmation that the dock design will be designed for the site specific coastal metocean conditions.
- Confirmation that the proposed dock meets current accessibility guidelines (handrails, maximum gangway ramp grade, etc.)
- Description of the maximum vessel size which will be moored to the floating docks.
- The applicant shall submit drawings sealed by a Professional Engineer licensed in British Columbia. These drawings shall identify design requirements, design codes used, layout, member sizes, connections, dimensions, materials, and finishes and be site specific for the intended dock location.
- Fabricator and/or shop drawings provided by dock buildings/constructors which have not been sealed by a Professional Engineer will not be accepted.
- Bathymetric survey

A decision flow chart for the Application process can be found in Appendix A.

3.5. PROPOSED DOCK DESIGNS

The recommended dock designs for within the Pender Harbour can be seen in Figure 2 to Figure 4 below.

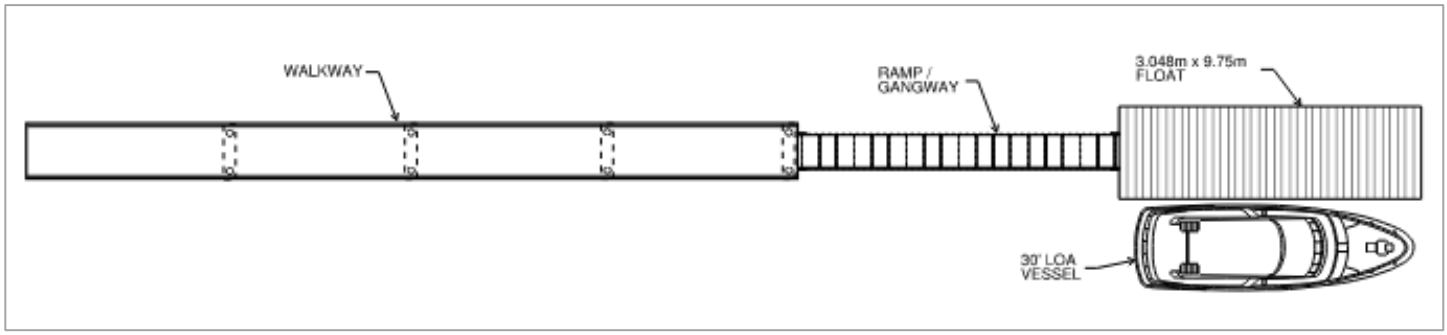

Figure 2 - Proposed Dock Design Option 1 (Plan View)

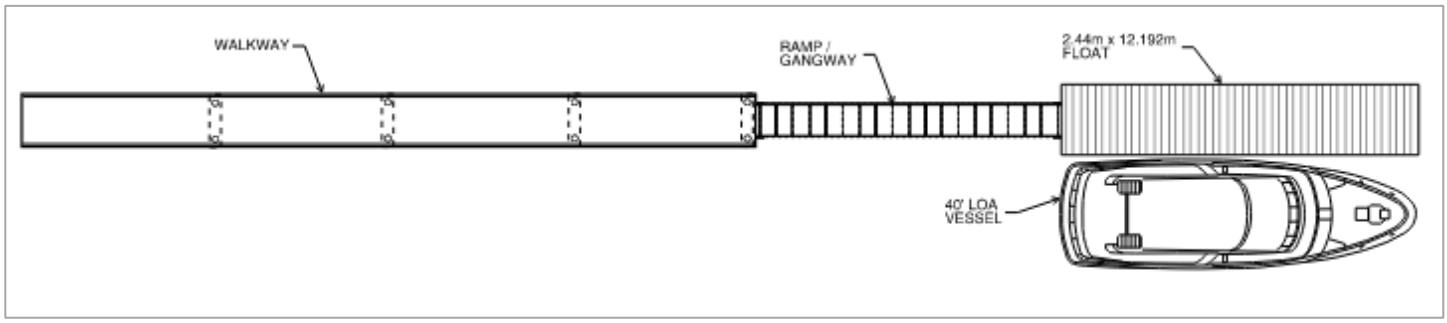

Figure 3 - Proposed Dock Design Option 2 (Plan View)

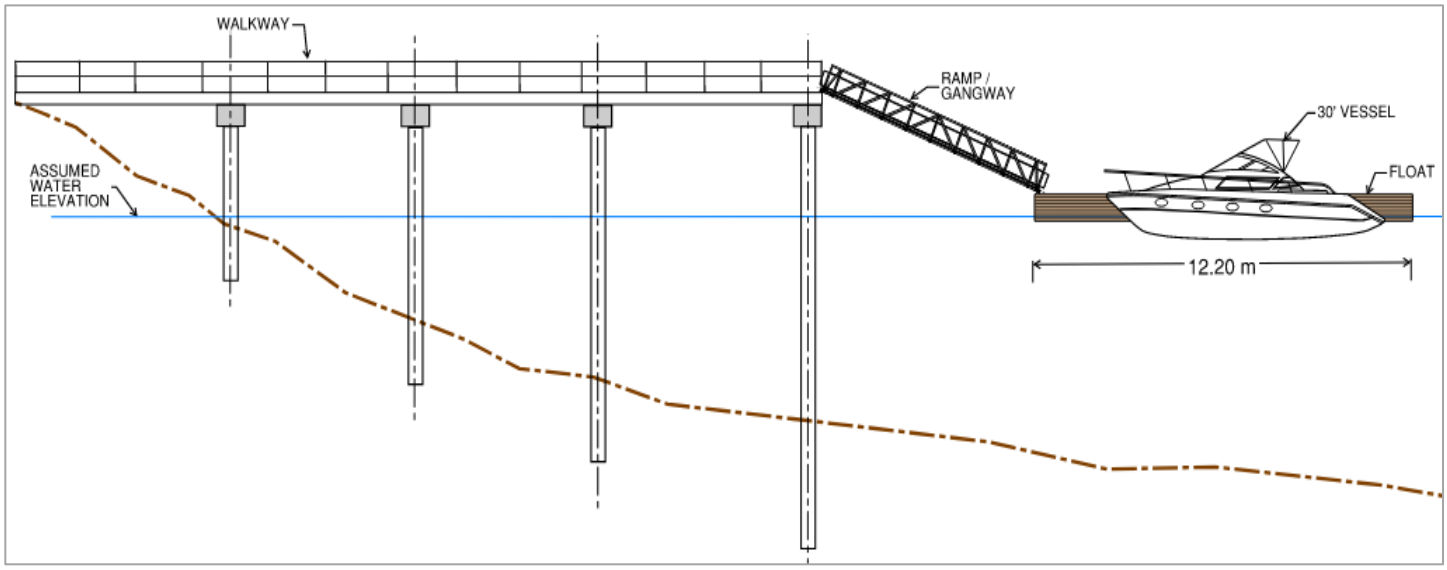

Figure 4 - Proposed Dock Design Option 1/2 (Elevation View)

The (2) options shown both meet the new proposed dock design criteria and can be altered to suit different areas within the Pender Harbour. The options also provide a safe and accessible facility to

access the waterfront, and for boat moorage. By allowing property owners the choice between the dock design options above, it will allow for the moorage of vessels up to 40’ LOA, while still maintaining a safe stability for the float.

The float areas for the design options are as follows:

- Option 1: (2.44 m) x (12.192 m) = 29.75 m^2
- Option 2: (3.048 m) x (9.75 m) = 29.72 m^2

The ASCE Planning and Design Guidelines for Small Craft Harbors recommends that individual floats maintain a width to length ratio of 1:3 for stability. Design option 1 has a width to length ratio of 1:3.2, while design option 2 has a ratio of 1:5. Option 1 provides the most stable float, while still allowing for moorage of vessels up to 30’ LOA and should be recommended as the standard design. However, should a property owner require the moorage of vessels larger than 30’ LOA, option 2 provides a float with a length of about 40 feet. Following the design standard from ASCE, it does not meet the stability criteria, however, as stated in the existing written reports, a design float with a width of 2.44 meters is possible to provide enough stability for some uses. The design engineer for the float shall be responsible for ensuring the float has adequate stability for the usage and loading while adhering to the maximum footprint allowance to reduce the environmental habitat area.

Both design options allow for chain and anchor block mooring, or exterior pile mooring. Should pile mooring with internal mooring well be require, design option 2 would not be an option, due to limiting the width of the float.

3.6. ANTI GROUNDING DESIGN

The recommended concept design to prevent grounding of the floats at low tides can be seen in Figures 5 to 7 below. Due to ongoing sediment accretion / erosion, typical for marine coastal processes, it is not recommended that dock have bearing structures directly on the seabed which is subject to change. As such, the floating dock elements should be supported directly on the steel piles using steel braces to ensure stable and consistent structural support.

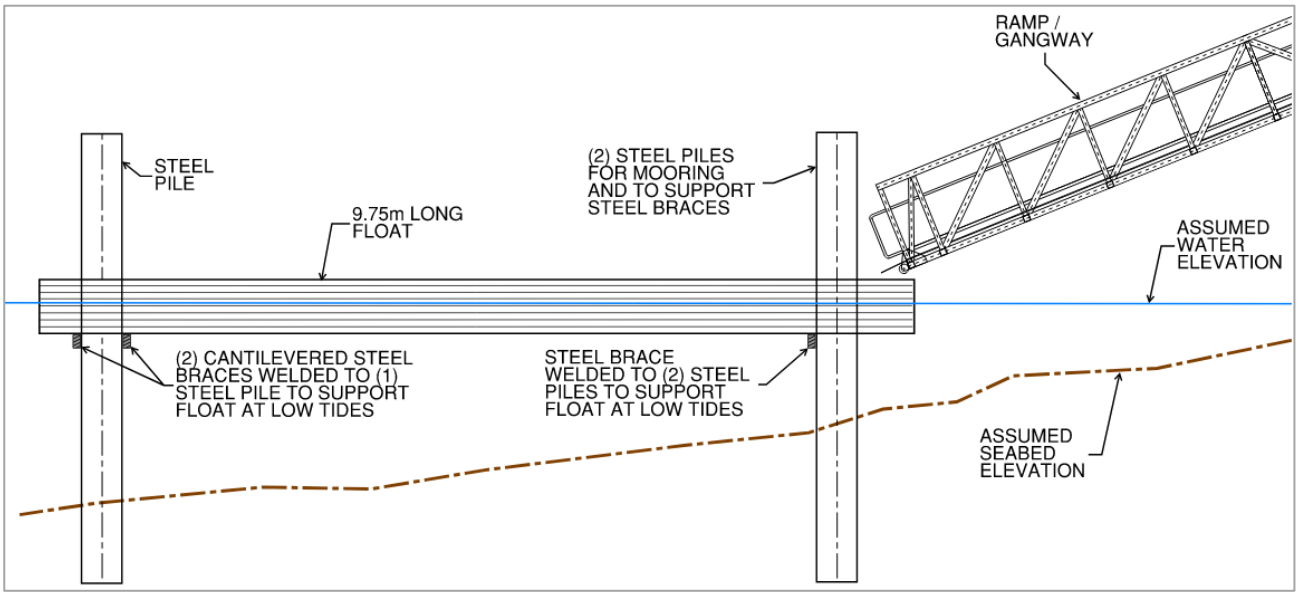

Figure 5 - Proposed Anti-Grounding Design (Elevation View)

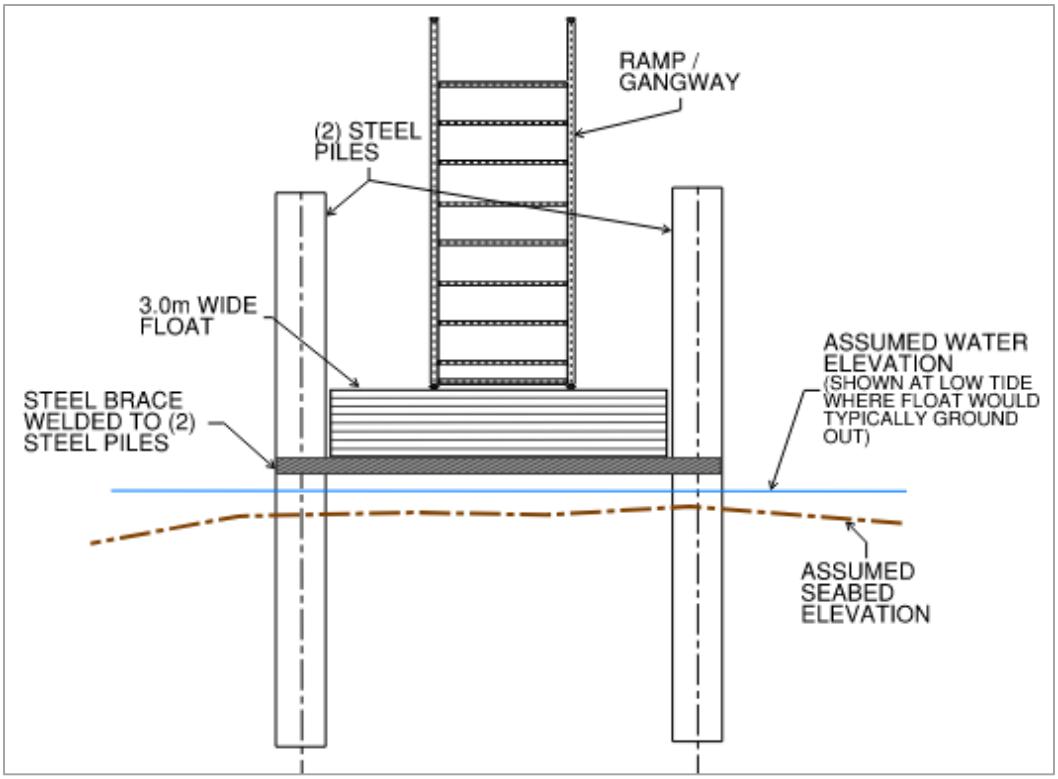

Figure 6 - Proposed Anti-Grounding Design (Cross-Section View of end of float closest to foreshore)

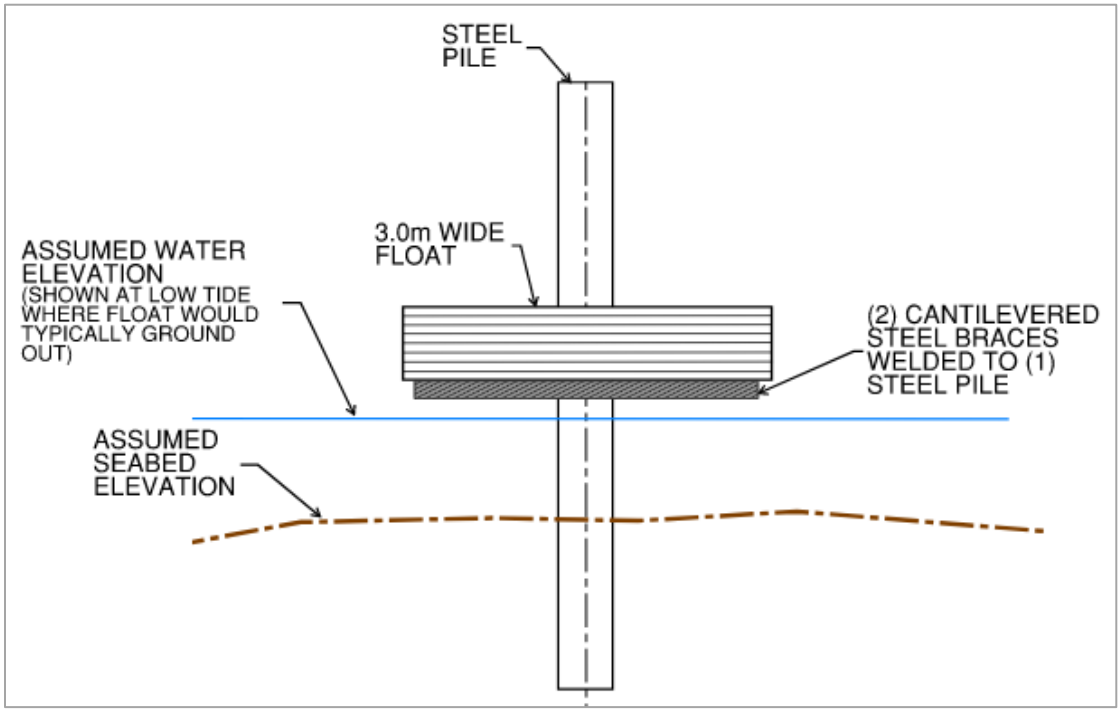

Figure 7 - Proposed Anti-Grounding Design (Cross Section View of end of float closest to offshore)

3.7. FUNCTIONAL DESIGN REQUIREMENTS

The float shall be designed to meet the structural requirements of Canadian codes for the applicable material. These codes may include:

- CSA A23.3 Design of Concrete Structures
- CSA O86 Engineering Design in Wood
- CSA S16 Design of Steel Structures
- CSA S157 Strength Design in Aluminum

As there are no specific codes or guidelines for the marine design of floating docks in British Columbia or Canada, industry accepted international codes, standards or guidelines applicable to floating docks and small craft harbours may be referenced, such as PIANC, UFC, ASCE and others.

3.7.1. General Requirements

- The float system shall permit access for vessels of the size noted.
- The dock shall consider the coastal metocean conditions specific to the site.
- The material of construction for the floats shall be determined by the applicant and approved by the DMP. Materials such as concrete, steel, aluminum, FRP, timber and expanded polystyrene foam flotation are acceptable. It is expected that the applicant will select the most suitable, practical and durable materials for the application and design life.
- The surface of the floats shall be non-slip and suitable for use in the marine environment.
- The minimum service life of these floats shall be 25 years.
- The applicant shall submit record drawings, sealed by a Professional Engineer licensed in British Columbia in accordance with EGBC requirements for structural designs. These drawings shall show the final as-built condition of the dock including any changes which were made during construction.

3.7.2. Float Performance Criteria

- The float shall sit level with a maximum cross slope of 2%, and a minimum acceptable freeboard of 200mm.
- Floats shall be designed to support the weight of the gangway with minimal freeboard loss.
- Floats shall be designed to carry a uniformly distributed load of 1.9 kPa over the whole or any part of the deck. Stability shall be checked and verified for this loading condition.

- Floats shall be designed to carry, at any location on the float deck, a concentrated load of 1.8 kN placed at any location, no closer than 300mm to any edge. Stability shall be checked and verified for this loading condition.

- Maximum angle of heel under any loading case shall not exceed 6 degrees.

3.7.3. Float Appurtenances and Hardware

- Cleats shall be provided with a sufficient capacity for vessel moorage.

- Fenders or rub strips shall be provided around the perimeter of the float. These continuous items shall have high resistance to environmental elements, such as UV light, and marine growth.

- A safety ladder shall be provided on the float, sufficient for egress from the water. The ladder shall extend a minimum of 1m below the water surface. Corrosion shall be considered in the material selected and fabrication details of the ladder.

- Floats shall provide attachment points for the mooring system.

- Water utilities and electrical services shall be designed and installed by qualified tradesman and considering all relevant codes/standards.

4. Coastal Metocean Considerations

In reviewing industry best practices for small craft harbour dock construction, typically a coastal metocean analysis is completed to determine the following environmental conditions which need to be considered in the engineering design of new floating dock structures:

- Design Wave Conditions (Wave height, direction, and period)
- Design Wind Conditions (Frequency, Speed, and Direction)
- Design Current Conditions (Frequency, Speed, and Direction)
- Design Water Levels (Maximum Flood Construction Level, minimum water level)

This provides critical insight for ensuring that the dock and mooring systems constructed will be sufficient to meet environmental forces and water level geometries during storm events (storm surge and sea level rise conditions). In addition, since a detailed geotechnical analysis for each proposed dock site is not economically feasible, a clear understanding of the environmental factors influencing the marine infrastructure is important for design engineers to determine minimum geotechnical performance required during pile installation.

McElhanney recommends that shishalh / FLNRORD retain a coastal engineering consultant to prepare an overall coastal engineering study of the shishalh swiya. This will ensure consistency for all proposed dock areas and will help to identify where there is high risk for premature damage/deterioration due to onerous environmental forces not currently considered. Currently it does not appear that site specific environmental conditions are typically considered in the dock designs prepared by dock applicants.

5. References / Standards

Vancouver Fraser Port Authority (VFPA) – Recreational Dock Guidelines for Burrard Inlet
https://www.portvancouver.com/wp-content/uploads/2021/11/Recreational-dock-guidelines-for-Burrard-Inlet-1.pdf

Stewardship Centre for BC – GreenShores for Shoreline Development
http://stewardshipcentrebc.ca/PDF_docs/greenshores/Resources/GSSD_PilotEditionApril2020.pdf

BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development – Land Use Operational Policy: Private Moorage
https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/private_moorage.pdf

Department of Transport Canada - Canadian Navigable Waters Act
https://laws.justice.gc.ca/eng/acts/N-22/

City of Vancouver – Guidelines for Universal Access to New Public Docks in False Creek
https://vancouver.ca/files/cov/guidelines-universal-access-new-public-docks-false-creek.pdf

Department of Fisheries and Oceans Canada - Department of Fisheries and Oceans Act
https://laws-lois.justice.gc.ca/eng/acts/F-15/

Ministry of Water, Land and Air Protection – A Field Guide to Fuel Handling, Transportation & Storage
https://www2.gov.bc.ca/gov/content/environment/waste-management/industrial-waste/fuel-tanks

Transport Canada – Small Vessel Compliance Program
https://tc.canada.ca/sites/default/files/migrated/tp15111e.pdf

6. Closure

Please do not hesitate to contact the undersigned with any questions or comments.

Sincerely,
McElhanney Ltd.

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Permit to Practice 1003299

2023-01-17

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Revision History

Date	Status	Revision	Author
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February 11, 2022	Revised Draft	B	HH
November 30, 2021	Draft Issue	*A*	HH

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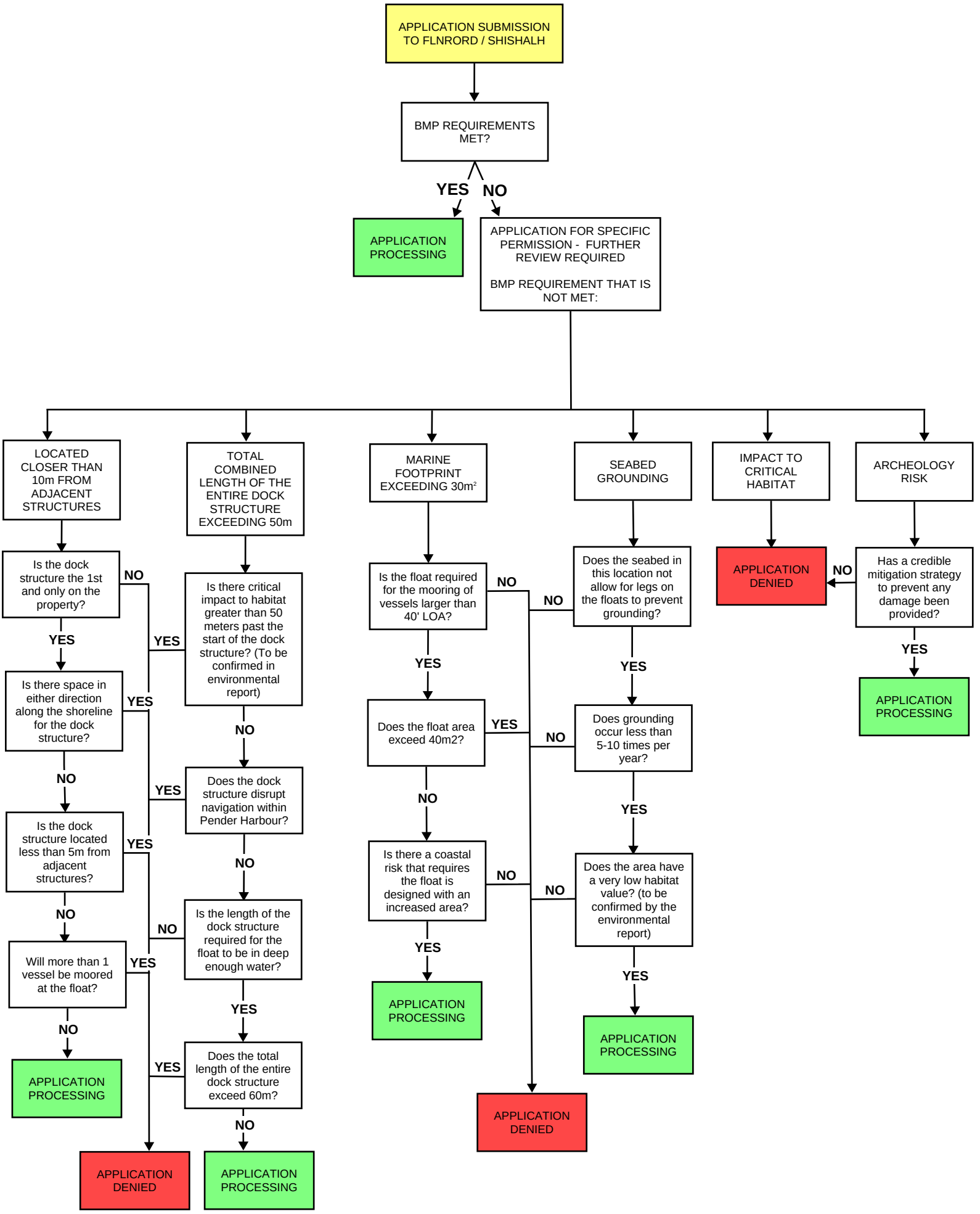
APPENDIX A – DRAFT DECISION FLOW CHART


APPLICATION SUBMISSION TO FLNRORD / SHISHALH
BMP REQUIREMENTS MET?
YES
NO
APPLICATION PROCESSING
APPLICATION FOR SPECIFIC PERMISSION - FURTHER REVIEW REQUIRED
BMP REQUIREMENT THAT IS NOT MET:
LOCATED CLOSER THAN 10m FROM ADJACENT STRUCTURES
Is the dock structure the 1st and only on the property?
Is there space in either direction along the shoreline for the dock structure?
Is the dock structure located less than 5m from adjacent structures?
Will more than 1 vessel be moored at the float?
APPLICATION PROCESSING
TOTAL COMBINED LENGTH OF THE ENTIRE DOCK STRUCTURE EXCEEDING 50m
Is there critical impact to habitat greater than 50 meters past the start of the dock structure? (To be confirmed in environmental report)
Does the dock structure disrupt navigation within Pender Harbour?
Is the length of the dock structure required for the float to be in deep enough water?
Does the total length of the entire dock structure exceed 60m?
APPLICATION PROCESSING
MARINE FOOTPRINT EXCEEDING 30m²
Is the float required for the mooring of vessels larger than 40' LOA?
Does the float area exceed 40m2?
Is there a coastal risk that requires the float is designed with an increased area?
APPLICATION PROCESSING
SEABED GROUNDING
Does the seabed in this location not allow for legs on the floats to prevent grounding?
Does grounding occur less than 5-10 times per year?
Does the area have a very low habitat value? (to be confirmed by the environmental report)
APPLICATION PROCESSING
IMPACT TO CRITICAL HABITAT
APPLICATION DENIED
ARCHEOLOGY RISK
Has a credible mitigation strategy to prevent any damage been provided?
APPLICATION PROCESSING
APPLICATION DENIED
APPLICATION DENIED
APPLICATION PROCESSING
APPLICATION DENIED

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