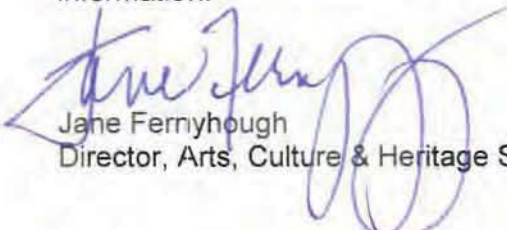




**To:** Parks, Recreation and Cultural Services Committee      **Date:** November 15, 2011  
**From:** Jane Fernyhough      **File:**  
Director, Arts, Culture & Heritage Services  
**Re:** **Maintenance and Management of the fleet at Britannia**

**Staff Recommendation**

That this report regarding the Maintenance and Management of the fleet at Britannia dated November 15, 2011 from the Director, Arts, Culture and Heritage Services, be received for information.



Jane Fernyhough  
Director, Arts, Culture & Heritage Services

Att. 1

<b>FOR ORIGINATING DEPARTMENT USE ONLY</b>		
<b>CONCURRENCE OF GENERAL MANAGER</b> 		
<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

## Staff Report

### Origin

At the September 23, 2008 Parks Recreation and Cultural Services Committee meeting staff were requested to

***“Examine how to (i) maintain and (ii) manage the fleet of boats at Britannia Heritage Shipyard in conjunction with the Britannia Heritage Shipyard Society.”***

This report responds to the referral.

### Analysis

The Britannia Heritage Shipyard Business Plan (adopted 2001) created the Vision and Guiding Principles for the site. These were reconfirmed with the adoption of the Updated Business Plan 2008-2012. The Guiding Principles include the statement with respect to the vessels:

*“the boat collection on display should be heritage boats of the type that would have been built or repaired at Britannia and should be accessible to the public”.*

At their Annual General Meeting of March, 2010 the Britannia Heritage Shipyard Society adopted the mission statement “The Britannia Heritage Shipyard Society will preserve West Coast maritime history by promoting boat building traditions.”

There are currently six vessels on site – one is owned by the City of Richmond and the remaining five are owned by the Society.

### City of Richmond owned vessel

Vessel	Description	Significance
Silver Ann	34' gillnet, built 1968	The last boat built at Britannia when it was a working shipyard. She is typical of Japanese Canadian boat construction and representative of hundreds of vessels built in Steveston.

In May 2004, the City embarked on a project to restore the *Silver Ann* and contracted a shipwright to oversee a group of volunteers to do this work. The goal of the restoration was two fold:

- To develop a corps of trained and skilled volunteers for Britannia; and
- To restore the *Silver Ann* to her 1968 configuration as a typical Japanese-Canadian river gill-netter.

The *Silver Ann* was completely restored to her 1968 configuration. She was officially launched on July 1, 2009 and now serves as the flagship for Britannia and the City of Richmond. The *Silver Ann* visits maritime and wood boat festivals throughout the area to promote Britannia Heritage Shipyards as a National Historic Site of Canada.

The goals of the Silver Ann restoration project have been fully realized and the operational model to achieve this has worked well. A small corps of skilled volunteers has been developed

and a vessel of considerable importance to Britannia Heritage Shipyard has been comprehensively restored. The *Silver Ann* retains her Japanese-Canadian heritage and is representative of a typical river gill-netter. She is fully operational, in safe and seaworthy condition and is a valuable asset to the City. In 2010 and 2011, she represented Britannia at the Vancouver Wooden Boat Festival, where she received an excellent response for the quality of her restoration and workmanship.

Ongoing maintenance is funded from the Britannia operating budget and done by volunteers.

### **Britannia Heritage Shipyard Society owned vessels**

The Britannia Heritage Shipyard Society owns five vessels:

Vessel	Description	Significance
Fleetwood	57' former rum-runner, built 1930	A former (1950's – 60's) Britannia Shipyard manager once owned <i>Fleetwood</i> . She represents a specialized working vessel converted to a pleasure craft.
Iona	38' fish packer, built 1928	<i>Iona</i> was a double-ended fishing vessel converted to a collector boat. She represents a typical fish packer used to transport fish from the fishing grounds to the cannery.
Merrilee II	34' Monk design	Pleasure vessel built in Powell River. Ed Monk was a well-known local designer of pleasure vessels in the Pacific Northwest area.
Shuchona IV	53' Table Seiner, built 1927	BC Packers formerly owned <i>Shuchona IV</i> . She represents an important change of technology and mechanization in the fishing industry.
Starliner	38' seine boat, built 1940's	<i>Starliner</i> was built by Terry Lubzinski and represents an important evolution in hull form in the fishing fleet.

All of these vessels have been donated to the Britannia Heritage Shipyard Society. With a decline in the Society membership and finances in recent years, the vessels have been neglected. The Society has been challenged to keep up even minimal maintenance and it was determined that a priority for the restoration and maintenance was required.

In early 2010, the Society established a Collections Committee specifically to deal with their vessels. In 2011, a shipwright (Colin Duffield) and a marine surveyor (Philip Oldham) were retained to inspect and assess the Society's vessels and to provide a report on the scope of work required for each vessel. This was cost shared between the Society and the City.

The Duffield Oldham report (**Attachment 1**) provides the basis for an individual Restoration Plan for each vessel, to ensure that an effective and efficient process is followed and that historical integrity of each vessel is maintained. Using this report the Society is preparing a prioritized plan for the maintenance and restoration of their vessels. Each plan will outline scope and order of work required and establish a budget and timeline for completion. A program will then be developed for the restoration of each vessel using the skills and training of existing volunteers, while building new volunteer involvement and skills.

As a result of the preliminary findings of Duffield and Oldham, *Shuchona IV* is being decommissioned and broken up (memo to Council, November 8, 2011). A maintenance work plan has been developed for *Merrilee II* and she has been moved into Richmond Boat Works. A

temporary shelter has been purchased and will be erected to house and protect Starliner. A maintenance work plan will be developed for Fleetwood over the winter months.

City staff are working with Society board members to assist with establishing vessel priorities and site improvements. The carriages on the Richmond Boat Builders ways are in need of repair. Society volunteers are supplying the labour and the City will supply the materials to complete this project. This will ensure the safe movement of vessels into and out of the Richmond Boat Builders shop. The Shipyard ways require significant remediation and repairs, including pile caps and timber rail supports. Britannia staff are working with Project Development and Facility Services staff to determine the scope of work required and costs, in preparation for submission to the 2013 Capital budget. Once completed, this will permit the continued safe operation of the shipyard as an important working element in the historic site interpretation. It will also provide better conditions to maintain the fleet of vessels. Repairs to the Richmond Boat Builders carriage can be met within the existing Britannia Shipyard's budget. Remediation of the Britannia Shipyard ways will be submitted in the 2013 Capital budget request.

### **Management of the fleet**

With the exception of the *Silver Ann*, the management of the vessels rests with the Britannia Heritage Shipyard Society. Acquisition of vessels must conform with the vision endorsed by Council as outlined in the Business Plan and with the Society's vision and mandate "to preserve West Coast maritime history by promoting boat building traditions". All vessels must have City approval before being docked at Britannia and must be insured, with the City of Richmond as a named insured. The Society has recognised their limited resources need to be focused on the existing fleet and that their vessels require continuous maintenance. Future acquisitions are not a priority until the current vessels are fully restored.

The City and the Society are developing a plan to attract and train volunteers who are able to act as guides and provide safe and secure access to the vessels at the docks.

### **Financial Impact**

There is no financial impact at this time.

### **Conclusion**

The Britannia Heritage Shipyard Society is moving forward with the maintenance and management of their fleet. Working together, the City and the Society are making progress on the maintenance and management of the fleet at Britannia.

  
per. Bryan Klassen  
Britannia Site Supervisor  
(604-718-8044)

**Restoration Possibilities and Preservation Plan  
BRITANNIA HISTORICAL SHIPYARD VESSELS:  
Fleetwood, Shuchona IV, Starliner, Iona and Merrilee II**

August/November 2011

Britannia Heritage Shipyard Society 5180 Westwater Drive Richmond BC V7E 6P3 Tel 604-718-8038	City of Richmond/Bryan Klassen Britannia Heritage Shipyard 5180 Westwater Drive Richmond BC V7E 6P3 Tel 604-718-8044
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### **Purpose**

Fleetwood, Shuchona IV, Starliner, Iona and Merrilee II present a wide range of challenges regarding their respective future uses and preservation. To help decision making about the restoration possibilities for these vessels, this document presents a report of the structural condition and steps necessary to affect repair (where needed) in each case. The restoration possibilities tables will be useable as guides for potential work.

Discussion of perseveration and maintenance of the boats will also be included, with added comments on how to return the Fleetwood, Shuchona IV, Iona and Starliner to their original configurations.

This document will not make recommendations about the disposition of boats. In some cases the scope of required work may suggest a non-floating future; in other cases very little work is needed.

Several relevant definitions, including “degrees of restoration,” are included in an Appendix for the readers’ interest.

### **Restoration Possibilities**

The following tables present a breakdown each boat’s structural components, and steps that would be required to make that part of the boat sound again. Inner structural work would have to be completed before more superficial work can proceed.

## **MV "FLEETWOOD" ex "SKEEZIX"**

Official Number 156889  
Net tonnage 18.22t  
Gross tonnage 31.51t



MV "FLEETWOOD" drydocked at Britannia Historical Shipyard, Richmond, B.C.

### **Overview:**

MV "FLEETWOOD" was built by Vancouver Shipyards in 1930 for the transport of contraband liquor between Canada and the United States. She was converted to a pleasure vessel in 1934.

#### Structural details:

Length overall: 56'  
Beam 12'  
Propulsion: General Motors model 6-71 6 cylinder marine diesel engine  
Hull construction: carvel planked red cedar, over 1/2" x 3" diagonal red cedar planking  
1 1/2" x 1" bent oak on 11" centers  
1 1/4" x 7" transverse floors  
Deck construction: longitudinal 1/2" yellow cedar exterior planking over double diagonal  
1/2" x 3" cedar strips over 2 1/4" x 1 1/2" yellow cedar frames  
Superstructure: mahogany planking

#### General layout

The hull comprises a plumb stem round bilges to a full length keel and transom stern. The decks comprise a bow roller at the stem followed by an anchor winch, forward hatch and raised cabin trunk. Side decks lead to a small aft deck. Below decks there is a chain locker in the forepeak followed by the foc's'le with single berth. Next aft is the galley followed by the wheelhouse. The engine room is next aft followed by the accommodation cabins.

**GENERAL CONDITION:**

The vessel was found to be in poor condition with numerous deficiencies noted. Most of these conditions arise from the fact she has been drydocked for most of 20 years, possibly longer. The inner diagonal 1/2" planking has dried and the interface between the inner diagonal and outer carvel layer has failed with a subsequent loss of structural integrity. The light construction bent oak framing has pulled away from the hull, particularly in the underwater portions further degrading the structural integrity.

Galvanized hull fasteners generally are corroded and provide no security between the planking. External planking is damaged; much if it from "nail sickness" (the steel composition of the fastener has oxidized, decaying the surrounding wood).

Decay was noted in various bulkheads, mainly below the cabin sole level.

**Table**

<b>Structure</b>	<b>Condition &amp; steps to repair</b>
<b>Centreline</b>	
Stem & band	Decay of the stem above the metal guard. Photo #1 Repair; Remove the guard to reveal the stem structure; depending of the extent of deterioration it might be possible to scarp in a section. If decay is extensive it would not be practical to repair.
Keel & shoe	Keel generally appeared to be sound
Shaft log & deadwood	Appeared to be sound
Horn timber	Appeared to be sound
Transom frame/built-up transom & knee	Decay was noted in the port side of the transom planking and frame. Photo #2 Repair; Remove all deteriorated structure and replace with new.
<b>Lower hull &amp; bulkheads</b>	
Floor timbers	Many pulled away from the hull with decay noted. Photo #3 Repair; Refasten in place in conjunction with other hull repair.
Bilge stringers (longitudinal members at turn of bilge)	None
Bulkheads	Various decayed particularly below the cabin sole. Photo #4 Repair; Remove deteriorated structure and replace with new. Work will have to be completed in conjunction with hull repair.
<b>Hull to deck</b>	
Deck/sheer clamp (longitudinal members supporting deck and upper hull shape)	Deteriorated over much of its length. Some sections have been replaced but do not provide designed structural integrity. Photo #5 Repair; Very difficult to repair, the best procedure would be to remove the covering boards to access the sections in conjunction with hull repair, and insert new via upper transom corners.

Breast hook (at stem) & quarter knees (at transom)	Breast hook appears sound Quarter knees (upper) at transom decayed port and starboard sides. Repair; Remove deteriorated structure and replace with new.
<b>Hull</b>	
Ribs	Various show signs of deterioration with some having been sistered or replaced. Many are pulled away from the hull particularly at the keel. Photo #6 Repair; Remove covering board & set new steamed ribs from above.
External planking	Many areas of decay mostly due to oxidation of galvanized fastenings. Photo # 7 Repair; The most extreme repair would involve replanking the vessel (see below) Some original may be used with repairs to the damaged material
Inner diagonal planking	Much of the inner planking has shrunk & cupped resulting in the loss of structural integrity. Some decay noted in various sections. Photo #8 Repair; Remove the exterior planking, repair/replace deteriorated sections and fit new exterior planking with a bonding agent between the inner and outer. Reframing would have to be completed first to provide a solid surface to fasten to and to allow the existing hull to act as a bending mold for the new frames
Transom planks	Decay noted in various. Photo #9 Repair; Remove and replace damaged sections
Fasteners	Heavily rusted both inner and exterior. Photo #10 Repair; Replace fasteners in conjunction with replanking
Caulking	Will need to be recaulked after planking
Rub rail	Appeared to be sound
<b>Hull fittings</b>	
Shaft & rudder stuffing boxes	Appeared to be sound. Original (port & starboard) are still in place & should be removed.
Through-hulls/valves, hoses & hose clamps	All to be replaced.
Engine mount through-fastenings	Appear to be sound
Portholes	Appear to be sound
<b>Deck</b>	
Deck beams	Some decay noted in conjunction with deck. Repair; Remove decayed structure and replace in conjunction with deck sections
Carlins (longitudinal members under cabin sides)	Appeared to be sound
Deck & covering boards	We are advised the decks were replaced during this drydocking. Some decay was noted in the inner planking.



Bulwarks & caps/toe rail	Appeared to be sound
Hatches & covers	Appeared to be sound
<b>Deck fittings</b>	
Stanchions	Will need to be refastened with deck/sheer clamp repair
Cleats	Many removed
Winch	Condition unknown
Vents	Good
<b>Cabin</b>	We are advised the cabin was rebuilt during this drydocking
<b>Interior</b>	
Sole bearers	Good
Sole (cabin floor)	Good
Cabinetry	Good where complete
Overhead liner	Good
Hull ceiling	Good
<b>Machinery supports</b>	
Engine log bearers & engine logs	Good
Tank supports	Not sighted
Battery supports	Not sighted
<b>Systems</b>	
Bilge pumps	Not sighted New pumps & systems would have to be installed
Electrical	Some work has been undertaken on AC systems – work is not to marine standard. DC system would have to be installed new.
Plumbing	The condition of tanks is unknown. All plumbing systems would have to be installed new.

### Preservation:

To preserve the "Fleetwood" in her present condition as a historical vessel for public display little needs to be done over the short term. Areas of deterioration could be preserved with anti-fungal treatments or sealed with resins. This could provide a safe platform for viewing. Interior lighting could be installed, sections of cabinetry fitted and the interior painted. Models, diagrams and pictures would convey the original character of the vessel.

Returning "Fleetwood" to her original configuration is not recommended; the scope of work (which would include research and design, removal of existing cabin structure, building new wheelhouse/ helm station and cargo area is very large, especially when considered in addition to the necessary hull repairs.

To restore the vessel to a seaworthy condition would require the steps presented in the table above – this would be a very costly and time consuming endeavour.

PHOTO APPENDIX



Photo #1 Damage of exterior stem structure



Photo #2 Deterioration of inner transom structure



Photo #3 Detail of floor timber pulled away from hull



Photo #4 Deterioration of bulkhead under engine stern tube



Photo #5 Deterioration of sheer clamp forward cabin



Photo #6 Detail of rib pulled away from hull



Photo #7 Detail of corroded fastener with adjacent deteriorated wood planking



Photo #8 Deterioration of inner planking



Photo #9 Deterioration of transom exterior planking starboard corner



Photo #10 Detail of corroded fasteners inner planking

## **MV "SHUCHONA IV"**

Official Number 154431  
Net tonnage 26.19t  
Gross tonnage 38.51t



MV "SHUCHONA IV" moored at Britannia Historical shipyard, Richmond, B.C.

### **Overview:**

MV "SHUCHONA IV" was built by T. Atagi Boatworks, Steveston, B.C. in 1927 and donated to the Britannia Historical Shipyard Society 1997 by BC Packers.

#### Structural details:

Length overall: 53'  
Beam 13' 9"  
Propulsion: General Motors 6 cylinder marine diesel engine  
Hull construction: carvel planked red cedar  
2" x 3" bent oak on 12" centers  
Deck construction: 3 1/2" x 1 1/2" cedar  
Superstructure: painted plywood

#### General layout

The hull comprises a plumb stem, round bilges to a full length keel and rounded transom stern. The decks comprise a bow roller at the stem followed by an anchor winch, forward hatch and superstructure with command bridge over. The superstructure encloses the wheelhouse forward, followed by a cabin and the galley. Side decks lead to the working deck. The working deck consists of the fish hold followed by the lazarette.

Below decks there is a chain locker in the forepeak followed by the foc's'le with upper and lower single berths. Next aft is machinery space.

**GENERAL CONDITION:**

Inspections were restricted by ceilings, liners and equipment installations.

The vessel is a heavily constructed example of a west coast fishing vessel. Hull framing and planking generally appear to be in reasonable condition where sighted with the exception of the stern section where extensive deterioration has occurred. We are advised additional underwater hull fastening and recaulking, occurred eight years ago, and bulwarks were replaced approximately 10 years ago.

The decks are in very poor condition.

The fish hold has been created with sprayed-in-place foam against the hull; this method of creating an insulated fish hold usually results in deterioration of the hull framing and planking behind the foam.

We are advised the engine and systems have not been operated for approximately 10 years and they would require considerable rehabilitation to restore them to a serviceable condition.

The superstructure generally is in poor condition with areas of decay noted.



Photo #1 Detail of deterioration in hull framing stern section





Photo #2 Detail of deterioration under aft deck and transom/hull connection



Photo #3 Detail of deterioration at fish hold foam/hull connection

### **Preservation:**

In order to restore this vessel to a seaworthy condition it would be necessary to rebuild the superstructure, decks and hull stern section. Removal of the foam fish hold may reveal deterioration of the framing and planking which would necessitate their replacement. Reconfiguring "Shuchona IV" to a table seiner entails adding a table, mast, boom and rigging. This would require design research, building a rotating table and locating and fitting a suitable mast and boom.

## **MV "STARLINER"**

License Number 8K 12111 (New Westminster, B.C.)



MV "STARLINER" on blocks at Britannia Historical Shipyard, Richmond, B.C.

### **Overview:**

MV "STARLINER" was built as a Fraser River gillnetter

#### Structural details:

Length overall:	35' 4"
Beam	10'
Draft:	2' 6"
Propulsion:	Ford 4 cylinder gasoline engine
Hull construction:	carvel planked red cedar 2 1/2" x 1" bent oak on 8" centers
Deck construction:	3" x 1" red cedar
Superstructure:	painted plywood side and solid red cedar front

#### General layout

The hull comprises a plumb stem, round bilges to a full length keel and rounded transom stern. Decks consist of a small foredeck followed by the cabin superstructure. Side decks lead to the working deck. The working deck consists of the main fish hold followed by smaller holding compartments. Aft is the cockpit with engine controls.

Below decks there is stowage in the forepeak followed to starboard by the galley and to port by a dinette. Aft is the wheelhouse and head compartment.

**GENERAL CONDITION:**

Inspections were restricted by ceilings, liners and equipment installations.

The vessel was found to be generally in poor condition due to a great extent by the fact she has been unprotected and not maintained for many years.

The superstructure and decks are deteriorated. Much of the forward hull framing appeared to be sound with the exception of where it was exposed to the elements. The fuel tank has been leaking gasoline into the bilge & seeped through the hull to the atmosphere – the effect on the wood structure is unknown.

The fish holds have been created with sprayed-in-place foam against the hull; this method of creating an insulated fish hold usually results in deterioration of the hull framing and planking behind the foam.

The gasoline fuelled engine may be usable but if so will require rebuilding together with new fuel tanks and systems.

**Table:**

Structure	Condition & steps to repair
<b>Centreline</b>	
Stem & band	Appeared to be sound
Keel & shoe	Appeared to be sound – the effect of being soaked in gasoline is unknown
Shaft log & deadwood	Appeared to be sound – would have to be modified with new engine installation
Horn timber	Appeared to be sound
Transom frame/built-up transom & knee	Appeared sound where sighted
<b>Lower hull &amp; bulkheads</b>	
Floor timbers	Appeared to be sound
Bilge stringers (longitudinal members at turn of bilge)	None
Bulkheads	Appeared to be sound
<b>Hull to deck</b>	
Deck/sheer clamp	Not sighted
Breast hook	Not sighted
<b>Hull</b>	
Framing	The majority appeared to be sound where sighted. Photo #1 Those deteriorated, particularly under the aft cockpit would have to be replaced
Planks	The majority appeared to be sound as sighted from the exterior Some will need replacing.
Transom planks/staves	The exterior appeared sound The inner surface was not accessible
Hull fasteners	Mostly corroded Repair; Remove existing nails and refasten
Caulking	Recaulk in conjunction with above
Rub rail	Appeared to be sound
Bumper (if any)	None

<b>Hull fittings</b>	
Shaft & rudder stuffing boxes	To be replaced with replacement engine installation
Through-hulls/valves, hoses & hose clamps	All to be replaced in conjunction with plumbing system upgrade
Engine mount through-fastenings	To be replaced with engine replacement
Depth sounder, keel cooler, zincs, topside vents	To be replaced with engine replacement
Portholes	None
Swim grid	None
<b>Deck</b>	
Deck beams	Some may be reused forward; will likely all need replacing aft
Carlins (longitudinal members under cabin sides)	Solid yellow cedar under side decks. To be assessed during deck and superstructure replacement.
Deck & covering boards	To be replaced with deck replacement Photo # 2
Bulwarks & caps/toe rail	To be replaced with deck replacement
Hatches & covers	To be replaced with deck replacement
<b>Deck fittings</b>	None
<b>Cabin</b>	Heavy deterioration Photo #3 All to be replaced
<b>Interior</b>	
Sole (cabin floor)	To be replaced Photo #4
Cabinetry	In poor condition but may be usable depending on the restored configuration
Overhead liner	None fitted
Hull ceiling	Appeared to be sound but would have to be removed for access to hull framing.
<b>Machinery supports</b>	
Engine log bearers & engine logs	To be replaced with engine replacement
Tank supports	To be replaced in conjunction with cabinetry rebuild
<b>Bilge pumps</b>	To be replaced in conjunction with rewiring electrical systems
Hoses and discharge through-hull	All in poor condition To be replaced in conjunction with hull repair

**Preservation:**

The vessel may be suitable as a restoration project depending on the hull condition when the fish holds are opened up.

The decks and superstructure would have to be removed, together with the hull ceilings to expose the framing.

Reconstruction would involve rebuilding the decks and superstructure. The interior would have to be rebuilt, together with operating systems and engine.

Restoring the "Starliner" to her original configuration would require design research and fitting of a net drum, rollers, mast, boom and rigging.

PHOTO APPENDIX



Photo #1 deterioration of rib in forward hull section



Photo #2 deterioration of side deck over carlin plank



Photo # 3 Heavily deteriorated superstructure



Photo #4 cabin sole broken up note also gasoline engine installation

## MV "IONA"



MV "IONA" moored at Britannia Historical Shipyard, Richmond, B.C.

### **Overview:**

MV "IONA" was originally built in approximately 1937 as a fisheries collector boat.

#### Structural details:

Length overall:	37' 6"
Beam	9' 4"
Draft:	2' 8"
Propulsion:	1990 Perkins 135 hp marine diesel engine
Hull construction:	carvel planked red cedar 2" x 1" bent oak on 8 1/2" centers
Deck construction:	3" x 1" fir
Superstructure:	cedar strips

#### General layout

The hull consists of a plumb stem, round bilges to a full length keel and rounded transom stern. Decks comprise a small foredeck followed by the cabin superstructure. Side decks lead to the working deck. The working deck consists of the main fish hold followed by a lazarette. Below decks there is stowage forward followed by the machinery space with wheelhouse over.

The vessel was rebuilt by Richmond Boat Builders over the period 2009 – 2011.

Work completed included;

Work was carried out by volunteers under the direction of a shipwright and includes;

Removing all deteriorated wood structure in the stern section and reconstruction,

Replacing various bottom planks,

Removing deteriorated wood structure in the superstructure and reconstruction,

Refinishing brightwork and painting interior & exterior,

Rewiring electrical system.

**Preservation:**

Reconfiguring "Iona" to her original configuration as a double ender, as she was originally built is possible but would require undoing and removing recent repairs; thus it is not recommended at this time. If attempted, steps would include design, installing a stern stem, two or three temporary moulds aft of the aft bulkhead, steam bending planks and temporarily attaching them to the moulds and steaming in frames. Staggering of butt joints would require removal of sections of exiting planks forward of the bulkhead. The aft deck and sub-structure behind the aft bulkhead would then be rebuilt.

The vessel has recently been repaired and it is critical to maintain her condition. The engine should be preserved over the winter and run up regularly during the summer.

Regular on-board inspections should be made to ensure the bilges are kept clean with a limited amount of water present.

It is important that good ventilation be maintained in the vessel's interior at all times to prevent the establishment of fungus and resulting deterioration of the wood.

It was noted the newly installed 120 volt system included non-marine quality components; the system should be upgraded to comply with marine standards.



## **MV "MERRILEE II"**

Official Number 198128  
Net tonnage 13.45t  
Gross tonnage 14.31t



### **Overview:**

MV "MERRILEE II" was designed by Ed Monk and built by Lloyd Griffith in 1950

#### Structural details:

Length overall: 34'  
Beam 10'  
Draft: 3'  
Propulsion: Lehman Ford 6 cylinder marine diesel engine  
Hull construction: carvel planked yellow cedar  
2" x 1" bent oak on 12" & 5" centers  
Deck construction: canvas sheathed plywood  
Superstructure: painted plywood

#### General layout

The hull comprises a plumb stem, round bilges to a full length keel and transom stern. The decks comprise a foredeck with bow roller and foc's'le escape hatch followed by the cabin superstructure. Side decks lead to the cockpit. Below decks there is a chain locker in the forepeak followed by the foc's'le with V-berth. From the foc's'le steps lead up to the wheelhouse. Next aft is the salon with galley to port and settee and heads compartment to starboard.

#### **GENERAL CONDITION:**

This boat's structure is in very good condition, it was nearly impossible to find any wood that needs replacing, the majority of the work required to put this boat in sparkling condition is cosmetic – bleeding topside fastenings, cracking and lifting of thick paint on cabin corners and deck edges, and rubbing strips that require rebedding. Although cosmetic, these are big jobs.

The topsides need repainting, which will entail some stripping where the paint is lifting - it may be easier to completely strip the topsides. The topside seams also need to be re-puttied.

Bleeding fastenings are the result of failure of the galvanizing on the boat nails. The nails likely are still substantial with lots of holding power, although this should be confirmed when the boat is next hauled. One could pull 15 - 20 nails from all over the hull to check. Stopping bleeding of nails is a challenge, fresh paint overtop will work for a while, but a better solution is to expose the nail heads and treat them with a phosphoric acid primer, paint, then plug/putty. Below the water line, only plugs/putty that are being dislodged by rust should be exposed and treated.

The deck paint is lifting where it meets the toe rail and the edges of the deck. Paint is also cracked and lifting in a few spots on the corners of the bridge and around the front windows. Although minor, this results in water entrapment in the wood below. At a minimum, these areas should be stripped and repainted; these surfaces still appear, and feel sound. Particularly good news is that the cabin sides below all the windows feel sound as well (cabin sides below windows are often a trouble spot).

There are a few minor problem spots. There is rot in the aft end of the starboard longitudinal beam support of the cockpit cover, and a soft spot on the trunk cabin roof at the forward starboard corner, which may be the painted canvass lifted over a concave area. These areas need to be stripped and investigated to find the extent of rot, and the lifted canvass glued to the concave portion of the cabin roof.

**Table:**

Structure	Condition & Steps to repair
<b>Centreline</b>	
Stem & stem band	Good
Keel	Not checked outside; inside was good
Shaft log	Not checked outside; inside was good
Horn timber	Does not have one, flat planning hull
Transom frame, quarter knee	Good, also include large transom "frame blocks," oriented flush to the transom in each lower quarter, which support the turns of bilge and receive the bilge stringers.
<b>Lower hull &amp; bulkheads</b>	
Floor timbers	Good
Bilge stringers	Good
Bulkheads	Good
Engine stringers	Good
<b>Hull to deck</b>	
Deck/sheer clamp (longitudinal members supporting deck and upper hull shape)	Good
Breast hook (at stem) & quarter knees (at transom – upper and lower)	Good breast hook. Good quarter knees, which are simple blocks.

<b>Hull</b>	
Ribs	Good
Planks	Good
Fasters	Showing rust streaks on topsides, see overview.
Caulking	Good except one weeping seam at the turn of bilge in the head – re-caulk this part only.
Rub rail	Needs to be bedded, which will entail, removal, cleanup of surfaces, checking plank condition underneath, refastening onto bedding compound.
Bumper (if any)	
<b>Hull fittings</b>	
Shaft & rudder stuffing boxes	Good
Through-hulls/valves, hoses & hose clamps	Gate valves on 1/2" lines port and starboard above water line (likely these are tank vent lines) consider replacing gate valves. Engine cooling water intake (1", aft of engine on port side), and exit (1" port side above water line forward of engine – no valves, consider adding ball valves to both. Through-hull, in foc's'le port locker above water line is combined exit for manual and automatic bilge pumps – no valve, consider adding. Ensure all hose attachments have double marine grade hose clamps.
Engine mount through-fastenings (if any)	Fastened to substantial engine logs.
Depth sounder, keel cooler, zincs, topside vents	Boat in water, see comment on vents above.
Portholes	Good
Swim grid	Check sizing of washers on inside surface of transom, I think the existing ones were starting to pull through the transom frames – increase size if needed. This needs to be rechecked.
<b>Deck</b>	
Deck beams	Good
Carlins (longitudinal members under cabin sides)	Good
Deck & covering boards	Good
Bulwarks & caps/toe rail	Good
Hatches & covers	Good
<b>Deck fittings</b>	
Stanchions	Good
Cleats	Good
Winch	Good
Vents	Good
<b>Cabin</b>	
Roof beams	Good

Roof	One possible soft spot at forward starboard trunk cabin roof. May be canvass that has lifted away from underlying structure.
Sides	Good
Windows	Good
Doors	Side door bottom tracks need replacing.
<b>Interior</b>	
Sole bearers	Good
Sole (cabin floor)	Good
Cabinetry	Good
Overhead liner	Good
Hull ceiling (inner hull covering)	Water damage to plywood on starboard side below side door.
<b>Machinery supports</b>	
Engine log bearers & engine logs	Additional metal frame attaching engine to engine logs, extending 2 ft forward and 1 ft aft of engine.
Tank supports	Good
Battery supports	Good
Other machinery supports	Good
<b>Bilge pumps</b>	
Pumps	Automatic pump not working. Repair or replace
Switches	Not assessed
Wiring to battery	Not assessed
Hoses and discharge through-hull	See comments on through-hulls.

**Preservation:**

Hull fasteners should be inspected and treated or replaced as required. Any deterioration in the superstructure should be repaired. The exterior should be repainted and brightwork refinished. The engine should be preserved over the winter and run up regularly during the summer. Regular on-board inspections should be made to ensure the bilges are kept clean with a limited amount of water.

It is important that good ventilation be maintained in the vessel's interior at all times to prevent the establishment of fungus and resulting deterioration of the wood.

This report was completed on November 4, 2011 and represents inspections completed by Colin Duffield August 2011 and Philip Oldham, October 2011.

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 Colin Duffield

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 Philip Oldham

## **Appendix**

### **Degrees of Restoration**

(Definitions from the Smithsonian Institute)

- 1. Protection:** The act or process of applying measures designed to affect the physical condition of a vessel by defending or guarding it from deterioration, loss or attack or to cover or shield the vessel from danger or injury. Such treatment is generally of a temporary nature and anticipates further historic preservation treatment.
- 2. Stabilization:** The act or process of applying measures designed to arrest, retard or prevent deterioration of a vessel and to assure its structural integrity. This may include rendering the vessel weather resistant and water-tight. The essential form of the vessel shall be maintained during this process
- 3. Preservation:** The act or process of applying measures to sustain the existing form integrity and material of a vessel. It may include initial stabilization work where necessary as well as on going maintenance.
- 4. Rehabilitation:** The act or process of returning a vessel to a state of utility through repair or alteration that make possible an efficient contemporary use while preserving those features of the vessel that are significant to its historical, navel, architectural, technological and cultural values.
- 5. Restoration:** The act or process of accurately recovering the form and detail of a vessel as it appeared at a particular time by the removal of later work or by replacement of missing or substantially deteriorated earlier work.

#### **Other Definitions:**

**Historic Fabric:** The material remains of a historic vessel or object, whether original materials or materials incorporated in a subsequent historically significant period.

**Integrity:** The authenticity of a vessel's historic identity as evidenced by the survival of characteristics such as plan, hull form, rigging, use of materials and or craftsmanship which existed during the vessel's historic period.