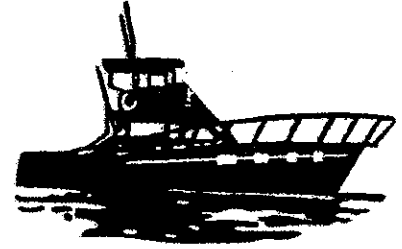




# BOAT CHECK

Hull & Engine Reports  
Insurance & Valuation Reports  
Damage Reports



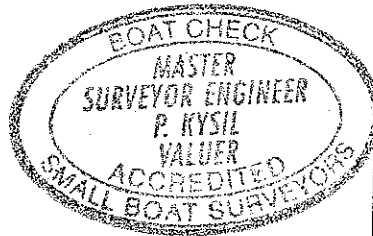
ABN57997692321

5 Tate Place  
Lugarno NSW 2210

Ph: (02) 9533 5396  
Mobile: 0408 289 600

13.2.2009,

Mr. Tim Smith,  
Deputy Director,  
Maritime Archaeologist,  
Heritage Branch,  
NSW Department of Planning,  
Locked Bag 5020,  
PARRAMATTA NSW 2124,  
AUSTRALIA.



Dear Sir,

**Subject: Ex. Sydney Harbour Ferry MV BARAGOOLA.**

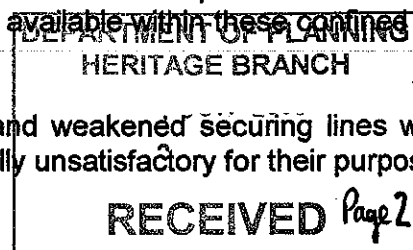
Thank you for your instructions on 5.2.2009 – **Undertake an assessment and report on the structural condition/integrity of the State Heritage Register listed ferry.**

The craft was inspected afloat at it's berth at the old coal loader facility in Balls Head Bay, Waverton on **6.2.2009** in company with the vessel owner's representative Mr. Adrian Thompson. My observations and comments following inspection of the vessel are as follows:

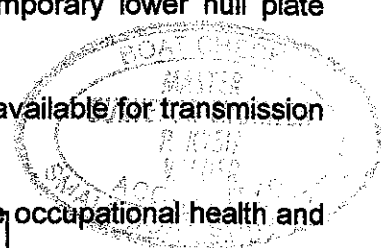
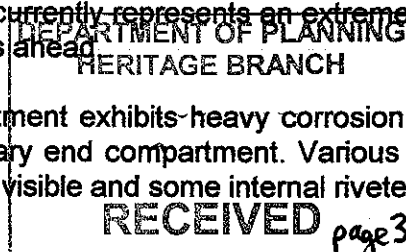
**OLDER CRAFT.** This vessel was built with a design life ie a use by date, as such you need to be aware that practically every component in the vessel including the hull structure has experienced a reduction in it's original condition, strength, efficiency, reliability or serviceability. As such the purpose of the inspection that was carried out was limited to visual deterioration indicators only, NO ITEM has been subjected to removal or scrutiny under a microscope or in a workshop or the extra costs associated with this type of extra ordinary investigation due to the inevitable higher charges that would be involved. The inspection of the subject vessel has produced representative defects and deficiencies and they are not necessarily the full extent of items that may be concealed, covered or impractical to be easily viewed. This report is not a warranty that limits the craft's deterioration to those items identified but is a clear and transparent representation of a vessel that is well and truly passed the builder's/maker's liability, component failure and structural issues can occur at any time. Fuel tanks typically can have pin hole leaks that are not always apparent during inspection, molecular deterioration of components and structures is likely, **AS THIS IS NOT A NEW VESSEL.**

1. Variously described as being between about 61-66m in length, about 10.4m in beam and approx. 4.4m in draft, this ex. Sydney Harbour ferry of around 506 metric tonnes and carrying capacity of 1523 people is understood to have been built by Morts Dock & Engineering Company Balmain. Launched on 14.2.1922 originally with an open upper deck, the vessel was re-powered and fitted with new seven cylinder diesel electric generators in 1958 replacing previous machinery.

2. The craft is constructed with a round bilge hull shell of riveted steel plate appropriately reinforced laterally and longitudinally with suitably heavy steel elements married together to form an integral double ended displacement structure propelled via propeller, propeller shafts, diesel electric drives and gearboxes.
3. This generalised description of the subject craft should at all times be considered in parallel with all historically correct records, photographs and publications, the description of the craft in this report is not intended to replace accurate and documented facts.
4. A worthwhile further observation that is useful to consider is the expectation of the era of the vessel's design, which was for a heavier overall general standard which was expected to achieve a longer operating design life.
5. This vessel when it was built and put into service represented a complex operating envelope comprising machines, steel, electrical systems, manpower and technology of the day requiring ongoing maintenance, upgrading from time to time whilst the general acceptance by all stakeholders continued that it remained fit for purpose.
6. The compounding deteriorating affect of years of maintenance neglect for a large craft such as MV Baragoola remaining afloat is exponential.
7. No vessel identifiers were visible on the craft with the exception of faint name individual letter outlines each side of the hull at the primary and secondary ends.
8. Generally speaking the significant items of fitout (excluding machinery) including wheel house items have severely deteriorated or have been stripped and removed, machinery overall is old technology and would have little more than scrap value.
9. The general arrangement of the craft provides a main lower deck, the upper deck, a wheel house forward and aft plus sub-lower deck compartments housing machinery, shafts etc. The superstructure provides an enclosed main lower deck area with partially covered side decks extending from forward to aft. The primary end of the vessel for the purposes of simplifying locations defined in this report is the end where a large manually operated anchor winch is found on the foredeck. A bulwark on each side of the vessel is provided, boarding gates are installed to bulwarks and various double sliding doors provide access into enclosed lower deck passenger space, side decks and the cambered internal main deck are timber planked, internal staircases towards each end of the main deck area provide access the upper deck, toilets are provided at the far end of the main deck at both ends of the vessel, two separated centralised enclosed compartments extend upward from the sub-main deck spaces through the lower deck space, upper deck space and through the roof over the upper deck, the superstructure main funnel and ventilation shafts are located over these compartments. The sub-main deck area is divided with bulkheads into four compartments, the engine room is aft of the primary end compartment, a second machinery and electrical control room is located adjacent to the engine room adjacent to the secondary end compartment. Access to all sub-main deck compartments is via the main lower deck. The lower main deck is provided with windows along the full length each side. The upper deck is now fully enclosed and originally it is understood it was open sided, the deck is timber planked, it also has windows along it's full length and various passenger access points into the enclosed passenger space, restricted areas outside the enclosed upper deck space are found at the primary and secondary ends of the craft. Access to the two wheel houses is via upper deck ladders at each end of the craft.
10. Heavy machinery and generators are in-situ in both the engine compartment and secondary machinery and electrical control room, considerable evidence of the partial dismantling and removal of machinery components is evident, no lighting is available within these confined spaces below the main lower deck.
11. Currently the vessel is tethered with heavily weathered and weakened securing lines which in some cases are substantially worn through and are generally unsatisfactory for their purpose.



12. At the end of the engine compartment closest to the primary end of the craft a port and starboard fuel tank is bridged with a day fuel tank, four diesel electric generators are arranged along the engine compartment from the fuel tanks towards the bulkhead for the secondary machinery space. The secondary machinery space is arranged with electrical boards and switch boards at the end adjacent to the engine compartment bulkhead, Gardener motors are located each side towards the bulkhead nearest the secondary end of the craft. A sealed gearbox is found in each of these two main compartments. All flooring around machinery in both compartments has been removed presenting considerable difficulty for individuals moving around within these two compartments.
13. Motor oils should be drained and disposed of to minimise potential environmental danger in the event the vessel is immersed.
14. Within the engine compartment it was noted that no visible asbestos was evident to exhaust lagging, variable layers of corrosion spalling from light to heavy was evident to all surfaces to the steel plated and riveted internal hull area, lateral and longitudinal hull structural members exhibited heavy to extreme corrosion particularly from around the waterline and below, seawater infiltration was evident through hull plate overlaps, temporary concrete repairs and shoring plus incompatible material repairs to leaking weakened plate areas was evident, sludge build up and heavy corrosion was noted to lower hull structural members, the fuel tanks generally were empty, a small starboard side (when facing the primary end of the craft) oil tank contained about 30 litres of oil which can easily be drained into a drum, ditto the secondary machinery room showed similar variable heavy to extreme corrosion to the hull plating/rivets and structural elements. It is not possible currently to safely fully investigate comprehensively the full extent of the heavy corrosion throughout the lower internal underbody areas of these two compartment, however it is evident that the extreme areas are extremely worrying. Heavy corrosion also exists to areas of the main lower deck support structure and deck head above these two compartments. Considerable external hull plate breakdown is evident from above waterline to just under the waterline where it is suspected thick hard shell growth is masking the vulnerability of failures in the lower plate areas.
15. Currently NO AUTOMATIC bilge pumping system protects the craft, seawater infiltration is occurring into hull bilge ie the vessel is slowly sinking day by day. The constant rolling action that the vessel is experiencing in it's current location is adding to hydrostatic loadings on the fragile areas of the hull underbody.
16. Currently NO BILGE HIGH WATER ALARMS are installed within the bilge areas of the craft.
17. Within the secondary machinery compartment the starboard battery bank contains failed batteries which should be removed to prevent environmental risk in the event the craft becomes immersed.
18. Bulkhead doors through the forward and aft bulkhead in the secondary machinery compartment are not easily operated and represent a potential hazard.
19. The aft compartment at the secondary end of the craft exhibits hull plates above waterline where daylight is visible. Lower hull stringers are so heavily corroded that they are compromised, lateral frames, riveted plate and various lower hull members are severely corroded and vulnerable, very heavy corrosion is evident uniformly throughout this compartment, temporary lower hull plate overlap concrete repairs are also evident.
20. Numerous digital pics were taken of areas throughout the craft and are available for transmission on request.
21. Each sub-main lower deck compartment currently represents an extreme occupational health and safety risk which will escalate in the weeks ahead.
22. The primary end sub-main deck compartment exhibits heavy corrosion throughout to a greater degree than that detailed for the secondary end compartment. Various temporary concrete pad repairs are evident, seawater infiltration is visible and some internal riveted plate surfaces

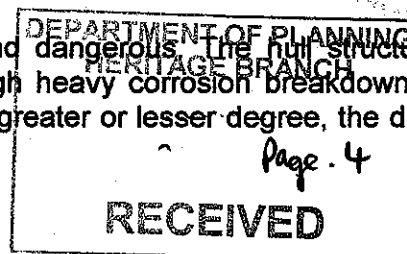


particularly to the lower underbody are so heavily affected by layers of heavy corrosion spalling that they are at the point or just about at the point of "imploding" which will produce unmanageable bilge water control. Riveted plate in many locations has reached the point where minimal available parent material is visibly and these areas are at the stage of imminent failure unless the vessel is removed from the water.

23. Side decks generally are heavily compromised due to the extensive areas of deterioration of planking and heavy corrosion to deck head steel support. Planks are visibly distorted, fractured, warped and irregular.
24. The superstructure generally shows areas of heavy deterioration through rot to linings and corrosion to framing. The bulwarks show heavy localised corrosion, the lower main deck edge rubbing strakes are generally compromised.
25. In the recent past the roof over the upper deck has been sheathed over with a light plywood and timber support structure along the full length, from wheel house to wheel house. These timber areas are now extensively rot affected and dangerous to walk on.
26. It is understood some makeshift external spot repairs were carried out in the past to riveted hull plate areas below waterline.
27. From some research of the craft's history it appears many changes have occurred to the vessel over its working life, these changes include its re-powering, replacement of the original funnel, enclosure of the top deck area and re-planking of some deck areas.
28. This report is issued subject to the condition that it is understood and agreed, that neither the firm nor any of its surveyors is under any circumstances whatever, to be held responsible for any inaccuracy in any report or certificate issued by this firm or its surveyors, or for any error of judgement, default or negligence of its surveyors, associates or agents. We have not inspected woodwork or other parts of the structure, which are covered, submerged, unexposed or inaccessible and we are therefore unable to report that any such part of the structure is free from defect. NB Localised undetected areas of rot can always exist, the engine beds were not core tested or opened up for inspection and no destructive investigation was carried out to establish their adequacy. The engine mounts were not removed for inspection to establish their adequacy and no conclusion was reached as to their adequacy.
29. The mechanical inspection is based on a visual non-intrusive inspection only. Items such as cracked cylinder heads and/or head gasket failure and piston failure are not always possible to detect during inspection.
30. A more detailed examination of the motors and gearboxes is currently not possible.
31. The sub-deck areas were not all inspected due to lack of access. All reasonable attempts have been made to trace defects present, however, there can always exist latent or design defects that are not always visible without interfering with the vessel's structure or fittings.
32. This report is for the exclusive use of the nominated client; no further circulation of same is authorized unless with the express approval of the author who retains the right of its content.
33. Note: Each and every defect or deficiency identified may not be limited to the item described, nominated client should seek to inspect and investigate each matter raised in this report.

## Summary

The craft presents as derelict, potentially hazardous and dangerous. The hull structure is severely compromised, particularly the lower hull structure, through heavy corrosion breakdown to the riveted plate and structural members along its entire length to a greater or lesser degree, the deteriorated hull condition is common and is not isolated to specific areas.



In my view from the limited inspection to waterline that I have carried out, MV Baragoola is perilously close to and in **imminent danger of sinking** should any of a considerable number of hull underbody areas fail by hydrostatic pressure rupture or "implosion".

The lack of maintenance to the craft for a considerable number of years has lead progressively to the point where further inaction will increase the potential for considerable further liabilities surrounding this vessel. Todate through some bandaging under the hull and a considerable amount of good luck MV Baragoola is at a point where a decision must be made about it's fate. Currently the hull is being pumped out on a cycle which will only increase in frequency until the vessel's hull fails allowing a rapid increase in internal flooding leading to acceleration in it's instability.

To retain seaworthiness the hull skin (plated and riveted shell) and most of the hull structural elements would require replacement at considerable cost if a suitable location could be found for the work to be carried out.

It may be possible as a temporary measure to skin or sheath the outside of the hull underbody with say sprayed on glass reinforced plastic (grp) at considerable expense, if a suitable site and funds were found. This is not a desirable option for numerous reasons including differing characteristics between the current hull skin and a temporary coating but may extend the period the vessel could be kept static on the water.

Desireably if the vessel could be removed from the water then time would not continue to be of the essence in arriving at a strategy for the craft.

I am not aware of a suitable Parramatta River Sydney site where the craft could be removed from the water.

The potential environmental contamination dangers currently are minor and they could without too much difficulty be managed.

Alternatively, if MV Baragoola could be introduced to a floating dock, the opportunity would be available then to carry out some temporary work to it's underbody.

The advanced structural deterioration of the hull and structural elements supporting the hull in particular make restoration an uneconomic and illogical proposition on the face of it, however, if heritage considerations are of greater consideration then the massive costs associated with restoration could be considered.

Leaving the considerable additional costs associated with refurbishing the superstructure, re-wiring the craft, replacing/refurbishing machinery, replacing systems and refitting the craft aside, the costs of the hull reconstruction I believe would be prohibitive.

To carry out all the works necessary to make the craft seaworthy and to achieve a full conservation outcome would require at least 65% of the original heritage fabric to be replaced.

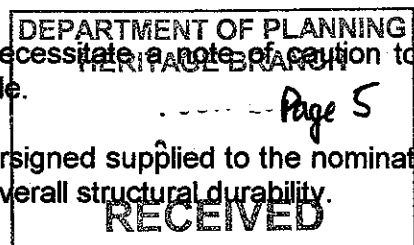
Costs associated with the vessel sinking would also be massive.

In the circumstances I stand willing to condemn the vessel allowing it's break up to proceed which would normally be the favoured outcome in the circumstances I have outlined. Equally if MV Baragoola is to be managed to allow it's stabilisation afloat my services are at your disposal.

The vessel in my opinion was not tight and sound on the specific day when inspected namely 6.2.2009 and it is a **time bomb in imminent danger of sinking** at it's berth.

What I have seen alerts me to the many risk factors that would necessitate a note of caution to a prospective insurer, consequently the vessel in my view is uninsurable.

This report is subject to the Standard Trading Conditions for the undersigned supplied to the nominated client on the understanding the subject vessel has aged reducing its overall structural durability.



This report is given without prejudice and is conscientiously believed to be a true and accurate statement. Thank you for the opportunity to assist on this occasion.

Yours faithfully,  
**Boat Check.**

**USL Capt. Peter Kysil,  
Master Surveyor, Engineer & Valuer.**

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